

NOTES ON THE B.C. SNOW GOOSE/BLACK BRANT HARVEST

1966 - 1976

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*Mike Croome*  
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## NOTES ON THE BRITISH COLUMBIA SNOW GOOSE HARVEST

1966-67

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1. Approximately 500-550 Snow geese were taken in the Fraser River foreshore area during the 80 day split season (Oct. 8 - Nov. 28, 1966 and Feb. 11 - March 10, 1967). This estimate is a projection of the known kill of 426 birds which were recorded at casual checks and through telephone contact of all known decoy owners following the season closure. An unknown number of geese are taken casually by duck hunters during the first half of the season but it is felt that the known kill of 426 birds represents 75% to 85% of the total kill.
2. During some years, a few early northward migrants have been reported taken at the heads of some of the coastal inlets, and in the Tofino area of Vancouver Island. This year no such reports were received so it is assumed that the estimate of 500-550 birds represents the total kill for the Province.
3. Most hunters reported more juvenile than adult birds in their total bag, which is in contrast with the 1965-66 season. Photographic classification of 566 snow geese after the season ended indicated 40.1 % juveniles.
4. Most hunters reported better hunting success and a larger total bag of snow geese than in 1965-66. They attribute this to the increased juvenile component and to an apparent increase in the total number of birds in the Fraser Foreshore area. The season's kill, therefore, is believed to be one of the highest for a number of years.
5. Most birds were taken off Sea Island and Lulu Island (Sturgeon Bank) but a substantial number were also taken South of the Reifel Refuge on Roberts Bank.

6. During the first half of the season an estimated 4,000 - 6,000 snow geese were resting off the foreshore. Apparently only a few of these remained all winter. During the last week of the season most birds had returned from further South and an estimated 6,000 - 10,000 were present.
7. Only two Russian-banded birds were reported taken this year. Previous band returns indicate that some, and perhaps many, of these snow geese breed on Wrangel Island, a Russian Arctic island in the Chukchi Sea.

KNOWN SNOW GOOSE HARVEST

1967-68

A. Tsawwassen - Iona Island

1. 1st Half of Season

Unknown Hunters (Sumas Prairie etc.)	10
Peter Storners-Kress	52
Ross Young	2
Wilf Bing	30
Bruce Gloves	3
Fred Nichol (522-8717)	5
Dow Whitehead (AL 5-1931)	1
	<hr/>
	103

2. 2nd Half of Season

Peter Storness-Kress	45
Rich Nichol (Fred Nichols 522-8717)	25
Lyle Stellack	2
Jim Murray	4
Terry Wilson	8
Hugh Manahan	7
Robert Husband	2
Gordon Zonailo	2
Frank Bradley (YU8-6275)	0
Robert Fulton (299-7860)	1
Leon Noel (299-2037)	0
Romeo Bruneau (922-4901)	1
Ted Larden (277-6572)	0
Bill Otway	0
Bill Morrow Sr. (253-8272)	
Roy Dowding	0
Dave Samuelson (298-3951)	0
Ed Williams (HE 3-8620)	15
Wilf Bing (CR8-6535)	10
Bruce Glover (Cr 8-2369)	2
Karl Mathias (327-6645)	1
Tony Bernard (CR 8-8357)	2

1. See opening day records in Matsqui area.
2. See King's March road check - one hunter took seven.

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127 TOTAL 230

The Black Brant & Snow Goose Harvest In

The Lower Mainland Region, 1968-69.

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A. Black Brant

The ninety-three day Black Brant season ended March 10th, and goes on record as one of the poorest seasons for many years.

Similar to previous years, most of this season's hunting activity was confined to the last two months of the season. The 1968-69 season, however, did not end with the last two or three days producing a high proportion of the kill, as has been the case for the past few years. Weather conditions at the end of the season were sunny and mild with light west and southwest winds - undoubtedly a major contributing factor to the low success.

The Lower Mainland also experienced one of the coldest winters on record, with sub-freezing temperatures lasting from the latter part of December to the end of January. These conditions produced extensive icing of the whole of Boundary Bay, Mud Bay and Beach Grove, thus greatly curtailing hunting effort for this period, especially for punt hunters. Only those using the permanent "pits" along the Beach Grove spit were able to maintain a constant hunting effort. And then, virtually no birds were available during the freeze-up.

The method of recording harvest which has been used since the season of 1966-67 was used again this year. All known Brant hunters and decoy owners co-operate by keeping records of their kill, and many of them are now recording the number of man-days of hunting spent over their decoys. The records are obtained through personal or telephone contact at the end of the season. The kill estimate thus obtained is believed to represent 95% to 99% of the actual total.

No attempts at aging the 1968-69 harvest were made but it is hoped that this can be done next year by encouraging the hunters to save a wing from each bird taken. A very small sample of classified birds this year indicated the usual low percentage of juveniles.

(1) The total estimated kill for the 1968-69 season of approximately 235 birds is almost 50% lower than the estimated kill for the 1967-68 season. It is the lowest harvest since the season of 1961-62 (Table 1).

TABLE 1 Recorded and Estimated Brant Harvest Figures for the last 10 Seasons, Lower Mainland Region.

Season Year	Recorded Kill	Estimated Kill
1959-60	102	150
1960-61	339	390
1961-62	100	<del>150</del> 150
1962-63	300	350
1963-64	454	500
1964-65	447	500
1965-66	411	460
1966-67	844	855
1967-68	454	460
1968-69	229	235

Note: Since the 1966-1967 season, Recorded Kill is believed to represent 95-99% of the total kill. Estimates previous to this are believed to represent 75-90% of total kill.

(2) As in previous years, most hunting effort and the largest proportion of the kill was attributed to the Beach Grove Spit. The second most productive area this year was the offshore portion of Boundary Bay, an area generally hunted by punt.

The ten days of March produced the largest kill of Brant (50.9% of total), with February producing most of the balance (31.6%).

TABLE 2 Known Harvest of Black Brant, Lower Mainland Region.

(1968-1969)

Area Hunted	Birds Taken					Total	% of Total
	Dec.	Jan.	Feb.	Mar.	Total		
Beach Grove Spit	24	13	39	85	161	70.1	
Boundary Bay & Offshore	0	0	25	26	51	22.4	
Canoe Pass-Tsawwassen	3	0	6	2	11	4.8	
Mud Bay-Crescent Beach	0	0	2	4	6	2.7	
Overall Total	27	13	72	117	229		
% of Total 1968-69	11.8	5.7	31.6	50.9			

(3) A 1967-68 - 1968-69 season comparison of the percentage of the total harvest coming from each of the key hunting areas is shown in Table 3. In particular, a large decline (21%) in the portion of the total kill coming from the Tsawwassen-Canoe Pass area. There is also a marked increase in the proportion of the kill now coming from the Beach Grove area (20% greater), and the Boundary Bay area (10% greater).

This would indicate that hunter effort has shifted to the Beach Grove, Boundary Bay areas. Hunter comments have indicated that perhaps the superport activity off Roberts Bank has had a disturbing effect on the Brant in this area thus causing some of the punt gunners who normally hunt here to shift their outfits to the Beach Grove-Boundary Bay area.

TABLE 3 Percentage of Total Brant Harvest For Each of The Key Hunting Areas in Lower Mainland Region For the Past Six Hunting Seasons.

Season	Beach Grove	Tsawwassen Canoe Pass	Crescent Beach Mud Bay	Boundary Bay Offshore	Estimated Total Kill
1963-64	65	22	13	-	500
1964-65	65	28	7	-	500
1965-66	-	-	-	-	-
1966-67	61	31	8	-	855
1967-68	50	29	6	15	459
1968-69	70	5	3	22	231

(4) Hunter effort, expressed as the number of hunter days required to bag one Brant, is presented in Table 4. A hunter-day represents an attempt by a hunter to bag Brant as shown by his presence in a blind, and may include any or all of a day (Blood and Smith, 1969). Hunter effort/or success) as is expressed, the average number of Hunter-days required to bag a Brant.

Unfortunately, insufficient data has been acquired to give much of an area breakdown for hunter effort. Nevertheless the figures in Table 4 are of the magnitude to indicate that much more effort for less return has gone into hunting the permanent pits at Beach Grove Spit than for the other areas, which are mainly hunted by punt hunters lying off the Beach and using decoys. This is also surprising considering the nature of the winter.

TABLE 4 Brant Hunter Effort For The 1963-69 Season, Lower Mainland Region.

Area	Hunter Days	Brant Taken	Success (HD/bird)
Beach Grove * (Permanent Pits)	798	130	6.1
Other Areas in Lower Mainland (Mainly Punt Hunters)	337	99	3.4

\* The number of Hunter Days for this area was arrived at by averaging the the number of hunters using a blind or pit each day for two of the outfits at Beach Grove (Kuchinsky and Barclay). This was approximately 3.0 H/D. The number of days beginning Feb. 1 (as most outfits didn't set up until this time) until the season end was multiplied by 3.0 H/D and this was multiplied by the 7 outfits occupying the pits.

(5) The Brant Harvest for British Columbia, 1968-69 Season.

The greater portion of the Provincial kill this year came from the Lower Mainland Region. For the past four seasons, at least, the greater portion has come from Vancouver Island, which at times has accounted for more than 70% of the total kill (1964-65 season). The Provincial estimates may be slightly low, since each year, reports are received of a few birds being taken along the upper mainland coast and on the Queen Charlotte Islands.

TABLE 5 Estimated Minimum Kill Of Black Brant In British Columbia, 1965-69.

Year	Lower Mainland	Vancouver Island	Total
1965	500	1,233	1,733
1966	460	516	976
1967	855	1,053	1,908
1968	459	772	1,231
1969	235	191	426

The Brant harvest for the 1968-69 season can only be assumed to be a reflection of the severe winter conditions for the months of December and January. This would tend to curtail hunting activity in the Lower Mainland but for the main would probably delay the northward migration. It is expected that regular numbers of Brant should appear on the Lower Mainland within the next month.

B. Snow Geese

The 1968-69 split season for snow geese lasted 57 days (October 12 to December 8) during the southward migration, and 30 days (February 8 to March 10) during the northward migration.

As has been the case in former years, the larger portion of the harvest occurred during the second half of the season, but was not so pronounced as in previous years. The total harvest was considerably lower this year (Table 6).



TABLE 6 Recorded Kill of Snow Geese in the Lower Mainland Region For the Past Two Seasons.

Season	First Half Of Season (57 Days)	Second Half Of Season (30 Days)	Total
1967-68	103	127	230
Percent of Total	44.7	55.3	
1968-69	69	75	144
Percent of Total	48.0	52.0	

The Recorded Snow Goose kill is believed to represent about 75% of the Total harvest. Data for Snow Geese is collected throughout the year from road checks and by an intensive post season telephone survey of known Snow Goose hunters. These individuals are generally "specialists" with punts and large sets of decoys, and usually account for the majority of the harvest. However, regular season duck hunters take an unknown but probably substantial portion of the harvest.

The Juvenile component of the kill this year was 4.3% for the first half of the season (69 bird sample) and 4.0% for the second half of the season (72 bird sample), (Table 6). No comparative data for previous seasons kills are available. However, April classified counts on the foreshore marshes for the past two years have indicated a large variation in the juvenile component (40.1% in 1967, 2.5% in 1968). Since juveniles are more vulnerable to hunting than adults, the low percentage of juveniles in this season's bag indicates a second consecutive year of very poor recruitment. Classified counts will be conducted in April to confirm this.

TABLE 7 Juvenile Component of the Snow Goose Recorded Harvest, 1968-69 Season.

Age	First Half of Season	Second Half of Season
Juvenile	3	3
Adult	66	72
Total	69	75
% Juvenile	4.3	4.0

Several factors possibly have contributed to the low harvest for the 1968-69 season:

- (1) The severity of the winter with the prolonged freezing, snow and ice conditions during the latter portion of the first half of the season probably curtailed hunter effort, and may have altered the normal feeding behaviour of the birds. The marshes in which they feed were totally iced-in for one full month. However, at least 1200 geese remained throughout the winter on the foreshore.
- (2) In conducting the post season telephone survey, comments were received of: (a) industrial activity in the Tsawwassen-Roberts Bank area disturbing the geese and making them more wary; (b) recently erected airport guidance markers on Sturgeon Bank changing the daily flight patterns of the birds and thus, reducing hunter success.

(3) The low Juvenile component in the harvest indicates that fewer birds were available and vulnerability of the total flock was lower than normal.

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May, 1970.

"THE BLACK BRANT & SNOW GOOSE HARVEST - 1969-70  
COAST MAINLAND REGION"

I THE BLACK BRANT HARVEST.

A. Introduction.

Black Brant were open to hunting for a period of 95 days (Dec. 6 - Mar. 10) during the 1969-70 waterfowl season.

Weather during the 1969-70 season was very mild with almost no freezing conditions and no snow. Consequently there was no curtailment of hunter activity as there had been during the severe winter of 1968-69. On the other hand the unseasonably mild weather in the latter part of this season may have caused the harvest to be lower than if weather conditions had been more normal.

B. The Lower Mainland Harvest.

Harvest data was obtained in the same manner as it has been in the past few years. All known Brant hunters and decoy owners co-operate by keeping records of their kill. At the end of the season these records are obtained either through personal or telephone contact. The recorded kill is believed to represent 95% to 99% of the actual total kill.

Hunting effort, as in former years, was concentrated in the last two months of the season and the greatest percentage of the kill (87%) occurred in the last two weeks of the season. This has generally been the case in past years, with the exception of 1968-69

TABLE 1. Known Harvest of Pacific Black Brant on the Lower Mainland during Segments of the 1969-70 season.

Date	No. Birds Shot	% of Total Harvest
Dec. 6 - Feb. 23	49	13
Feb. 23 - Mar. 9	279	74
March 10	49	13
TOTAL	367	100

The estimated total kill for the lower Mainland is 397 birds (Table 2). This is almost 70% greater than the estimated kill for 1968-69 and very close to the ten year average of 404 birds.

TABLE 2. Recorded and Estimated Brant Harvest Figures for the last 11 years, Lower Mainland Region.

Season	Recorded Kill	Estimated Kill
1959-60	102	150
1960-61	339	390
1961-62	100	150
1962-63	300	350
1963-64	454	500
1964-65	447	500
1965-66	411	460
1966-67	844	855
1967-68	454	460
1968-69	229	235
1969-70	377	397

Note: Since the 1966-67 season, recorded kill is believed to represent 95-99% of the total kill. Estimates previous to this are believed to represent 75-90% of the total kill.

As in past years, the Beach Grove Spit produced the highest percentage of the kill (72.8%). The Canoe Pass-Tsawwassen and Mud Bay-Crescent Beach areas were the next best areas producing 10.7% and 7.8% respectively. The harvest in Boundary Bay (excluding Beach Grove) was down significantly from previous years.

It would appear that there has been a shift in effort away from the Boundary Bay area and a greater concentration placed on the Tsawwassen and Mud Bay areas. Comments from hunters indicate that the Tsawwassen area north of the ferry causeway is becoming shallower due to increased deposition of sediments from the Fraser River. This may be encouraging the growth of more eel grass upon which Brant depend.

TABLE 3. Percentage of the Total Lower Mainland Brant Harvest taken at each of the key hunting areas in the Past Seven Seasons

Season	Beach Grove	Tsawwassen Canoe Pass	Crescent Beach Mud Bay	Boundary Bay	Est. Total Kill
1963-64	65	22	13	-	500
1964-65	65	28	7	-	500
1965-66	-	-	-	-	-
1966-67	61	31	8	-	855
1967-68	50	29	6	15	460
1968-69	70	-	3	22	235
1969-70	73	10.7	7.8	8.7	400

### C. Brant Harvest For All of British Columbia.

As in most years (except 1968-69) the greatest portion of the Provincial kill (63%) has come from Vancouver Island. The Lower Mainland accounted for 36% of the harvest. The estimated kill for the Province (Table 3) is probably low as it does not consider the birds that are taken along the upper mainland coast and on the Queen Charlotte Islands.

TABLE 3. Estimated Minimum Kill of Black Brant in British Columbia, 1965-70.

Year	Lower Mainland	Vancouver Island	Total
1965	500	1,233	1733
1966	460	516	976
1967	855	1,053	1908
1968	460	772	1232
1969	235	191	426
1970	400	689	1089

There has been some suggestion that the extension of our Brant season to the Treaty deadline of March 10 is tending to eliminate a genetic strain of breeding birds which traditionally migrate northward early in the season (ie. arriving in the Strait of Georgia by late February and early March). There is good evidence that the majority (85-95%) of the Lower Mainland harvest consists of adult, paired breeders. Perhaps these birds are a genetic group which uses the same breeding location each year, and excessive spring hunting may tend to eliminate breeding numbers on this site. It may be further assumed that their offspring move northward later, perhaps with other genetic strains of adults, but adapt to the early migration pattern upon reaching breeding age.

This is likely a valid theory, and certainly deserves further investigation. Its effect would be indications of a downward trend in hunting success and total harvest up to the end of the spring season (March 10). Past data for this region do not display any trend, but merely year to year fluctuations. However, indications of declining numbers will be looked for in the next few years.

## II THE SNOW GOOSE HARVEST.

### A. The Season.

The 1969-70 split season for Snow Geese lasted a total of 90 days. Fifty-eight of these days (Oct. 11 - Dec. 7) occurred when the geese were migrating south from their Wrangel Island nesting grounds in Russia, and 32 days (Feb. 7 - Mar. 10) when they were returning northward.

### B. The Harvest.

Unlike past years the greater part of the snow goose harvest occurred during the first half of the season. The total harvest was up considerably over the past two years (Table 1).

TABLE 1. Recorded Kill of Snow Geese in the Lower Mainland Region for the Past Three Seasons.

Season	First Half of Season (58 days)	Second Half of Season (32 days)	Total
1967-68	103	127	230
% of total	44.7	55.3	
1968-69	69	75	144
% of Total	48.0	52.0	
1969-70	205	146	351
% of Total	58.5	41.5	

The recorded snow goose kill is believed to represent 75% of the total kill. Data are collected through an intensive telephone survey of all known snow goose hunters. These men are considered specialists at the sport and possess good equipment. Each year they account for the majority of the kill. Other waterfowl hunters who encounter snow geese while duck hunting account for the remainder of the kill (about 25%).

#### C. Age Composition.

The ratio of juveniles to adults in the harvest and in the April classified counts taken on the foreshore marshes is related to the breeding and rearing success. Successful breeding and nesting years result in an increased number of juveniles available for hunters, and consequently a greater harvest, since juvenile birds tend to be much more vulnerable to hunting than the adults.

This season the recorded harvest consisted of 60% juveniles for the first half of the season and 65% for the second half. Last year's juvenile component was only 4.3% and 4.0% respectively. Thus, success on the breeding grounds was apparently much greater in 1969 than in 1968.

TABLE 2. Juvenile Components of the Snow Goose Harvest for the past two Seasons.

Age	1968-69		1969-70	
	First Half Of Season	Second Half Of Season	First Half Of Season	Second Half Of Season
Juvenile	3	3	123	95
Adult	66	72	82	51
Total	69	75	205	146
% Juvenile	4.3	4.0	60.0	65.0

That there was a high percentage of juveniles in this season's snow goose population is verified by classified counts on the foreshore marshes conducted between Nov. 1969 and April 1970. The percentage of juveniles in samples of the population ranged from 43.0% to 67.0% (Table 3) and averaged 56.1%. The accuracy of counts toward the end of April decreased as the grey juvenile birds rapidly completed their moult into the white adult plumage.

TABLE 3. Classified counts of Snow Geese 1969-70.

Date	Sample Classified	Adults	Juvenile	% Juvenile
Nov.	247	128	119	48.2
Nov. 26	133	44	89	67.0
Nov. 26	258	87	171	61.2
Jan. 23	365	141	224	61.3
April 15	200	114	86	43.0

Summary.

1. The 1969-70 Lower Mainland lesser snow goose harvest was 351 (known kill) and 470 (estimated kill), approximately 2½ times greater than the 1968-69 harvest.
2. Hunting success in the second half of the season was lower than in the first half due to:
  - (a) poorer hunting weather (sunny, calm),
  - (b) the fact that the large and normally vulnerable juvenile component became wary of hunters, having been pressured in British Columbia, Washington, Oregon and California. Furthermore, it is likely that the greater degree of vulnerability of the juveniles resulted in a reduced percentage of juveniles in the total population by the second half of our season.

The co-operation of the staff of the George C. Reifel Waterfowl Refuge and of the staff and students of B.C.I.T., who gathered much of the classified count data, is gratefully acknowledged.

BLACK BRANT AND SNOW GOOSE SEASON - 1972-73  
LOWER MAINLAND REGION

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INTRODUCTION:

The hunting of Black Brant was permitted in this Region from December 2, 1972 to March 10, 1973, a season of 99 days. The annual Snow Goose split-season lasted a total of 94 days, 58 of which were from October 7 to December 3, 1972, and 36 from February 3 to March 10, 1973. This permits Snow Geese to be harvested on both their southward and northward migration, as well as allowing hunters the experience of two opening days. Season lengths and times have not differed appreciably over the last several years.

Weather during the 1972-73 season was reasonably mild and resembled the 30-year norm in many aspects. Curtailment of hunting from inclement weather was minimal.

Hunting pressure for Brant is traditionally greatest at the Beach Grove Spit, Canoe Pass and Brunswick Point, and the Mud Bay-Crescent Beach areas, while Snow Geese are hunted primarily off the Fraser Delta.

METHODS:

All data for the 1972-73 Brant and Snow Goose seasons were collected by Conservation-Officers (notably D.R. Udy), Biologists and technicians by the following methods:

- (1) Contacting hunters in the field.
- (2) A post-season telephone survey of all known Brant and Snow Goose hunters.

As the recorded kill is believed to represent 95% to 99% of the total actual kill for Brant, and 75% of the actual kill for Snow Geese, projections of recorded data have been calculated to provide an estimated harvest. The hunters contacted annually are those known to own or have access to specialized equipment (decoys, punts, etc.) necessary for consistent success in the hunting of these species. They are considered specialists in the sport and it is known that each year they account for the majority of the harvest. Snow Geese are occasionally shot by duck hunters on an opportune basis



while Brant are almost solely taken during hunts for that species specifically. The availability of the latter to hunters during the general duck season is very limited and their habits are not conducive to opportune shooting; thus the discrepancies between the extrapolation factors for known and estimated kills.

BRANT RESULTS:

The last two weeks of the season are always more productive than the preceding period, kills often rising dramatically during the last ten days. This year proved no exception (Table 1).

Table 1 - Known Harvest of Pacific Black Brant on the Lower Mainland During Segments of the 1972-73 Season

Date	No. Birds Taken	% of Known Harvest
Dec. 2 - Feb. 28	168	38
March 1 - March 10	<u>278</u>	<u>62</u>
Total	446	100

The estimated total kill for the Lower Mainland is 469 birds (Table 2). This is approximately 59% greater than the estimated kill for 1971-72 and 46% greater than the previous five-year average of 321 birds. In fact, the current season proved to be one of the best in the last decade. Since 1959, the only seasons producing better hunter results were:

- (a) 1966-67, with an estimated kill of 855 birds.
- (b) 1964-65, with an estimated kill of 500 birds.
- (c) 1963-64, with an estimated kill of 500 birds.

**Table 2 - Recorded and Estimated Brant Harvest Figures for the Seasons 1967-68 to 1972-73, Lower Mainland Region**

Season Year	Recorded Kill	Estimated Kill
1967-68	454	460
1968-69	229	235
1969-70	377	397
1970-71	210	221
1971-72	280	294
1972-73	446	469

The annual Brant and Snow Goose report for 1969-70 introduced the concept of a general shift in hunter effort away from the Boundary Bay area (with the exclusion of the Beach Grove Spit) and a greater concentration in the Tsawwassen and Mud Bay areas. This appears to be the case in the past season as well (Table 3). The Beach Grove Spit, traditionally a very popular and productive area, produced the highest percentage of the harvest (71.0%), while the Canoe Pass - Tsawwassen and Mud Bay - Crescent Beach areas were the next best, producing 13.4% and 11.0% respectively. The harvest in Boundary Bay (excluding Beach Grove) decreased for the second consecutive year, possibly as a result of reduced hunting pressure.

**Table 3 - Percentage of the Total Lower Mainland Brant Harvest Taken at Each of the Key Hunting Areas for the Past Six Years**

Year	Beach Grove	Canoe Pass - Tsawwassen	Mud Bay - Crescent Beach	Boundary Bay	Total
1967-68	50%	29%	6%	15%	460
1968-69	70%	..	3%	22%	235
1969-70	73%	10.7%	7.8%	8.7%	400
1970-71	54.3%	7.6%	3.3%	34.8%	221
1971-72	61.0%	18%	7%	14%	280
1972-73	71.0% (317 birds)	13.4% (60 b's)	11.0% (49 b's)	4.5% (20 b's)	446

SNOW GOOSE RESULTS:

The Snow Goose harvest pattern of this season resembled that of most previous years, in that a greater number of birds were taken in the second half than in the first half of the season.

The total harvest of 290 birds was considerably below last year's extremely good harvest of 641 birds, and was below the five year average of 441 birds (Table 4)

Table 4 - Recorded and Estimated Snow Goose Harvest Figures for the Seasons 1967-68 to 1972-73 - Lower Mainland Region

Season	Reported Kill First Half of Season	Reported Kill Second Half of Season	*Recorded Kill	Estimated Kill
1967-68	103	127	230	307
% of Total	44.7%	55.3%	..	..
1968-69	69	75	144	192
% of Total	47.9%	52%	..	..
1969-70	205	146	351	468
% of Total	58.5%	41.5%	..	..
1970-71	..	..	448	597
% of Total	..	..	..	..
1971-72	246	235	481	641
% of Total	51.1%	48.9%	..	..
1972-73	102	116	218	290
% of Total	46.8%	53.2%	..	..

\*Assumed to represent 75% of actual total kill.

The juvenile component of the Snow Goose population available to hunting has a direct effect on the overall success of the hunting season since juveniles are more vulnerable to hunting than adults. This is substantiated by an examination of data available for past years. In the 1968-69 season, a year of poor hunting success (estimated kill of 192 birds), the percentage of juveniles in the harvest was found to be 4.3% and 4.0% for the first and second halves of the season respectively. In 1969-70, an excellent year (estimated kill of 468 birds), the juvenile component was 60.0% and 65.0% for the two portions of the season.

This year's data suggest the reason for poor overall success; juvenile components of 16% and 5% respectively (Table 5). The marked drop in juvenile percentages in the second half may be due to an excessive harvest of the juvenile birds, having been subjected to hunting pressure in British Columbia, Washington, Oregon and California. Otherwise it is unexplained.

Table 5 - Juvenile Component of the Snow Goose Recorded Harvest - 1972-73

Age	First Half of Season	Second Half of Season
Juvenile	14	3
Adult	88	95
Total	102	98
% Juvenile	13.7%	3.0%

From these data, illustrating a mean juvenile harvest component of 8.5%, it would appear that breeding success for the 1972 season was low. Personal communication with W.A. Morris, Canadian Wildlife Service Biologist, revealed that the 1972 hatching success for Snow Geese in their Arctic nesting grounds was disastrous, further supporting the evidence of a low juvenile component in the 1972-73 harvest.

DISCUSSION:

No attempt has been made to determine success per hunter-day as some hunters were uncertain as to the number of days spent hunting, and statistics formulated could prove very misleading. There was a similar lack of reliable information pertaining to the age-class composition of Brant taken. Post-season classified counts of Snow Geese, usually carried out in April, may substantiate or refute any conclusions reached from the 1972-73 harvest data on the age-class structure of the total population.

March 22/73

B.R. Gates, Regional Wildlife Biologist  
R.D. Forbes, Wildlife Technician

TABLE 2 - Percentage of the Total Brant Kill Taken at Each of the Key Hunting Areas For the Past Nine Years

YEAR	BEACH GROVE	CANOE PASS-TSAWASSEN	MUD BAY-CRESCENT BEACH	BOUNDARY BAY	TOTAL
1963-64	65	22	13	-	500
1964-65	65	28	7	-	500
1965-66	-	-	-	-	460
1966-67	61	31	8	-	855
1967-68	50	29	6	15	460
1968-69	70	-	3	22	235
1969-70	73	10.7	7.8	8.7	400
1970-71	54.3	7.6	3.3	34.8	221
1971-72	61.0	18	7	14	280

B. SNOW GEESE

The Snow Goose season lasted a total of 91 days, split into two periods October 9th, 1971 - December 5th, 1971 and February 5th, 1972 - March 10th, 1972. With this system hunters are given the experience of two "opening days" and a chance to bag geese as they move southward in the fall and northward in the spring.

The known kill of snow geese was again obtained by telephone interviewing. <sup>are</sup> Data is given in Table 1-S.

TABLE 1-S - The Recorded Kill of Snow Geese  
in the Lower Mainland Region for  
the Past Five Seasons

YEAR	REPORTED KILLED 1st HALF OF SEASON	REPORTED KILLED 2nd HALF OF SEASON	TOTAL
1967-68	103	127	230
% of Total	44.7%	55.3%	
1968-69	69	75	144
% of Total	48 %	52 %	
1969-70	205	146	351
% of Total	58.5%	41.5%	
1970-71	-	-	448
% of Total	-	-	
1971-72	246	235	481
% of Total	51 %	49 %	

The 1971-72 recorded harvest is the highest for the past 5 years, though only 10% higher than in the previous year.

The recorded kill is believed to represent 75% of the total kill, the remaining 25% being taken by duck hunters and other occasional shooters. Thus it is estimated that approximately 650 snow geese were taken in this region in 1971-72.

No age composition of the bagged birds was obtained this year. However, post-season classified counts in April <sup>1972</sup> indicate less than 10% juveniles in the population. (7.1% in a sample of 267 birds, April 10th, 1972).

*Calcutt*  
1972

BLACK BRANT AND SNOW GOOSE SEASON - 1973-74

LOWER MAINLAND REGION

Bill Stalker

INTRODUCTION:

The hunting of Black Brant was permitted in this region from December 1, 1973 to March 10, 1974 giving 100 hunting days. The Snow Goose season was split, giving a total of 93 hunting days which were from October 6 to December 2, 1973 and from February 2 to March 10, 1974. This gives hunters a chance to harvest Snow Geese on both their Southward and Northward migration as well as allowing hunters the experience of two opening days. Season lengths and times have not differed appreciably over the last several years.

Weather conditions were reasonably mild during the 1973-74 season. Hunting pressure for Brant is traditionally greatest at the Beach Grove Spit, Canoe Pass, and Brunswick Point, and the Mud Bay - Crescent Beach areas, while Snow Geese are hunted primarily off the Fraser Delta.

METHODS:

All data for the 1973-74 Brant and Snow Goose seasons were collected by Conservation Officers (notably D. R. Udy), Biologists and Technicians by the following methods:

- 1) Contacting hunters in the field.
- 2) A post-season telephone survey of all known Brant and Snow Goose hunters.

As the recorded kill is believed to represent 95% to 99% of the total actual kill for Brant, and 75% of the actual kill for Snow Geese, projections of recorded data have been calculated to provide an estimated harvest. The hunters contacted annually are those known to have access

to specialized equipment (decoys, punts, etc.) necessary for consistent success in the hunting of these species. They are considered specialists in the sport and it is known that each year they account for the majority of the harvest. Snow Geese are occasionally shot by duck hunters on an opportune basis while Brant are almost solely taken during hunts for that species specifically. The availability of the latter to hunters during the general duck season is very limited and their habitats are not conducive to opportune shooting; thus the discrepancies between the extrapolation factors for known and estimated kills.

#### BRANT RESULTS

The last two weeks of the season are always more productive than the preceding period but unfortunately data is not available on exact dates this year.

The estimated total kill for the Lower Mainland is 333 birds (Table 1). This is approximately 29% less than the estimated kill for 1972-73 season, but was approximately 3% higher than the five year average of 325 birds. This is due to the fact that the 1972-73 season was an exceptional year.

TABLE 1. Recorded and Estimated Brant Harvest Figures for the seasons 1968-69 to 1973-74, Lower Mainland Region

Season Year	Recorded Kill	Estimated Kill
1968-69	229	235
1969-70	377	397
1970-71	210	221
1971-72	280	294
1972-73	446	469
1973-74	317	333



In the past four years hunter effort has shifted from Boundary Bay towards Mud Bay and Tsawwassen areas with the exception of the Beach Grove Spit.

This past season 60% of Brant shot were at the Beach Grove Spit; 18% definite at Brunswick Point and the remaining 22% are also expected to largely be taken at Canoe Pass and Brunswick Point.

TABLE 2. Percentage of the Total Lower Mainland Brant Harvest taken at each of the key hunting areas for the past six years.

Year	Beach Grove	Canoe Pass Tsawwassen	Mud Bay-- Crescent Beach	Boundary Bay	Total
1968-69	70%	-	3%	22%	235
1969-70	73%	10.7%	7.8%	8.7%	400
1970-71	54.3%	7.6%	3.3%	34.8%	221
1971-72	61.0%	18%	7%	14%	280
1972-73	71.0%	13.4%	11%	4.5%	446
1973-74	60%	25%	10%	5%	317

Although the season did not compare with the excellent 1972-73 season, it was slightly better than the five year average.

#### SNOW GOOSE RESULTS

The Snow Goose harvest pattern of this season resembled that of most previous years in that a greater number of birds were taken in the second half than in the first half of the season.

The percentage of birds shot in the first half compared to the second half respectively is 21% and 79% (Table 3).

The total harvest of 190 birds was 35% lower than last years harvest of 290 birds and well below the five year mean of 438 birds (Table 3).

TABLE 3. Recorded and Estimated Snow Goose Harvest Figures for the Seasons 1969-69 to 1973-74 - Lower Mainland Region.

Season	Reported Kill 1st Half of Season	Reported Kill 2nd Half of Season	*Recorded Kill	Estimated Kill
1968-69	69	75	144	192
% of Total	47.9%	52%		
1969-70	205	146	351	468
% of Total	58.5%	41.5%		
1970-71	-	-	448	597
% of Total	-	-		
1971-72	246	235	481	641
% of Total	51.1%	48.9%		
1972-73	102	116	218	290
% of Total	46.8%	53.2%		
1973-74	15	57	152	190
% of Total	21%	79%		

\* Assumed to represent 75% of actual total kill.

NOTE: For the 1973-74 season only 72 kills were recorded as first or second half season. These were therefore used in Table 3.

The 1973-74 season had the poorest hunting success figures since 1968-69. This may be partially due to the poor hatch of 1972 but the main cause is a slow migration of Snow Geese into the Lower Mainland from their wintering grounds. The main Flocks reached our area approximately one week after the close of the season and since most geese are shot in the second half this had a definite effect on hunter success.

#### DISCUSSION

There was a lack of information pertaining to the age classes of Black Brant and Snow Geese. It may be suggested to hunters that they try to give a tally of how many juvenile birds are shot each year in comparison to adult birds.

BLACK BRANT AND SNOW GOOSE SEASON 1974-75  
LOWER MAINLAND REGION

INTRODUCTION

Black Brant hunting in the Lower Fraser Valley was permitted from Nov. 30 to Mar. 10 (101 days). The Snow Goose hunting season was split into winter (Oct. 5 - Dec. 1) and spring seasons (Feb. 1 - Mar. 9), totalling 93 hunting days. This permitted the hunters to harvest Snow Geese on both southward and northward migrations. Season lengths and times have not differed appreciably over the last several years.

Hunting pressure on Brant in the Lower Mainland is restricted to four traditional locations, those being Beach Grove, Canoe Pass, Mud Bay and Boundary Bay. The bulk of the Snow Goose hunting pressure was centered around Reifel Island. The hunting of these two species is considered a specialty sport with a restricted number of participants. Almost all Snow Goose hunters sampled, also hunt Brant.

METHODS

All data for the 1974-75 Brant and Snow Goose seasons were collected by Conservation Officers, Biologists and Technicians by the following methods:

1. Contacting hunters in the field.
2. A post-season telephone survey of all known Brant and Snow Goose hunters.

The recorded kill is believed to represent 95 to 99% of the total actual kill for Brant, and 75% of the actual kill for Snow Geese, projections of recorded data have been calculated to provide an estimated harvest. Numbers of Brant and Snow Geese harvested do not indicate a population trend due to the known unpredictable daily movements of these two species while migrating. The hunters contacted annually are those known to have access to specialized equipment (decoys, punts, etc.) necessary for consistent success in the hunting of these species. They are considered specialists in the sport and it is known that each year they account for the majority of the harvest.

Snow Geese are occasionally shot by duck hunters on an opportune basis while Brant are almost solely taken during hunts for that species specifically. The availability of the latter to hunters during the general duck season is very

limited as their habitats are not conducive to opportune shooting; thus the discrepancies between the extrapolation factors for known and estimated kills.

BRANT RESULTS:

Due to the time of migration of Brant coincident with breeding seasons in Russia and Alaska, the last week of the season is always more productive than the preceding period. The Brant harvest in the 1974-75 hunting season for the Lower Mainland was 134 birds (estimated kill 141).

Approximately 65% of the birds were harvested during the last week of the season. Approximately 89% of the total kill (134) was harvested at the Mud Bay and Beach Grove punts (Table 1). Boundary Bay yielding the fewest birds (2) had very little hunting pressure. Hunting effort was not evenly distributed throughout the four locations.

TABLE 1 - Percentage of the total Lower Mainland Brant Harvest taken at each of the key hunting areas.

	Beach Grove	Canoe Pass	Mud Bay	Boundary Bay	Total
Number harvested	55	13	61	2	131
%	42	10	46.5	1.5	100

Numbers of Brant harvested in the 1974-75 season was the lowest over the last seven years (TABLE 2). However, this does not indicate lower numbers of Brant migrating northward but closure of the hunting season before the main migration of Brant passed through the four regular hunting areas. The main migration passed through the Lower Mainland on March 11 and 12, the hunting season closed March 10.

TABLE 2 - Recorded and Estimated Brant Harvest Figures for the Seasons 1968-69 to 1974-75. Lower Mainland Region.

<u>Season Year</u>	<u>Recorded Kill</u>	<u>Estimated Kill</u>
1968-69	229	235
1969-70	377	397
1970-71	210	221
1971-72	280	294
1972-73	446	469
1973-74	317	333
1974-75	134	141

Data concerning sex and age structure of the Brant harvested and distribution of hunter-day effort is not known for the 1974-75 season.

SNOW GOOSE RESULTS

The Snow Goose harvest in the 1974-75 season totalled 44 geese (estimated kill 59). This is the lowest harvest on record (Table 3). In past years the bulk of the harvest is culled during the second half of the hunting season. In the 1974-75 season only 4 (9%) birds were harvested during the second half of the season by three hunters.

TABLE 3 - Recorded and Estimated Snow Goose Harvest Figures for the Seasons 1968-69 to 1974-75 - Lower Mainland Region.

<u>Season</u>	<u>1st Half of Season</u>	<u>2nd Half of Season</u>	<u>Recorded Kill</u>	<u>Estimated Kill</u>
1968-69	69	75	144	192
% of Total	47.9%	52%		
1969-70	205	146	351	468
% of Total	58.5%	41.5%		
1970-71	---	---	448	597
% of Total	---	---		
1971-72	246	235	481	641
% of Total	51.1%	48.9%		

Table 3 - cont'd.

Season	1st Half of Season	2nd Half of Season	Recorded Kill	Estimated Kill
1972-73	102	116	218	290
% of Total	46.8%	53.2%		
1973-74	15	57	152	190
% of Total	21%	79%		
1974-75	40	4	44	59
% of Total	97%	9%		

One main observation by biologists at Reifel Refuge was that the main flocks of geese passed through two days after the hunting season ended. The crop of Snow Geese was similar to the last two years, that being very poor. All Snow Geese harvested this season were adults indicating a poor hatch in 1973-74, resulting in a dramatic effect on hunter success.

## BLACK BRANT AND SNOW GOOSE SEASON 1975-76

### LOWER MAINLAND REGION

Black Brant hunting in the Lower Fraser Valley was permitted from November 29, 1975 to March 10, 1976 (103 days). The Snow Goose hunting season was split into winter (October 11, 1975 to November 30, 1975) and spring (January 31, 1976 to March 10, 1976), totalling 91 days. The purpose of the split season was to permit hunters to harvest Snow Geese on both southward and northward migrations. Season lengths and times have not differed appreciably over the last several years.

Hunting pressure on Brant in the Lower Mainland is restricted to four traditional locations, namely, Beach Grove, Canoe Pass, Mud Bay and Boundary Bay. Snow Goose hunting occurs primarily off Sturgeon and Roberts Banks, with the occasional bird bagged incidental to Brant hunting as the Snow Geese migrate through in the spring. The hunting of these two species is considered a specialty sport with a restricted number of participants.

#### METHODS

All data for the 1975-76 Brant and Snow Goose seasons were collected by Conservation Officers and Biologists by the following methods:

- 1) contacting hunters in the field
- 2) a post-season telephone survey of all known Brant and Snow Goose hunters.

The recorded kill is believed to represent at least 85% of the total actual kill for Brant, and 75% of the actual kill of Snow Geese. These estimates can be used to calculate an estimated harvest for both species. Numbers of Brant harvested appears to depend largely on the timing of the spring migration and probably reflects year-to-year variations in spring weather patterns. Hunting pressure is believed to be relatively constant from year-to-year.

The Snow Goose harvest can be taken as an indication of population trend in that high harvest years coincide with high production years whereas low harvest years coincide with low production years. As with Brant, hunting pressure on

Snows is probably fairly constant from year-to-year.

The hunters contacted annually are those known to have access to specialized equipment (decoys, punts, etc.) necessary for consistent success in the hunting of these species. They are considered specialists in the sport and it is thought that they account for the bulk of the annual harvest.

#### BRANT HARVEST

The reported Brant harvest during the 1975-76 season was 388 birds. The distribution of the kill between the key hunting areas is shown in Table 1. As in the more recent past, the bulk of the kill coincided with the arrival of early spring migrants in this area. The arrival of this segment of the brant population varies from year-to-year, but is seldom in evidence much before the first week of March. This results in the bulk of the kill occurring during the last week of the season. Unfortunately, the fragmented approach utilized by Branch staff to census hunter effort this year resulted in questions pertaining to chronology of kill not being asked of a substantial number of hunters. Those asked did indicate that more than one third (39.2%) of their birds were taken from March 1-10.

With a view towards future hunting restrictions at key land hunting locations ie. Beach Grove, some successful hunters were asked what methods they used to take Brant. The method used at key locations is shown in Table 2.

From a management standpoint, these results would indicate that a considerable Brant harvest, from a local standpoint, could still be obtained in the Beach Grove area even if the "sensitive" beach shooting should be discontinued in the near future.

A comparison of this year's reported kill to that of previous years (see Table 3) shows a substantial increase over the seven year average of 284 birds.

Data concerning sex and age structure of the Brant harvested, chronology of the entire harvest and distribution of hunter effort according to location is not known for the 1975-76 season.



TABLE 1 - Percentage of the Reported Lower Mainland Brant Harvest Taken at Each of the Hunting Areas - 1975-76.

	<u>Beach Grove</u>	<u>Canoe Pass</u>	<u>Mud Bay</u>	<u>Boundary Bay</u>	<u>Total</u>
Number Harvested	262	42	29	55	388
%	67.5	10.8	7.5	14.2	100.0

TABLE 2 - Method Used to Take Brant at Key Hunting Locations on Lower Mainland - 1975-76.

	<u>Beach Grove</u>	<u>Canoe Pass</u>	<u>Mud Bay</u>	<u>Boundary Bay</u>	<u>Total</u>	<u>%</u>
Beach Hunting	160	-	-	-	160	41.2
Punt Hunting	102	41	29	40	212	54.6
Wade-out Hunting	-	-	-	14	14	3.6
Incidental to other hunting	-	1	-	1	2	.6
<b>Totals</b>	<b>262</b>	<b>42</b>	<b>29</b>	<b>55</b>	<b>388</b>	<b>100.0</b>

TABLE 3 - Reported Brant Harvest Figures for the Season 1968-69 to 1975-76  
- Lower Mainland Region.

<u>Season Year</u>	<u>Reported Kill</u>
1968-69	229
1969-70	377
1970-71	210
1971-72	280
1972-73	446
1973-74	317
1974-75	134
1975-76	388
76-77	$\alpha$ 300 max
	$\Sigma$ 2681 $\div$ 9
	$\bar{X} = 300$

125?

130 = 180, 200  
1000

## SNOW GOOSE HARVEST

The reported Snow Goose harvest during the 1975-76 season was 543 birds. This is believed to represent at least 75% of the actual kill.

In past years slightly over half the annual kill has usually occurred in the second half of the season (see Table 4). However, this year a significant portion of the kill occurred in the first half of the season. There are several possible explanations for year-to-year variations in chronological occurrence of the kill. Probably the most plausible is that in most years the geese migrate south from the Fraser Delta sometime after the close of the first half of the season. If they return before or during the second part of the season then a potential harvest is possible. However, occasionally they do not return until the last few days of the season, or even after it has closed. Therefore, the second half kill is most often dependent on the degree of goose presence in this area during that portion of the season rather than on any other single factor.

Chronological distribution of the kill can also be affected by the age ratio of the population. In years of average or high production the less wary juveniles continue to present hunting opportunity over the entire season. However, in years of low production, when the hunting effort is directed towards primarily experienced birds, the geese become very wary by the second half of the season and bulk of the kill may then occur during the earlier portion of the season.

As shown in Table 5, the age ratio of the kill indicates that geese wintering and migrating through the Fraser Delta enjoyed considerable reproductive success in 1976. Therefore, the factor most likely affecting the second half kill was the disappearance of the geese from this area from January 12 until approximately February 20.

Distribution of the kill with respect to the major hunting areas is shown in Table 6. However, to indicate success rate at each area it would be necessary to have some idea of the man-days spent at each area.

TABLE 4 - Reported Snow Goose Harvest Figures for the Seasons 1968-69 to 1975-76  
- Lower Mainland Region.

Season	First Half	Second Half	Combined over the Season	Total Reported Kill
1968-69	69	75	-	144
% of Total	48%	52%		
1969-70	205	146	-	351
% of Total	58%	42%		
1970-71	-	-	-	448
% of Total				
1971-72	246	235	-	481
% of Total	51%	49%		
1972-73	102	116	-	218
% of Total	46.8%	53.2%		
1973-74	95*	57	-	152
% of Total				
1974-75	40	4	-	44
% of Total	91%	9%		
1975-76	343	120	80	543
% of Total	74%	25%		

\* original data lost; 95 based on personal recollection

TABLE 5 - Age Structure of Snow Goose Harvest in Lower Mainland Region - 1975-76

	<u>First Half</u>	<u>Second Half</u>	<u>Season Total</u>
Adults	75 (37%)	33 (56%)	108 (41.5%)
Juveniles	126 (63%)	26 (44%)	152 (58.5%)
Totals	201	59	260*

\* Age data was recorded on 260 of 543 Snow Geese reported

TABLE 6 - Distribution of Reported Snow Goose Harvest Among Key Hunting Areas in the Lower Mainland - 1975-76

	<u>Sea - Iona Is.</u>	<u>Lulu Is.</u>	<u>Westham - Reifel Is.</u>	<u>Canoe Pass</u>
Numbers Harvested	65	57	261	160
%	11.9	10.6	48.0	29.5