

MAINE & THE MARITIMES

Waterfowl Breeding Population Survey

2003



TITLE: Waterfowl Breeding Population Survey for Maine and the Maritimes

STRATA SURVEYED: 62, 63, 64, 65, 66 and 67

DATES: May 3 through June 7, 2003

DATA SUPPLIED BY: United States Fish and Wildlife Service (USFWS)
Canadian Wildlife Service (CWS)

Fixed Wing Crew:

Pilot/Observer: John Bidwell, Flyway Biologist, USFWS

Observer: Marty Drut, Wildlife Biologist, USFWS

Helicopter Crew:

Pilot: Harrison MacRae, Pilot, Canadian Coast Guard

Observer: Bob Raftovich, Wildlife Biologist, USFWS

ABSTRACT

The 2003 waterfowl breeding population survey of Maine and the Maritimes was conducted from May 3 through June 7. All transects and segments were flown and comparisons made with the historical data set, which includes estimates from 1996 through 2002. This was the fourth operational year for the survey.

Species	2003 estimates in thousands	% change from 2002	% change from 1996-2002 mean
Mallard	14.1	-12.7	-44.5
American black duck	192.9	-40.5	-21.0
American wigeon	27.7	-31.5	33.5
American green-winged teal	221.4	-55.9	13.2
Northern pintail	20.0	-50.3	66.6
Ring-necked duck	95.2	-21.1	-42.0
Goldeneyes	118.8	-14.4	12.2
Bufflehead	12.2	-16.7	-5.7
Scoters	23.3	-51.3	-20.9
Mergansers	74.4	-34.2	-10.4
Total Ducks	826.6	-42.7	-17.1
Canada goose	153.1	-30.4	-28.4
NAP Canada goose TIB (Strata 66 and 67)	133.3	-30.8	-26.6
NAP Canada goose TIP (Strata 66 and 67)	60.8	-1.9	-13.5

A Helicopter crew provided visibility correction in Strata 62 through 65 and new VCFs were applied to some species, but only to the 2003 data set. The 1996–2002 data is adjusted with pooled visibility correction factors for Strata 62 and 63 through 67. Since helicopter visibility correction was not conducted in Strata 66 and 67, the data for those strata continue to be adjusted with past-pooled factors.

For Maine and most of the Maritimes, below average temperatures and below average precipitation was the overall climatic theme for 2003. Winter conditions continued through the first half of April that delayed migration of early nesters. Spring break up, however, was rapid, even in Labrador where record-breaking temperatures were documented in mid May. The total duck index for 2003 is the second lowest of record. NAP Canada geese indices show significant declines, however the combined Total Indicated Pairs index for Strata 66 and 67 was only slightly lower than 2002.

METHODS

Methods for conducting this survey are described in the Standard Operating Procedures for Aerial Waterfowl Breeding Ground Population and Habitat Surveys in North America, Section III, revised 1987. Waterfowl data was collected using Voice/GPS (record and transcribe) survey system designed to georeference each observation. Transcribed raw data was error checked and compiled for transmission to the Population and Habitat Assessment Section (PHAS) of the United States Fish and Wildlife Service (USFWS), Division of Migratory Bird Management (DMBM).

This is the first year since 1995 that helicopter visibility correction was used in Crew Area 15. The Canadian Coast Guard provided a BO-105 helicopter piloted by Harrison MacRae. Bob Raftovich, Wildlife Biologist, was the observer. Funding was only available for visibility correction in Strata 62 through 65. Table 6 discusses the resulting changes in VCFs that were only applied to the 2003 data set. All other species were adjusted using pooled visibility correction factors for Strata 62 and 63 through 67. Because of significant habitat differences in Newfoundland and Labrador as compared to the rest of Crew Area 15, it was decided to also adjust the 2003 data for Strata 66 and 67 with past pooled visibility correction factors. Stratum 62 has a data set including the years 1995-2003 while Strata 63-67 have data sets including the years 1996-2003. A discussion of North Atlantic Population (NAP) Canada geese is included with Total Indicated Pairs (TIP) and Total Indicated Birds (TIB) listed in Table 5.

Crew leader John Bidwell, Biologist/Pilot and observer Marty Drut, Wildlife Biologist worked together for a fourth consecutive year. Because of increased interest and concern over American black duck and NAP Canada goose populations, DMBM has made a commitment to maintain the same aerial crew for at least another four years. Consequently, statistical analysis of population data will improve with each future survey.

A Partenavia (P68C-TC) aircraft (N766) was used for this survey, which began May 3 and continued through June 7. Nineteen days and 101.2 flight hours were needed to complete all 331 segments as shown in Table 2 (Current Year Design). The eastern most 1.414 statute miles of stratum 66, transect 01, segment 1 was not flown because of thick coastal fog. Table 2 also

shows this adjustment in the Stratum 66 expansion factor. Weather delays were encountered in New Brunswick (Stratum 63), Nova Scotia (Stratum 64), and Newfoundland (Stratum 66) totaling 16 days. Timing of the survey was about a week early in Maine because of the late spring and about a week late in Labrador because of weather related delays.

Traditionally, the survey is flown from Maine (Stratum 62) through New Brunswick (Stratum 63) then northeast to Labrador (Stratum 67). Within each stratum, transects are flown from south to north except in Nova Scotia (Stratum 64) and Prince Edward Island (Stratum 65). Stratum 65 only contains 6 segments and is normally flown in one day, from north to south. Once in Halifax (central Nova Scotia), transects for Stratum 64 are flown, first south to Yarmouth, and then north to Sydney. It should be noted that the final decision on survey design is based on duck breeding chronology, weather and flight safety factors.

WEATHER AND HABITAT

Maine and the Atlantic provinces, for the most part, experienced an “old fashioned” winter in 2002/03 with below average temperatures and average to slightly below average precipitation. Most weather reporting stations recorded 4-5 degree’s Fahrenheit below normal temperatures and generally 2-4 inches below average precipitation. The first half of April was much below average with high temperatures remaining under freezing on several occasions. Consequently, the start of spring break up was delayed until the middle of April. May, however, brought warm temperatures and mild winds. This was particularly evident in Labrador where record temperatures caused spring break up to occur in a short two week period during the middle of May.

Quasi-stationary lows affected the entire east coast through most of May. This caused record survey delays, but did provide excellent wetland habitat conditions for breeding waterfowl. Waterfowl migration also appeared delayed due to the late spring break up and many of the early nesters were late to arrive on traditional breeding grounds.

BREEDING POPULATION ESTIMATES

Strata and species in Table 1 list data for the 2003 breeding waterfowl population and the long-term population estimates can be found in Appendix 1. Population index graphs for individual species are found in Figure 1. The overall duck population estimate for 2003 is the second lowest of record at 826,600. It is (-42.7%) below the 2002 index and (-17.1%) below the long term (1996-2002) mean. American black ducks are down (-40.5%) from 2002 to the third lowest historical index of 192,900 and also down (-21.0%) from the long term mean. The only increase in 2003 was reflected in the Scaup index that showed an (+50%) increase over 2002 and an (+3.7%) increase over the long-term mean. All other species have significant decreases over the 2002 indices ranging between -12% and -55%.

The North Atlantic Population (NAP) Canada geese breed in western Greenland, Labrador, Newfoundland and eastern Quebec and over-winter in southern Atlantic Canada and New England. Tables 3 and 4 present raw and expanded data for NAP Canada geese in Stratum

66 (Newfoundland) and Stratum 67 (Labrador) respectively. Table 5 summarizes and combines these data sets and shows that the Total Indicated Pairs (TIP) index of 60,793 is only (-1.9%) below the 2002 index, but (-13.5%) below the 1996-2002 mean. Total Indicated Birds (TIB) fell to 133,298, which is (-30.8%) below 2002 and (-26.6%) below the long-term mean.

CONCLUSIONS

This years survey shows a consistent, across the board, decline in all indices. One possible explanation involves the weather. The winter of 2002/03 for the northeast was much colder than any previous winter in the history of this survey. Those cold conditions persisted well into April, which certainly delayed migration. Timing of the survey in Maine was probably a week early. Then the crew endured 16 days of weather related delays between Maine and Newfoundland. Consequently, timing of the survey in Labrador was probably at least a week late. Geese and ducks that arrived in Newfoundland and Labrador, later than normal, found optimum habitat conditions and immediately dispersed to breeding territories. Raw data for most species shows a consistently higher count of singles and pairs over grouped birds in 2003 when compared to 2002.

Good to excellent habitat conditions were available for the breeding population this year, so production should be good in 2003. Total indicated pairs for NAP geese only declined slightly which, with all other conditions equal, could reflect a fall flight similar to 2002.

VCF helicopter surveys should be continued into the foreseeable future. Because of the diversity of habitat conditions in Crew Area 15, these helicopter surveys need to be funded to also include Strata 66 and 67. This will only improve data accuracy and give more reliability to the black duck and NAP goose numbers that have become very important to management strategies in the Atlantic Flyway.

ACKNOWLEDGEMENTS

I would like to thank Bruce Turner, Scott Gilliland, Keith Chaulk and Myrtle Bateman of the Canadian Wildlife Service (Atlantic Region) for assistance and advice during this survey. Also, thanks to all the DMBM staff who assisted me in preparation of this final report. I want to recognize Flyway Biologist Jim Wortham and Wildlife Biologist Bob Raftovich for all their dedicated work in making the helicopter VCF survey happen. Also, thanks are extended to Canadian Coast Guard Pilot Harrison MacRae for his professionalism and advice during the survey. Finally, a special thanks is extended to Wildlife Biologist Marty Drut for completing a long and tiring survey.

Submitted by: John Bidwell, Flyway Biologist

July 22, 2003

Table 2. Survey design for Maine and the Maritimes, May 2003.

Survey Design	Stratum						Total
	62	63	64	65	66	67	
Square miles in stratum	32,202.7	27,874.5	21,179.6	2,225.21	42,248.4	84,608.8	210,339.21
Square miles in sample	333	256.5	216	27	319.5	337.5	1,489.5
Linear miles in sample	1,332	1,026	864	108	1,278	1,350	5,958
Number transects in sample	11	8	10	3	10	7	49
Number segments in sample	74	57	48	6	71	75	331
Expansion factor	96.705	108.673	98.054	82.415	132.233	250.693	141.215
Current Year Design							
Square miles in stratum	32,202.7	27,874.5	21,179.6	2,225.21	42,248.4	84,608.8	210,339.21
Square miles in sample	333	256.5	216	27	319.146	337.5	1,488.75
Linear miles in sample	1,332	1,026	864	108	1,276.58	1,350	5,955
Number transects in sample	11	8	10	3	10	7	49
Number segments in sample	74	57	48	6	71	75	331
Expansion factor	96.705	108.673	98.054	82.415	132.379	250.693	141.286

Table 3. North Atlantic Population Canada goose breeding survey data, stratum 66.

Stratum	Year	Raw data					Expansion		Expanded data				
		Singles	Pairs	Open	TIP*	TB**	factor	VCF***	Singles	Pairs	Open	TIP*	TB**
66	1996	11	47	0	58	116	234.7111	2.73	7,048	30,116	0	37,164	74,328
66	1997	14	32	4	46	96	223.5344	2.73	8,543	19,528	2,441	28,071	58,584
66	1998	28	62	71	90	251	132.2316	2.73	10,108	22,382	25,630	32,489	90,609
66	1999	59	46	45	105	255	132.2316	2.73	21,299	16,606	16,245	37,904	92,053
66	2000	36	45	38	81	200	132.2316	2.73	12,996	16,245	13,718	29,240	72,198
66	2001	39	32	17	71	159	132.2316	2.73	14,079	11,552	6,137	25,630	57,398
66	2002	27	50	63	77	217	132.2316	2.73	9,747	18,050	22,743	27,796	78,335
66	2003	33	50	4	83	170	132.3795	2.73	11,926	18,070	1,446	29,996	61,437

* Total indicated pairs = S + P

** Total indicated birds = 2S + 2P + O

*** Visibility correction factor

Expanded data = (Raw data) x (Expansion factor) x VCF

Table 4. North Atlantic Population Canada goose breeding survey data, statum 67.

Statum	Year	Raw data					Expansion			Expanded data				
		Singles	Pairs	Open	TP*	TB**	factor	VCF***	Singles	Pairs	Open	TP*	TB**	
67	1996	12	50	37	62	161	368.6623	2.73	12,077	50,322	37,239	62,400	162,038	
67	1997	22	29	30	51	132	261.1358	2.73	15,684	20,674	21,387	36,358	94,103	
67	1998	19	11	52	30	112	261.1358	2.73	13,545	7,842	37,071	21,387	79,845	
67	1999	45	41	6	86	178	250.6904	2.73	30,797	28,060	4,106	58,857	121,820	
67	2000	13	29	67	42	151	250.6904	2.73	8,897	19,847	45,854	28,744	103,342	
67	2001	20	27	11	47	105	250.6904	2.73	13,688	18,478	7,528	32,166	71,860	
67	2002	14	36	67	50	167	250.6904	2.73	9,581	24,638	45,854	34,219	114,292	
67	2003	34	11	15	45	105	250.6904	2.73	23,269	7,528	10,266	30,797	71,860	

* Total indicated pairs = S + P

** Total indicated birds = 2S + 2P + O

*** Visibility connection factor

Expanded data = (Raw data) x (Expansion factor) x VCF

Table 5. North Atlantic Population Canada goose breeding survey data combined (Newfoundland) and 67 (Labrador)

Stratum 66 (Newfoundland)					
Year	Singles	Pairs	Grouped	TIP *	TB **
1996	7,048	30,116	0	37,164	74,328
1997	8,543	19,528	2,441	28,071	58,584
1998	10,108	22,382	25,630	32,489	90,609
1999	21,299	16,606	16,245	37,904	92,053
2000	12,996	16,245	13,718	29,240	72,198
2001	14,079	11,552	6,137	25,630	57,398
2002	9,747	18,050	22,743	27,796	78,335
2003	11,926	18,070	1,446	29,996	61,437

Stratum 67 (Labrador)					
Year	Singles	Pairs	Grouped	TIP *	TB **
1996	12,077	50,322	37,239	62,400	162,038
1997	15,684	20,674	21,387	36,358	94,103
1998	13,545	7,842	37,071	21,387	79,845
1999	30,797	28,060	4,106	58,857	121,820
2000	8,897	19,847	45,854	28,744	103,342
2001	13,688	18,478	7,528	32,166	71,860
2002	9,581	24,638	45,854	34,219	114,292
2003	23,269	7,528	10,266	30,797	71,860

Combined total, strata 66 and 67					
Year	Singles	Pairs	Grouped	TIP *	TB **
1996	19,126	80,438	37,239	99,564	236,366
1997	24,227	40,202	23,828	64,429	152,687
1998	23,653	30,223	62,701	53,876	170,454
1999	52,096	44,665	20,351	96,761	213,874
2000	21,893	36,092	59,571	57,985	175,541
2001	27,766	30,030	13,665	57,797	129,258
2002	19,328	42,687	68,596	62,016	192,628
2003	35,195	25,598	11,711	60,793	133,298

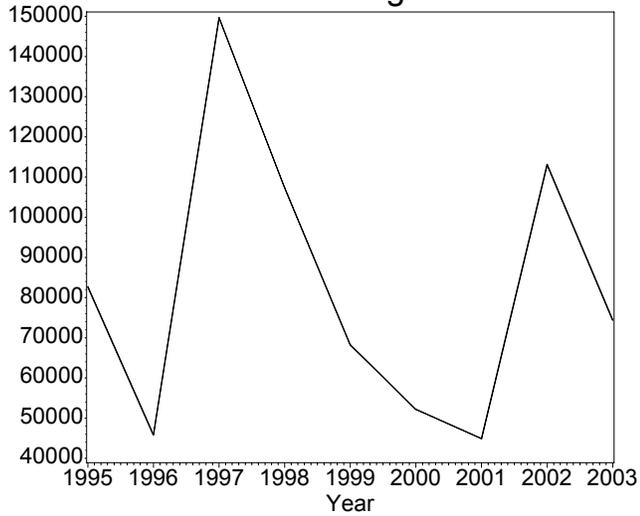
* Total indicated pairs = Singles + Pairs

** Total indicated birds = 2 x Singles + 2 x Pairs + Grouped

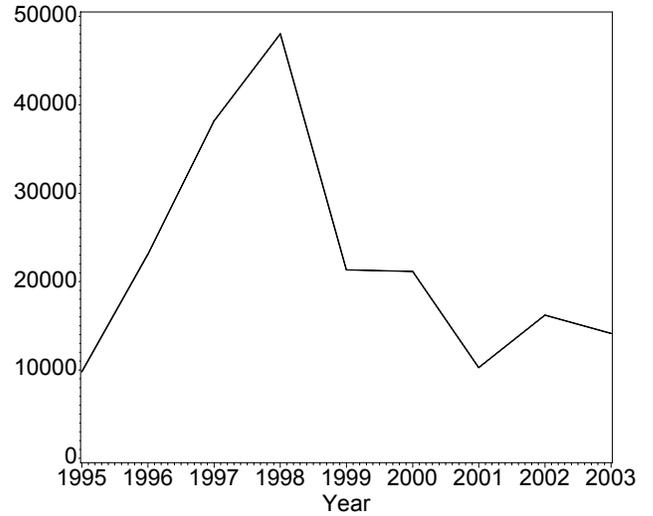
Table 6. Resulting changes in Visibility Correction Factors (VCFs) calculated from the 2003 Helicopter Crew Survey data in Stata 62-65. (Notes: 1. These were the only species changed; 2. Pooled VCFs were used in Stata 66 and 67)

Species	AOU	VCF (1996-2002)	VCF (2003)
Merganser	1299	1.29	1.31
Mallard	1320	1.41	1.65
American Black Duck	1330	2.11	1.87
Green-winged Teal	1390	5.29	3.34
Ring-necked Duck	1500	3.04	2.77
Goldeneye	1519	7.55	4.50
Canada Goose	1720	2.73	2.26

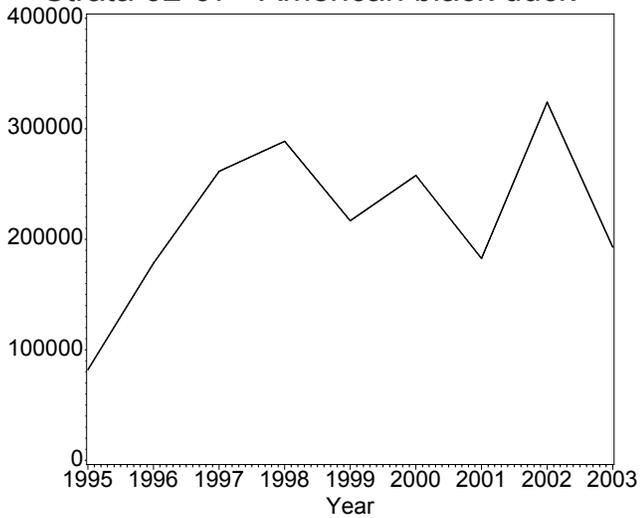
Strata 62-67 Mergansers



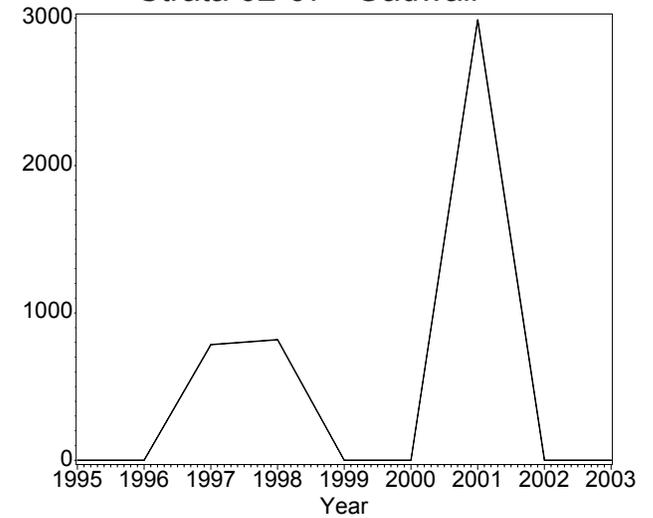
Strata 62-67 Mallard



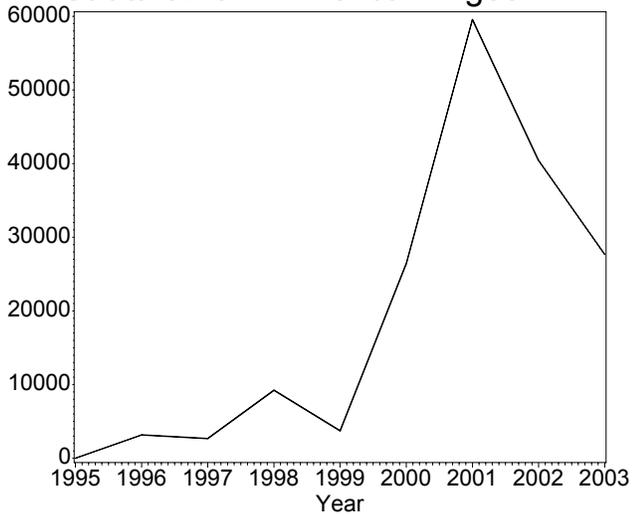
Strata 62-67 American black duck



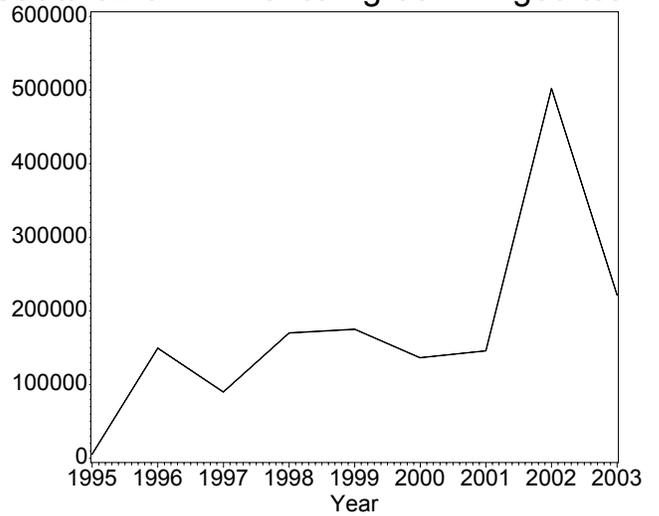
Strata 62-67 Gadwall



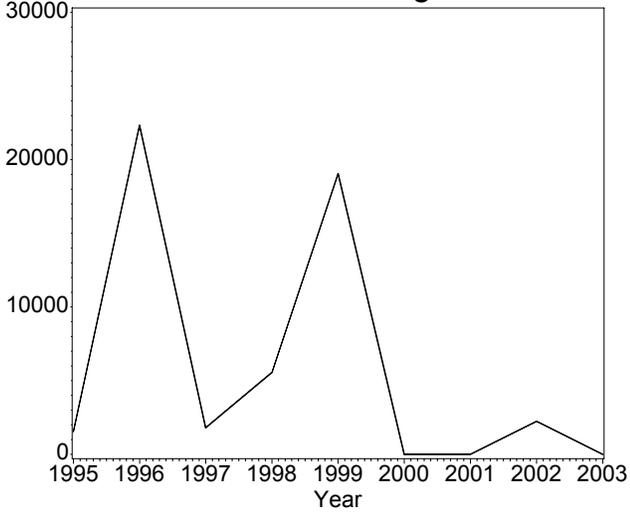
Strata 62-67 American wigeon



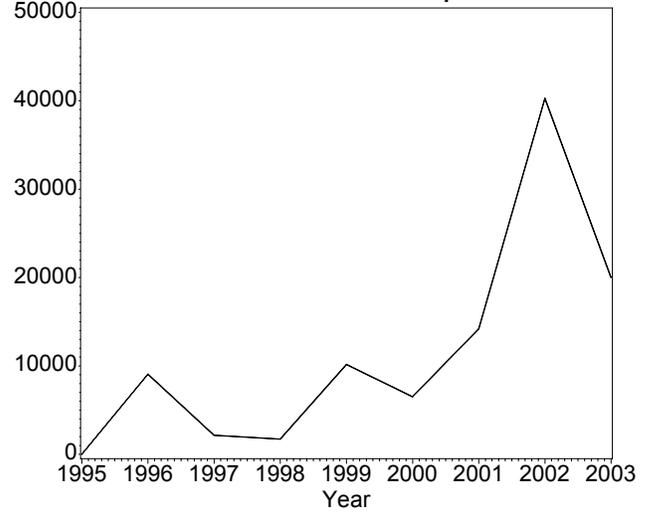
Strata 62-67 American green-winged teal



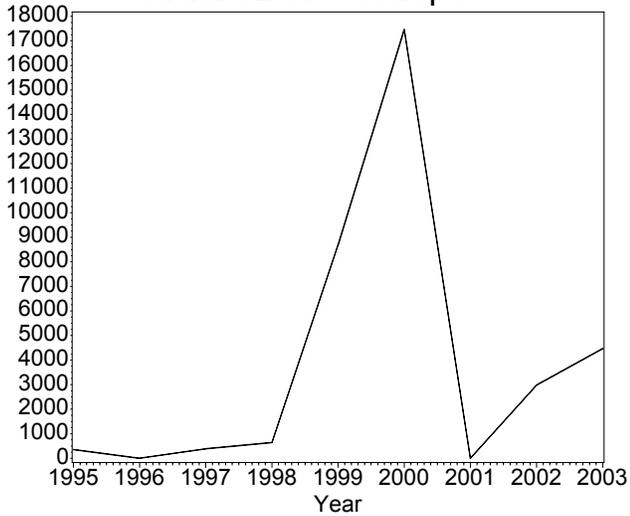
Strata 62-67 Blue-winged teal



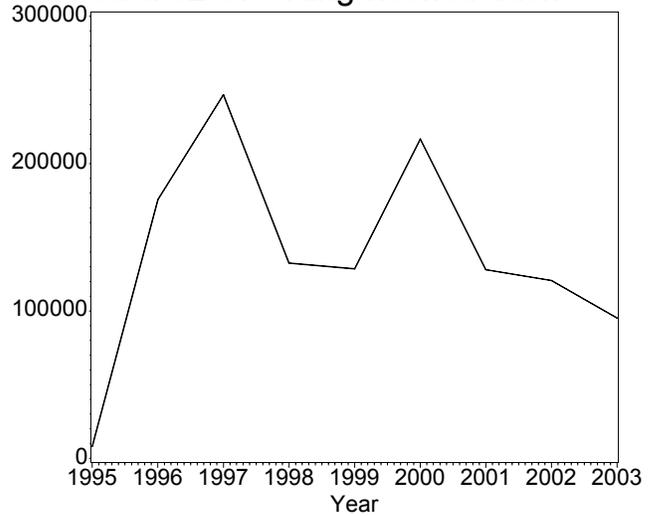
Strata 62-67 Northern pintail



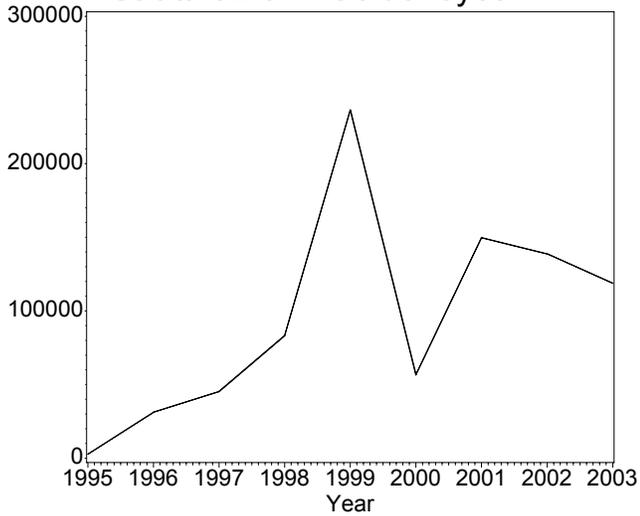
Strata 62-67 Scaups



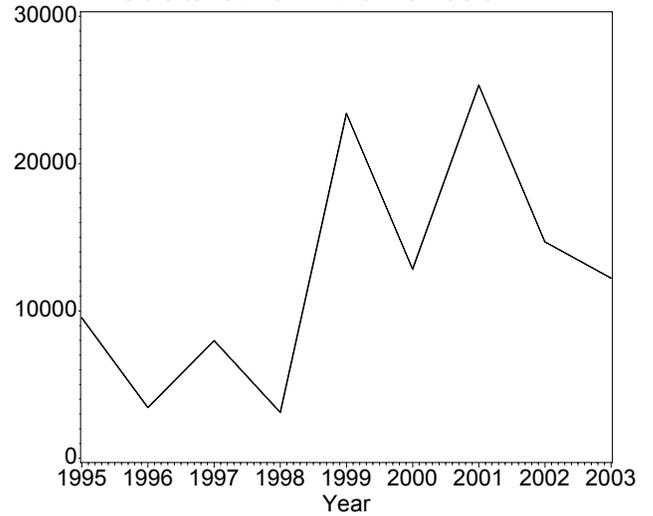
Strata 62-67 Ring-necked duck



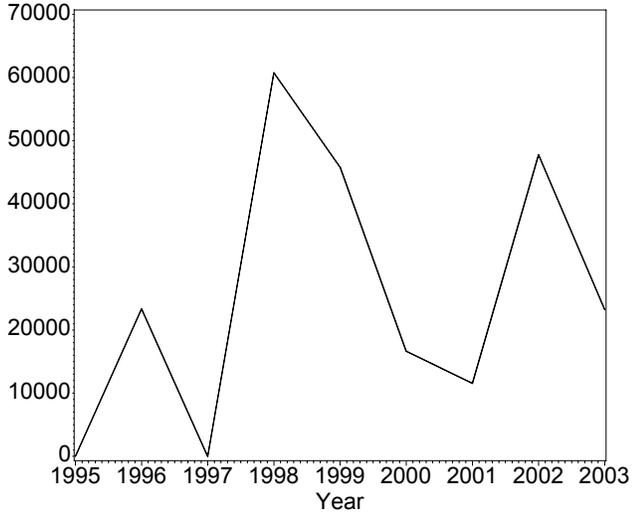
Strata 62-67 Goldeneyes



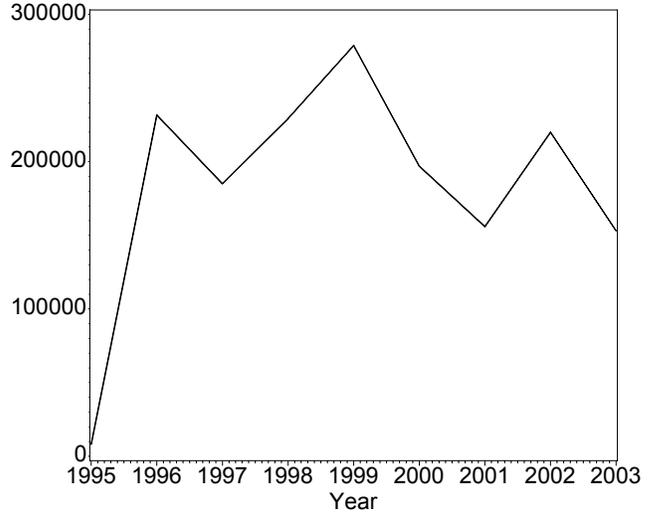
Strata 62-67 Bufflehead



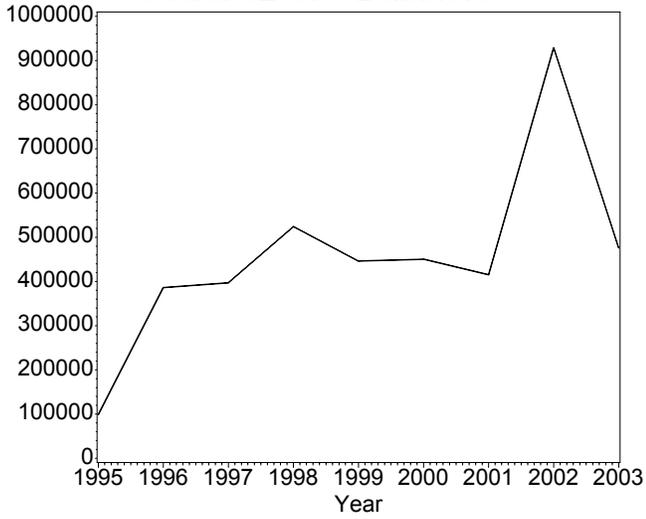
Strata 62-67 Scoters



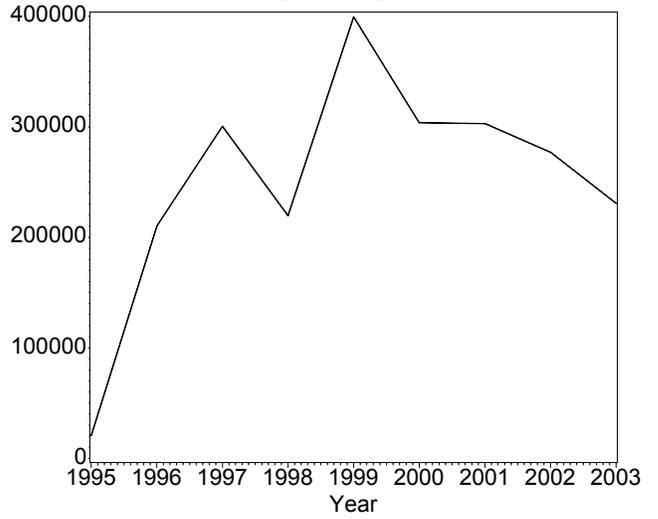
Strata 62-67 Canada Goose



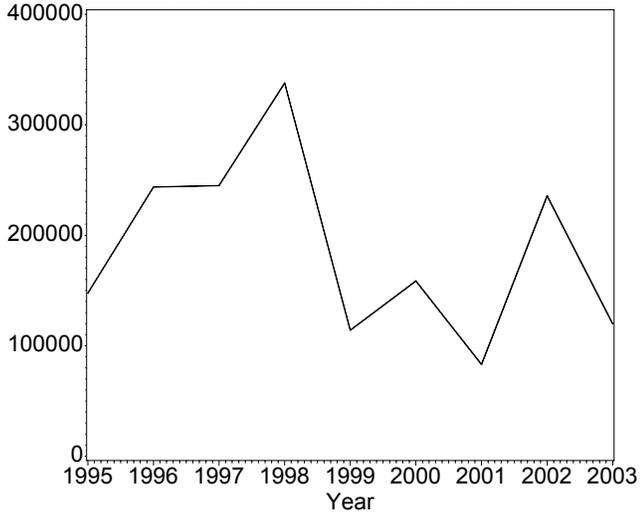
Strata 62-67 Dabblers



Strata 62-67 Divers



Strata 62-67 Miscellaneous



Strata 62-67 Total Ducks

