

WATERFOWL BREEDING POPULATION SURVEY

SOUTHERN AND CENTRAL ALBERTA

MAY 2003



The map shows the outline of Southern and Central Alberta with several survey routes marked by numbers in circles. The routes are as follows:

- Route 76:** FORT ST. JOHN, PEACE RIVER, GRANDE PRAIRIE
- Route 75:** SLAVE LAKE, LAC LABICHE, COLD LAKE
- Route 26:** EDMONTON, VERMILION, RED DEER
- Route 27:** HANNA
- Route 28:** CALGARY, BROOKS
- Route 29:** MEDICINE HAT, LETHBRIDGE

Logos on the left side of the map include:

- U.S. FISH & WILDLIFE SERVICE
- CANADIAN WILDLIFE SERVICE
- Alberta ENVIRONMENTAL PROTECTION Natural Resources

TITLE Waterfowl Breeding Population and Habitat Survey for Southern and Central Alberta

STRATA SURVEYED 26, 27, 28, 29, 75, 76

DATES May 10-25, 2003

DATA SUPPLIED BY United States Fish and Wildlife Service (USFWS)
Canadian Wildlife Service (CWS)
Alberta Environmental Protection/Wildlife
Management Division (AEP)
Ducks Unlimited, Canada (DUC)

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Ground Crew

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ABSTRACT

The 2003 breeding population estimate for strata 26-29 (Southern Alberta) is 2,698,600 total ducks (Table 1), an increase of +13.6% from 2002, a decrease of -18.1% from the recent ten-year mean (1993-2002) and a decrease of -38.6% from the long-term mean (1955-2002). In Southern Alberta, total dabbling ducks (Table 1) increased +10.9% from 2002, decreased -18.1% from the 1993-2002 ten-year mean and remained - 41.3% below the 1955-2002 long-term mean. Mallards (Table 1) decreased -21% from 2002, Blue-winged Teal increased +32.1% from 2002 and Pintails increased

+245.2% from 2002. Total diving ducks (Table 1) increased +28.6% from 2002, decreased -17.1% from the 1993-2002 ten-year mean and decreased -23.6% from the 1955-2002 long-term mean. Total pond counts (Table 2) increased +86.3% in Southern Alberta from last year, increased +30% from the ten-year and +23% from the long term means.

The 2003 breeding population estimate for strata 75-76 (Central Alberta) is 1,270,500 total ducks (Table 4) a decrease of -30% from last year and a decrease of -14.3% from the long-term(14 year) mean. Total dabbling ducks decreased -55.1 % from last year and decreased -39.3% from the 14-year mean. Mallards decreased -49.7% from 2002, and decreased -36.7% from the 14-year mean. Blue-winged Teal decreased -63.5% from last year and decreased -46.9% from the 14-year mean. Pintails increased +18.4% from 2002 and decreased -2% from the 14-year mean. Total diving ducks decreased -84.5% from last year and decreased 79.4% from the 14-year mean. Total ponds (Table 5) in Stratum 75 and 76 decreased - 9.7% from last year and increased +7.3% from the 14-year mean.

Some relief from a decade of drought was seen in Southern Alberta this year. Precipitation since April was well above normal (150% to 545% of normal) in the prairies and southern Aspen Parklands of southern Alberta. Although much of this moisture soaked directly into the dry soil, improvement in wetland conditions were seen in Stratum 26 to 29, especially along the Milk River Ridge, Brooks and Hanna areas. The added soil moisture and residual upland vegetation improved nesting habitat for late season nesters. The high mountain snow pack provided near normal run-off this spring and early summer. Conditions declined in the west and central Peace Parklands of Stratum 76 northern Aspen Parklands of Stratum 75.

METHODS

The procedures followed in conducting the survey are contained in the Standard Operating Procedures for Aerial Waterfowl Breeding Ground Population and Habitat Surveys, Section III, revised April 1987. The analytical and procedural changes, described in the 1991 and 1992 reports, continued this year. As a result, measures of precision are now available with the population estimates. This year and the last eight years reports reflects a major change made to the historical (1955-1995) database of breeding waterfowl and habitat estimates. Nonparametric regression methods were used to predict population values for years in which no survey was conducted in a stratum. An internal report (Office of Migratory Bird Management, Laurel, MD) describes how and for which cases prediction was done.

Air-ground segment data in Central Alberta's strata 75 and 76(12- air/ground segments = 13% of the survey area) are not sufficient to compute accurate visibility correction factors (VCF's) for all duck species. Stratum 26 more closely resembles the habitat of 75 and 76 than the other Southern Alberta strata (27-29). It was decided to combine air-ground data from strata 26, 75 and 76, when calculating VCF's for strata 75 and 76. Acceptable standard errors and variances were obtained when this was done. Southern Alberta VCF's are still calculated with data from strata 26-29 only (37- air/ground segments = 25% of the survey area).

In 1996, Canada goose breeding population estimates were corrected for visibility bias based on data collected by air and ground survey crews in this reporting region. For validity of comparisons to means for previous years, historical Canada goose population indices were also adjusted for visibility bias using data collected by all air and ground survey crews throughout the Canadian and U.S. prairie regions in 1996. Therefore, estimates and means reported here cannot be directly compared with those in reports written before 1996 for this region.

Air data were compiled using a notebook computer. All areas in the current survey design (Tables 3 and 6) were flown. The survey was conducted using the same aerial crew and aircraft, a Cessna 206, for strata 26-29, 75 and 76. This was the 16th year of flying aerial waterfowl surveys for the pilot/observer and the 7th year for the aerial observer. All air and ground crew members participated in pre-survey training.

The Alberta ground crew did reconnaissance of the survey area and concluded that most species observed appeared paired by May 5. Most deciduous tree species were leafed out and the season timing appeared normal in southern areas. Due to late spring storms, the survey was initiated on May 10 for Southern Alberta and completed on May 20. The Central Alberta survey commenced on May 20 and concluded on May 23. A total of 65 flight hours was required to complete the survey. Aerial Pintail telemetry was conducted in conjunction with the waterfowl survey when logistics allowed. Data was forwarded to USGS, Dixon, CA.

WEATHER AND HABITAT CONDITIONS

Environment Canada, Climate Research Branch reports average temperatures for the November 2002 to April 2003 period. Late winter/early spring snowstorms brought some relief from the dry winter experienced in Alberta.

Precipitation since April was well above normal (150% to 545% or normal) in the prairies and southern Aspen Parklands of southern Alberta. Although much of this moisture soaked directly into the dry soil, improvement in wetland conditions were seen in Stratum 26 to 29, especially along the Milk River Ridge, Brooks and Hanna areas. The added soil moisture and residual upland vegetation improved nesting habitat for late season nesters. The high mountain snow pack provided near normal run-off this spring and early summer.

Habitat conditions in the majority of Alberta's prairie and Aspen Parkland regions are rated as fair to poor in the east and good in the central and western portions. Pond counts were greatly improved from last years numbers.

Conditions are rated as fair to poor in the west and central Peace Parklands of Stratum 76 and fair to poor in the northern Aspen Parklands of Stratum 75. Despite the above normal precipitation in April (82% to 246% or normal) conditions declined compared to last year. Pond counts are below last years numbers.

BREEDING POPULATION INDICES

A listing of all birds and the respective comparisons can be found in Tables 1 and 4, the Trend Graphs and Appendices 1 and 2.

SOUTHERN ALBERTA

The 2003 breeding population estimate for strata 26-29 (Southern Alberta) is 2,698,600 total ducks (Table 1), an increase of +13.6% from 2002, a decrease of -18.1% from the recent ten-year mean (1993-2002) and a decrease of -38.6% from the long-term mean (1955-2002). In Southern Alberta, total dabbling ducks (Table 1) increased +10.9% from 2002, decreased -18.1% from the 1993-2002 ten-year mean and remained -41.3% below the 1955-2002 long-term mean. Mallards (Table 1) decreased -21% from 2002, Blue-winged Teal increased +32.1% from 2002 and Pintails increased +245.2% from 2002. Total diving ducks (Table 1) increased +28.6% from 2002, decreased -17.1%

from the 1993-2002 ten-year mean and decreased -23.6% from the 1955-2002 long-term mean. Total pond counts (Table 2) increased +86.3% in Southern Alberta from last year, increased +30% from the ten-year and +23% from the long term means. Canada geese numbers changed -1.8%, +16.1% and +189.7 %, and Coots changed -40.9%, -25.1% and -3.9 % from the above respective means.

CENTRAL ALBERTA

The 2003 breeding population estimate for strata 75-76 (Central Alberta) is 1,270,500 total ducks (Table 4) a decrease of -30% from last year and a decrease of -14.3% from the long-term(14 year) mean. Total dabbling ducks decreased -55.1 % from last year and decreased -39.3% from the 14-year mean. Mallards decreased -49.7% from 2002, and decreased -36.74% from the 14-year mean. Blue-winged Teal decreased -63.5% from last year and decreased -46.9% from the 14-year mean. Pintails increased +18.4% from 2002 and decreased -2% from the 14-year mean. Total diving ducks decreased -84.5% from last year and decreased 79.4% from the 14-year mean. Total ponds (Table 5) in Stratum 75 and 76 decreased - 9.7% from last year and increased +7.3% from the 14-year mean. Canada geese numbers changed -18.8%,and +44.7% , and Coots changed -85.2%,and -63.3 % from the above respective means.

CONCLUSIONS

- 1) Relief from the long drought in Southern Alberta was a welcome event. Residual nesting cover from late fall precipitation added to this years late spring rain, increased upland nesting habitat . Production this year should be good in the prairies if the June rains continue to charge the wetlands.
- 2) The late spring snow and rain did not seem to discourage early nesting attempts.
- 3) Habitat conditions and duck numbers declined in Central Alberta.

Sincere appreciation is extended to all who participated in this survey. Thank you to the Winnipeg Climate Center and Alberta Agriculture for precipitation data and soil moisture maps.

Submitted by: Elizabeth Buelna-Flyway Biologist

Date: June 26, 2003

Table 1. Status of waterfowl breeding population estimates (thousands, adjusted for visibility bias) by species and stratum with comparison against the previous year, the previous 10-year mean, and the long-term mean for Southern Alberta.

Species/Ponds	Stratum				2003 Total	2002 Total	10-Year Mean	Long-Term Mean	% Change From		
	26	27	28	29					2002	10-Year Mean	Long-Term Mean
Ducks											
Dabblers											
Mallard	329.7	111.0	86.2	100.2	627.1	793.3	841.1	1127.8	-21.0%	-25.4%	-44.4%
Am. black duck	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--	--	-100.0%
Gadwall	103.5	42.6	35.8	59.0	240.9	333.4	364.3	309.9	-27.7%	-33.9%	-22.2%
Am. wigeon	59.5	20.0	23.0	29.1	131.6	77.5	177.2	307.2	69.9%	-25.7%	-57.2%
Am. green-winged teal	63.0	13.9	44.2	10.7	131.8	147.0	214.1	197.8	-10.4%	-38.5%	-33.4%
Blue-winged teal	163.3	70.3	33.2	55.7	322.6	244.2	439.2	618.8	32.1%	-26.5%	-47.9%
N. shoveler	121.3	90.1	120.3	116.8	448.4	274.0	358.7	353.8	63.7%	25.0%	26.7%
N. pintail	37.7	53.6	86.6	74.0	251.9	73.0	237.0	751.9	245.2%	6.3%	-66.5%
Subtotal	878.0	401.5	429.3	445.5	2154.3	1942.3	2631.5	3667.2	10.9%	-18.1%	-41.3%
Divers											
Redhead	49.3	10.4	16.4	20.9	96.9	112.5	112.9	118.0	-13.9%	-14.2%	-17.9%
Canvasback	44.0	10.1	6.0	9.6	69.7	14.5	55.0	64.2	381.2%	26.7%	8.5%
Scaups	98.3	28.3	28.8	16.6	172.1	146.5	273.6	366.5	17.5%	-37.1%	-53.1%
Ring-necked duck	4.0	1.4	6.4	19.2	31.1	7.5	18.6	17.0	312.9%	66.8%	82.4%
Goldeneyes	26.1	1.3	3.1	3.7	34.2	6.6	17.5	14.1	420.9%	95.5%	142.3%
Bufflehead	69.6	4.3	3.0	5.9	82.9	47.2	70.7	47.5	75.5%	17.3%	74.4%
Ruddy Duck	42.8	1.5	1.7	8.9	54.9	86.5	105.0	81.6	-36.6%	-47.7%	-32.8%
Subtotal	334.1	57.3	65.5	84.8	541.7	421.3	653.3	709.1	28.6%	-17.1%	-23.6%
Miscellaneous											
Long-tailed duck	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--	--	-100.0%
Eiders	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--	--	--
Scoters	0.0	0.0	0.0	0.0	0.0	0.5	2.1	13.4	-100.0%	-100.0%	-100.0%
Mergansers	0.8	0.3	0.8	0.6	2.6	10.5	7.7	6.8	-75.5%	-66.7%	-62.6%
Subtotal	0.8	0.3	0.8	0.6	2.6	11.0	9.8	20.3	-76.7%	-73.9%	-87.4%
Total Ducks	1213.0	459.2	495.6	530.9	2698.6	2374.5	3294.6	4396.6	13.6%	-18.1%	-38.6%
Canada Goose	117.9	21.8	31.3	22.3	193.3	196.9	166.5	66.7	-1.8%	16.1%	189.7%
Am. coot	82.9	20.1	37.0	82.2	222.3	376.1	296.6	231.4	-40.9%	-25.1%	-3.9%
Ponds	384.1	167.2	159.5	177.7	888.4	476.9	683.4	722.4	86.3%	30.0%	23.0%

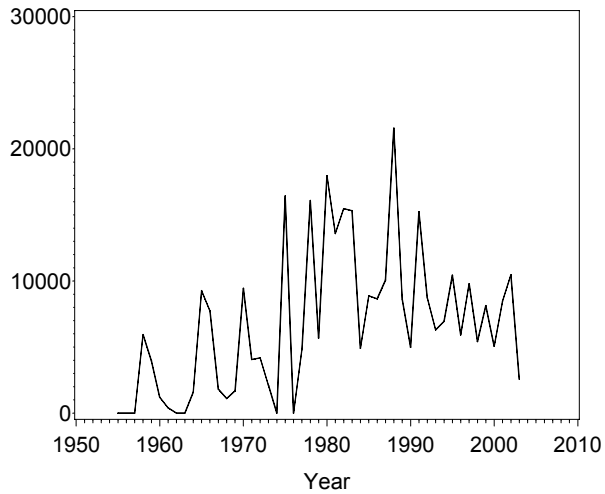
Table 2. Long term-trend in adjusted May pond estimates (thousands) by stratum with comparisons against the previous year, the previous 10-year mean, and the long-term mean for Southern Alberta.

Year	Stratum				Total
	26	27	28	29	
1961	358.2	105.8	82.0	49.8	595.7
1962	395.5	84.9	73.2	52.5	606.2
1963	543.0	127.9	49.1	57.6	777.6
1964	366.7	97.1	62.1	118.6	644.5
1965	601.7	197.5	95.5	104.2	998.8
1966	490.2	162.6	134.9	76.2	863.9
1967	377.5	155.9	215.8	169.9	919.1
1968	266.1	43.6	47.3	80.9	438.0
1969	483.2	156.4	125.3	94.5	859.5
1970	531.2	187.1	86.5	77.8	882.7
1971	585.4	196.6	121.4	78.0	981.4
1972	517.1	92.7	60.1	61.2	731.1
1973	683.9	136.4	121.3	83.6	1025.2
1974	947.3	259.1	124.1	64.1	1394.6
1975	428.2	205.8	178.3	145.6	957.9
1976	459.6	144.2	104.1	123.7	831.6
1977	433.8	53.0	45.4	55.8	588.0
1978	295.8	89.8	88.6	145.6	619.9
1979	617.2	124.9	100.7	153.7	996.4
1980	281.2	68.1	59.1	52.1	460.6
1981	365.2	80.5	58.9	64.7	569.3
1982	374.6	86.4	66.8	103.3	631.1
1983	318.7	56.0	58.0	64.3	497.1
1984	386.4	69.8	42.9	38.8	537.9
1985	493.5	170.2	89.3	75.3	828.3
1986	514.5	70.7	46.4	96.0	727.5
1987	325.0	151.5	58.1	72.1	606.8
1988	229.3	61.6	52.7	74.3	417.9
1989	274.0	111.2	57.8	105.9	548.9
1990	467.9	116.4	66.2	121.7	772.1
1991	445.7	83.1	73.5	93.4	695.7
1992	328.1	78.3	48.0	48.8	503.2
1993	344.0	139.1	90.7	115.9	689.8
1994	406.1	122.5	69.8	122.0	720.4
1995	417.9	93.2	58.8	118.8	688.7
1996	522.1	138.4	130.5	112.9	903.9
1997	653.6	199.0	143.2	104.6	1100.4
1998	358.1	78.7	66.3	56.2	559.3
1999	469.5	104.6	67.2	74.7	716.0
2000	345.9	89.3	63.1	54.8	553.1
2001	226.4	67.6	56.6	75.1	425.7
2002	249.4	80.1	59.9	87.5	476.9
2003	384.1	167.2	159.5	177.7	888.4
10-year Mean	399.3	111.3	80.6	92.3	683.4
Long-term Mean	432.8	117.6	83.3	88.7	722.4
Percent Change:					
From 2002	54.00%	108.70%	166.30%	103.10%	86.30%
From 10-year Mean	-3.80%	50.30%	97.90%	92.50%	30.00%
From Long-term Mean	-11.30%	42.20%	91.40%	100.20%	23.00%

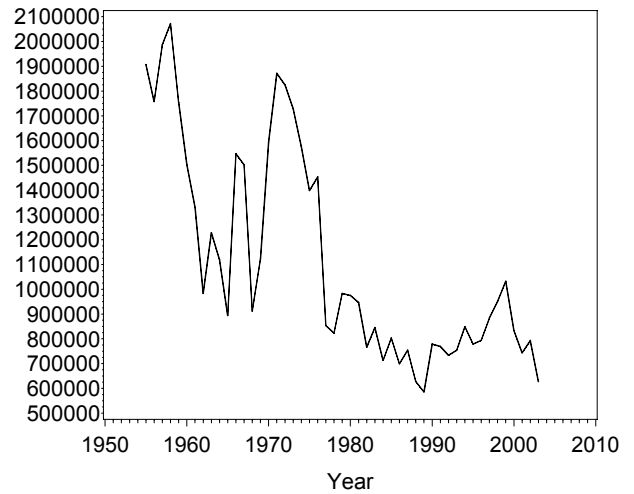
Table 3. Survey design for Southern Alberta, May 2003.

	STRATUM				
	26	27	28	29	Total
<u>Survey design</u>					
Square miles in stratum	26,448	11,724	12,890	13,235	64,297
Square miles in sample-waterfowl	544.5	288.0	310.5	171.0	1,314
Square miles in sample-ponds	272.3	144.0	155.25	85.5	657
Lineal miles in sample	2,178	1,152	1,242	684	5,256
Number of transects in sample	11	6	7	4	28
Number of segments in sample	121	64	69	38	292
Expansion factor	48.5730	40.7083	41.5137	77.3977	---
<u>Current year coverage</u>					
Square miles in sample-waterfowl	256.5	144.0	130.5	171.0	697.5
Square miles in sample-ponds	126.0	72.0	65.25	85.5	348.75
Lineal miles in sample	1,008	576	522	684	2,790
Number of transects in sample	6	3	3	4	16
Number of segments in sample	57	32	29	38	155
Expansion factor	103.11	81.4167	98.7739	77.3977	—

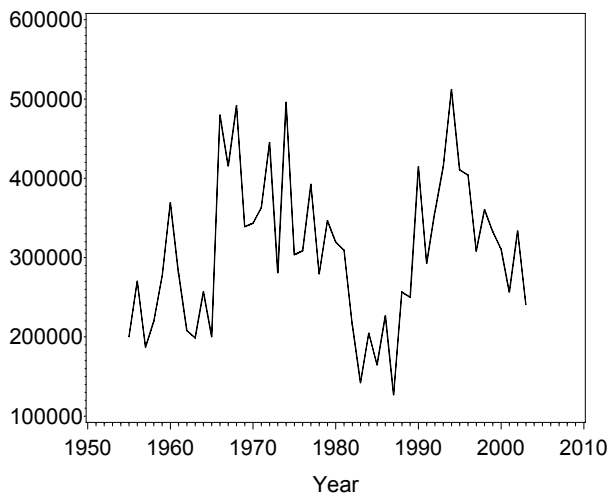
Strata 26-29 Mergansers



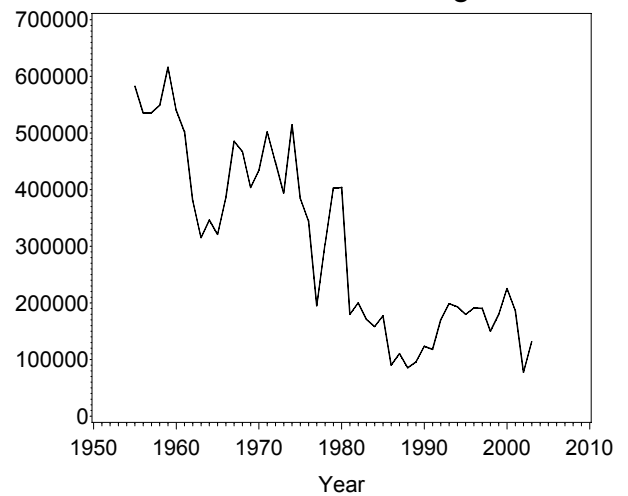
Strata 26-29 Mallard



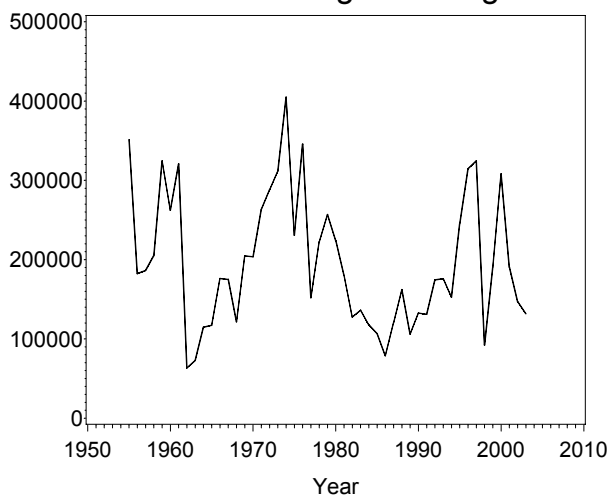
Strata 26-29 Gadwall



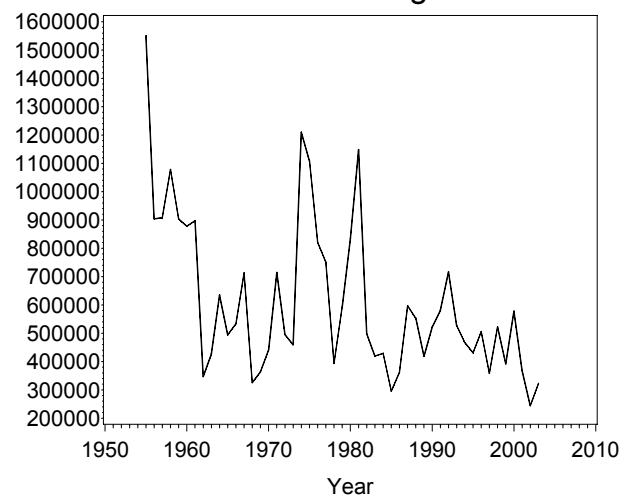
Strata 26-29 American wigeon



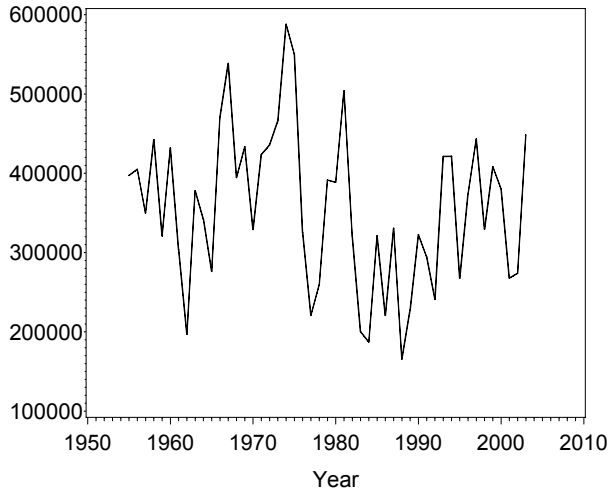
Strata 26-29 American green-winged teal



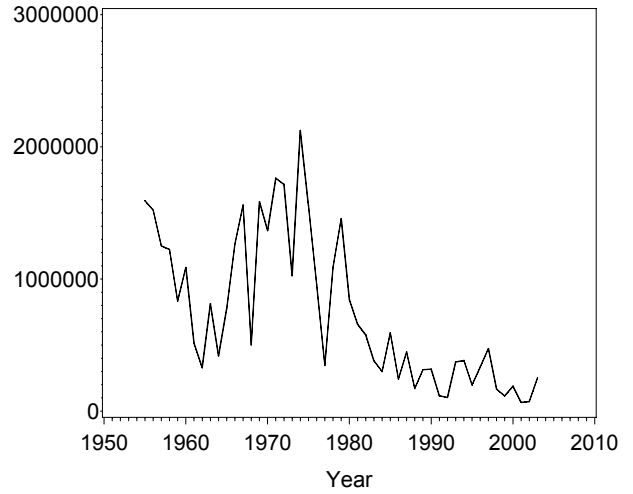
Strata 26-29 Blue-winged teal



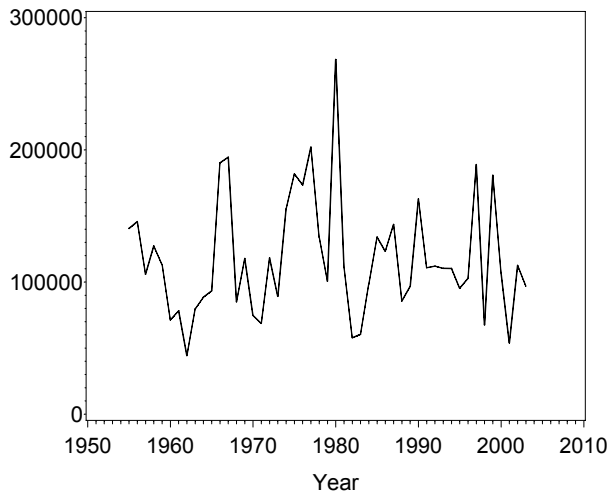
Strata 26-29 Northern shoveler



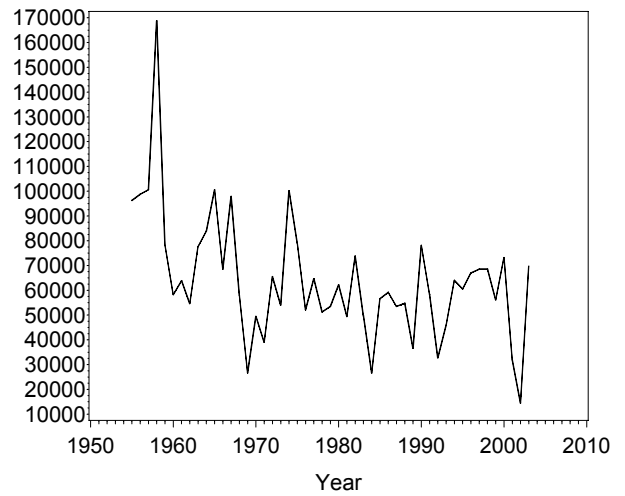
Strata 26-29 Northern pintail



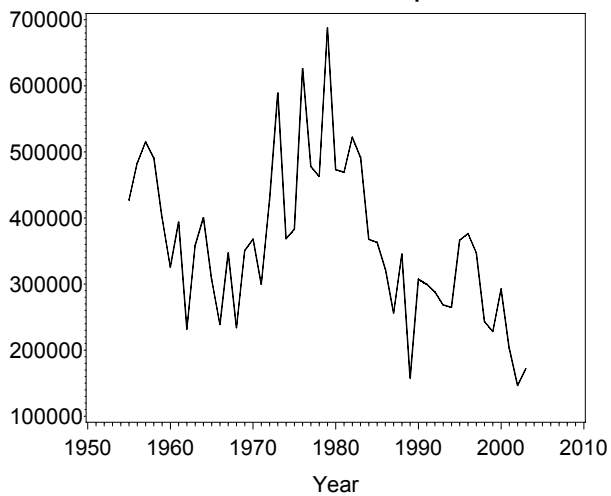
Strata 26-29 Redhead



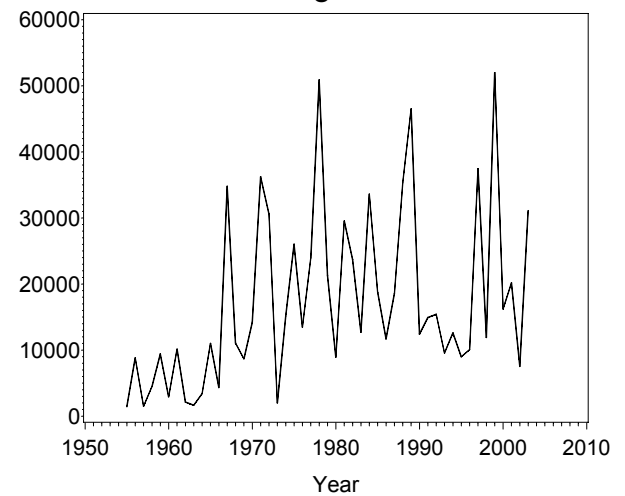
Strata 26-29 Canvasback



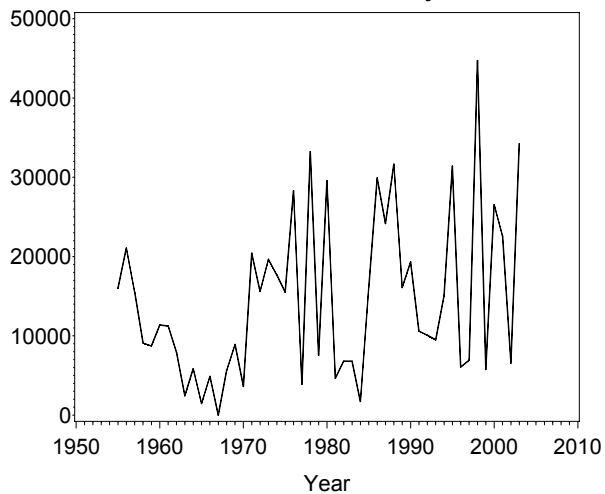
Strata 26-29 Scaups



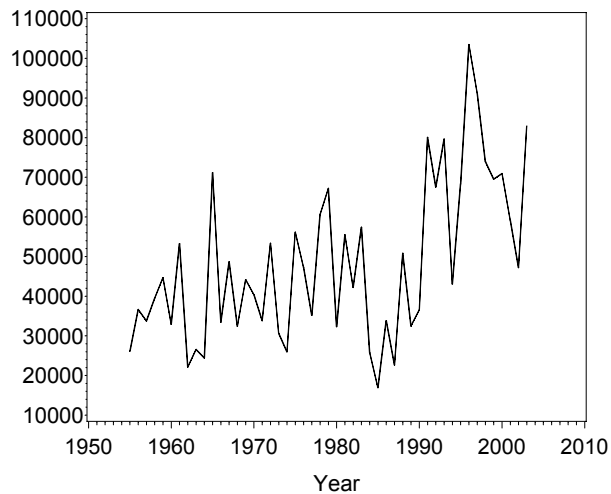
Strata 26-29 Ring-necked duck



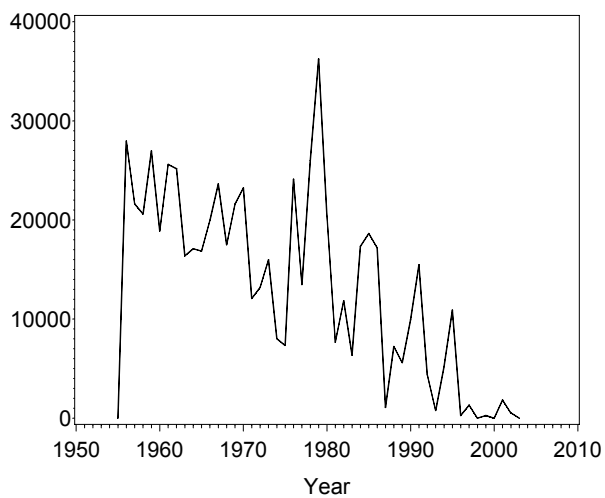
Strata 26-29 Goldeneyes



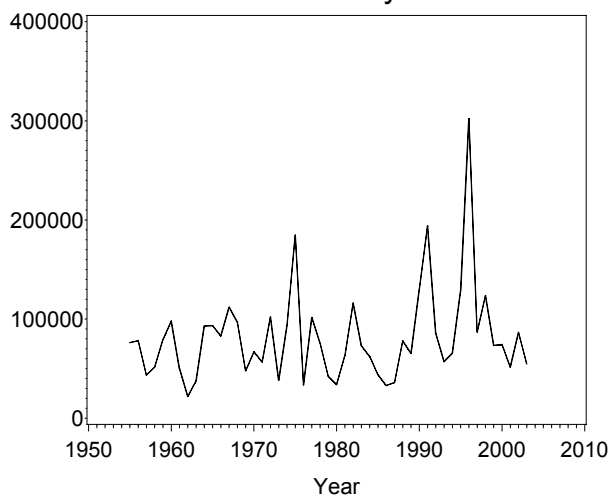
Strata 26-29 Bufflehead



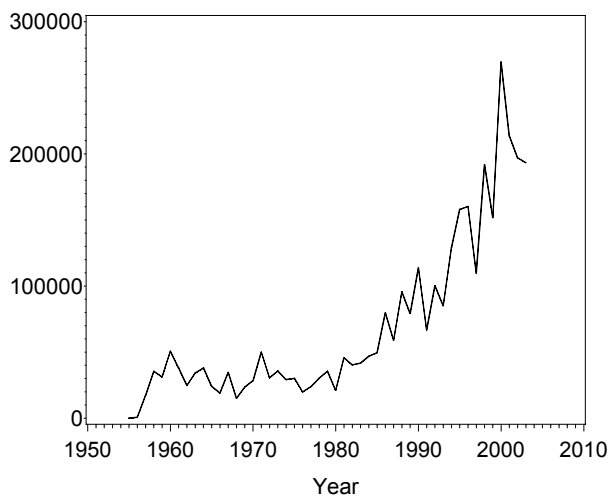
Strata 26-29 Scoters



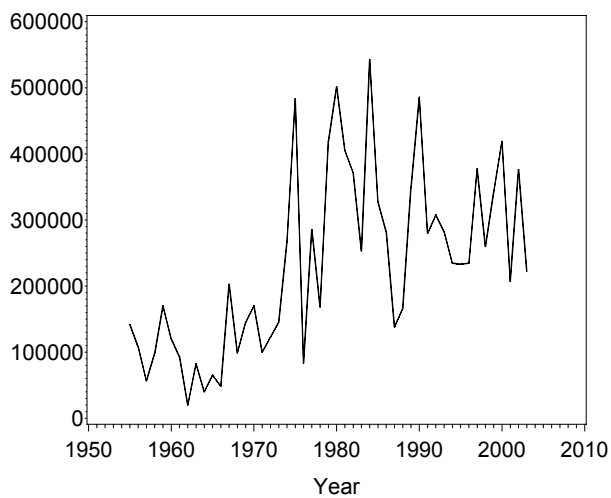
Strata 26-29 Ruddy Duck



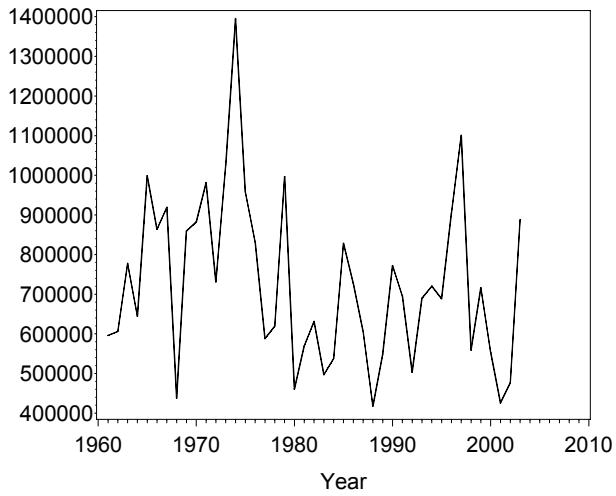
Strata 26-29 Canada Goose



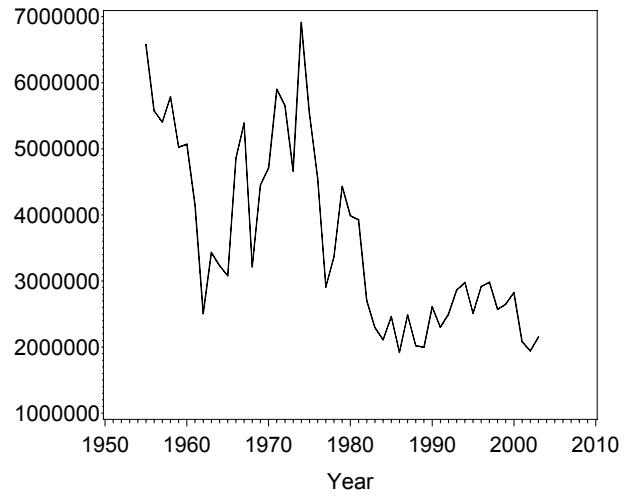
Strata 26-29 American coot



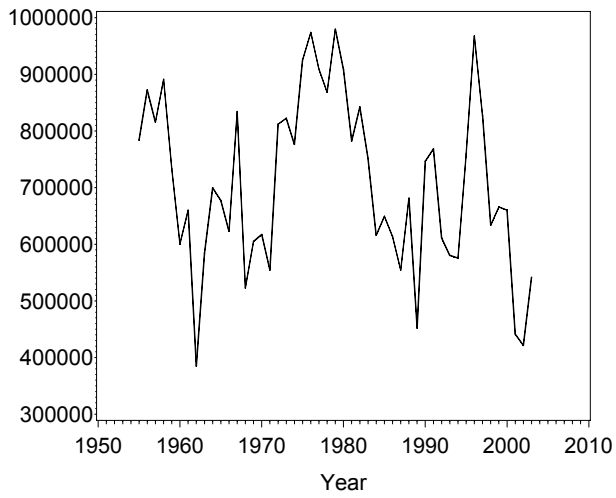
Strata 26-29 Ponds



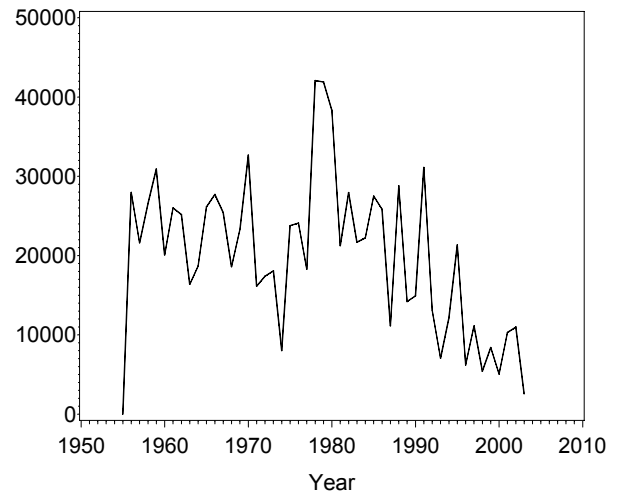
Strata 26-29 Dabblers



Strata 26-29 Divers



Strata 26-29 Miscellaneous



Strata 26-29 Total Ducks

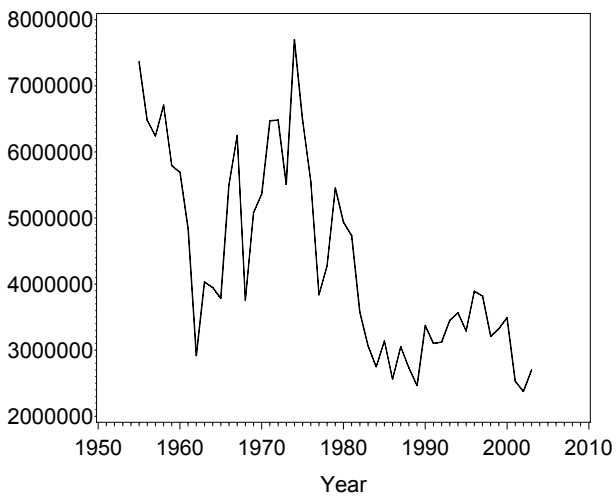


Table 4. Status of waterfowl breeding population estimates (thousands, adjusted for visibility bias) by species and stratum with comparison against the previous year and the previous long-term mean for Central Alberta.

Species/Ponds	Stratum		2003 Total	2002 Total	% Change From		
	75	76			Long-Term Mean	2002	Long-Term Mean
Ducks							
Dabblers							
Mallard	128.6	146.4	275.0	546.5	434.2	-49.7%	-36.7%
Am. black duck	0.0	0.0	0.0	0.0	0.0	--	--
Gadwall	31.3	25.6	56.8	131.2	62.3	-56.7%	-8.8%
Am. wigeon	16.2	21.5	37.8	45.4	85.2	-16.8%	-55.7%
Am. green-winged teal	13.8	26.2	40.0	184.1	119.4	-78.3%	-66.5%
Blue-winged teal	34.5	40.3	74.9	204.8	141.1	-63.5%	-46.9%
N. shoveler	22.7	51.1	73.7	157.6	88.4	-53.2%	-16.6%
N. pintail	6.1	12.2	18.3	15.5	18.7	18.4%	-2.0%
Subtotal	253.2	323.3	576.5	1285.1	949.3	-55.1%	-39.3%
Divers							
Redhead	10.3	9.2	19.4	21.9	32.0	-11.3%	-39.3%
Canvasback	17.8	26.0	43.8	26.1	33.8	68.1%	29.7%
Scaups	67.9	70.4	138.3	144.2	154.3	-4.1%	-10.4%
Ring-necked duck	32.9	3.8	36.7	6.7	36.4	449.3%	0.9%
Goldeneyes	143.4	18.1	161.4	31.3	41.6	416.6%	288.5%
Bufflehead	77.6	93.4	171.1	193.4	163.6	-11.6%	4.5%
Ruddy Duck	58.4	61.0	119.4	82.3	52.8	45.1%	126.3%
Subtotal	408.3	281.8	690.2	505.8	514.4	36.5%	34.2%
Miscellaneous							
Long-tailed duck	0.0	0.0	0.0	0.0	0.0	--	--
Eiders	0.0	0.0	0.0	0.0	0.0	--	--
Scoters	1.0	0.6	1.6	2.8	8.3	-43.8%	-81.1%
Mergansers	0.9	1.4	2.3	22.1	10.5	-89.6%	-78.1%
Subtotal	1.8	2.1	3.9	24.9	18.8	-84.5%	-79.4%
Total Ducks	663.3	607.2	1270.5	1815.8	1482.5	-30.0%	-14.3%
Canada Goose	30.6	38.4	69.0	85.0	47.7	-18.8%	44.7%
Am. coot	31.7	25.6	57.3	386.8	156.3	-85.2%	-63.3%
Ponds	181.0	336.0	517.0	572.5	482.0	-9.7%	7.3%

Table 5. Long-term trend in adjusted May pond estimates (thousands) by stratum with comparisons against the previous year and the previous long-term mean for Central Alberta.

Year	Stratum		Total
	75	76	
1989	160.4	251.5	411.9
1990	174.4	315.5	489.9
1991	166.1	252.1	418.2
1992	137.2	282.0	419.2
1993	156.2	245.3	401.5
1994	147.2	238.2	385.4
1995	175.1	330.9	505.9
1996	239.3	329.6	569.0
1997	394.1	405.4	799.5
1998	170.5	225.5	395.9
1999	209.0	337.2	546.2
2000	129.0	298.2	427.2
2001	139.6	266.4	406.0
2002	184.8	387.8	572.5
2003	181.0	336.0	517.0
1989-2002 Mean	184.5	297.5	482.0
Percent Change:			
From 2002	-2.00%	-13.40%	-9.70%
From 1989-2002 Mean	-1.90%	12.90%	7.30%

Table 6. Survey design for Central Alberta, May 2003

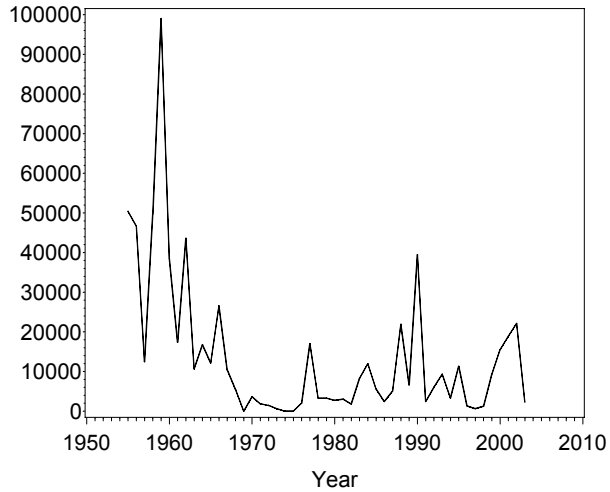
	STRATUM		
	75	76	Total
<u>Survey design</u>			
Square miles in stratum	19,387	26,483	45,870
Square miles in sample-waterfowl	166.5	220.5	387
Square miles in sample-ponds	83.25	110.25	193.5
Lineal miles in sample	666	882	1,548
Number of transects in sample	4	5	9
Number of segments in sample	37	49	86
Expansion factor	116.4384	120.1043	--
<u>Current year coverage</u>			
Square miles in sample-waterfowl	180.0	220.5	400.5
Square miles in sample-ponds	90.0	110.25	200.25
Lineal miles in sample	720	882	1602
Number of transects in sample	4	5	9
Number of segments in sample	40	49	89
Expansion factor	107.7056	120.1043	

Appendix 2. Long-term trend in adjusted waterfowl breeding population estimates (thousands) for Central Alberta.

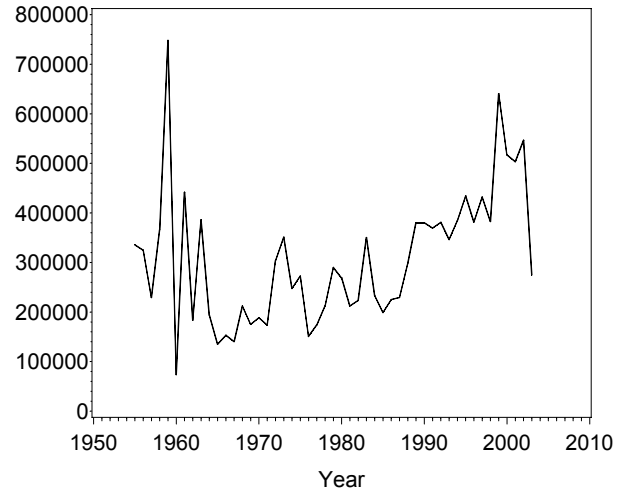
Species/Ponds	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Ducks										
Dabblers										
Mallard	380.2	380.0	369.4	380.9	346.4	384.4	434.0	381.6	431.9	382.8
Am. black duck	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gadwall	59.3	62.6	32.1	41.3	31.7	41.1	29.4	64.6	68.3	99.2
Am. wigeon	62.0	84.2	101.6	82.4	97.7	97.2	139.0	115.6	110.8	57.6
Am. green-winged teal	50.6	41.1	57.5	62.7	82.4	121.9	144.0	146.1	167.9	41.4
Blue-winged teal	161.3	160.2	127.2	158.2	55.6	95.1	76.1	163.6	117.0	183.4
N. shoveler	87.4	101.4	60.7	100.6	46.8	65.0	62.6	76.1	113.5	87.4
N. pintail	35.2	23.5	7.2	8.4	2.9	12.5	13.8	18.1	74.4	13.3
Subtotal	835.9	852.9	755.8	834.5	663.4	817.3	899.0	965.8	1083.8	865.0
Divers										
Redhead	21.7	26.3	15.0	72.8	31.7	23.1	9.6	18.4	35.7	50.2
Canvasback	28.9	37.6	5.6	13.7	59.0	42.8	10.6	90.4	26.7	61.3
Scaups	128.0	194.9	124.6	153.4	136.9	131.9	126.3	182.5	159.2	81.1
Ring-necked duck	24.7	20.2	18.0	15.5	25.1	88.2	86.2	44.2	26.1	32.2
Goldeneyes	28.5	50.6	39.4	25.2	39.4	55.7	71.0	16.4	73.5	47.0
Bufflehead	87.0	135.2	156.1	220.3	116.7	90.8	136.8	232.2	231.8	202.5
Ruddy Duck	64.7	44.2	5.7	62.8	60.7	4.9	27.5	57.6	7.5	194.8
Subtotal	383.6	509.1	364.4	563.8	469.6	437.4	468.1	641.7	560.6	669.1
Miscellaneous										
Long-tailed Duck	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Eiders	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Scoters	9.0	11.4	12.6	10.7	3.4	10.1	11.8	0.5	11.5	4.3
Mergansers	6.6	39.5	2.4	6.0	9.3	3.3	11.3	1.3	0.6	1.3
Subtotal	15.6	50.8	15.0	16.8	12.7	13.4	23.1	1.9	12.1	5.5
Total Ducks	1235.1	1412.8	1135.1	1415.1	1145.7	1268.1	1390.2	1609.4	1656.5	1539.7
Canada Goose	12.5	19.0	15.4	19.8	18.9	20.7	43.3	48.2	29.1	71.1
Am. coot	26.4	158.7	21.6	64.0	62.6	39.7	31.9	37.7	243.3	375.3
Ponds	411.9	489.9	418.2	419.2	401.5	385.4	505.9	569.0	799.5	395.9

Species/Ponds	1999	2000	2001	2002	2003
Ducks					
Dabblers					
Mallard	640.5	516.8	503.3	546.5	275.0
Am. black duck	0.0	0.0	0.0	0	0.0
Gadwall	68.6	56.9	86.6	131.2	56.8
Am. wigeon	93.0	44.3	61.5	45.4	37.8
Am. green-winged teal	174.0	327.3	70.7	184.1	40.0
Blue-winged teal	150.1	246.8	76.1	204.8	74.9
N. shoveler	78.4	99.1	101.0	157.6	73.7
N. pintail	19.8	10.8	5.9	15.5	18.3
Subtotal	1224.5	1301.9	905.1	1285.1	576.5
Divers					
Redhead	82.9	18.0	20.1	21.9	19.4
Canvasback	34.5	10.6	24.9	26.1	43.8
Scaups	207.0	181.0	208.7	144.2	138.3
Ring-necked duck	61.8	28.5	32.0	6.7	36.7
Goldeneyes	9.9	35.1	58.7	31.3	161.4
Bufflehead	190.3	133.9	163.9	193.4	171.1
Ruddy Duck	27.3	67.8	31.0	82.3	119.4
Subtotal	613.7	474.9	539.2	505.8	690.2
Miscellaneous					
Long-tailed Duck	0.0	0.0	0.0	0	0.0
Eiders	0.0	0.0	0.0	0	0.0
Scoters	2.9	8.8	16.2	2.8	1.6
Mergansers	9.3	15.5	18.9	22.1	2.3
Subtotal	12.2	24.3	35.1	24.9	3.9
Total Ducks	1850.4	1801.1	1479.4	1815.8	1270.5
Canada Goose	93.8	114.5	76.7	85	69.0
Am. coot	142.4	548.6	48.9	386.8	57.3
Ponds	546.2	427.2	406.0	572.5	517.0

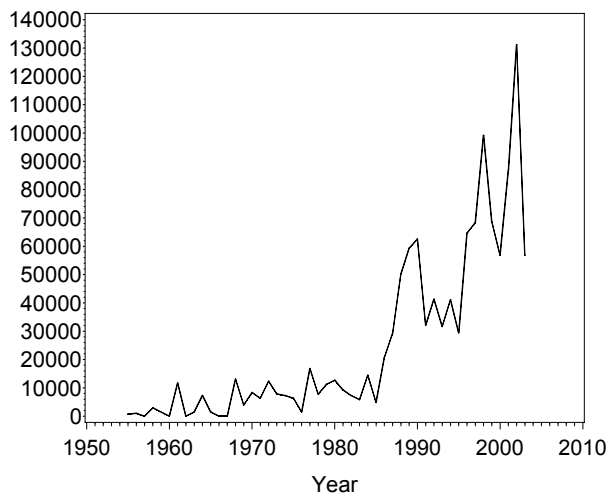
Strata 75-76 Mergansers



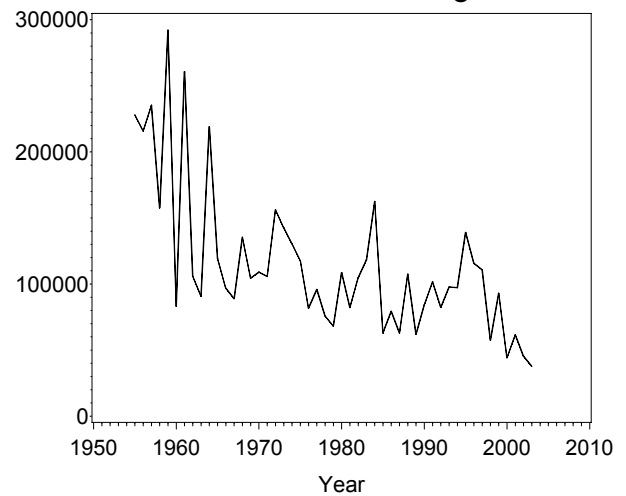
Strata 75-76 Mallard



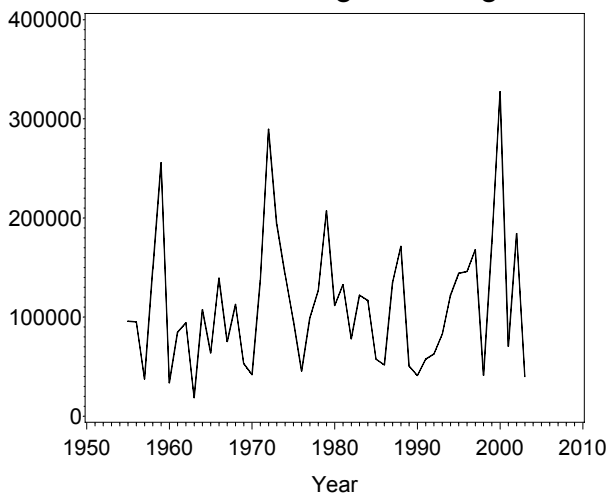
Strata 75-76 Gadwall



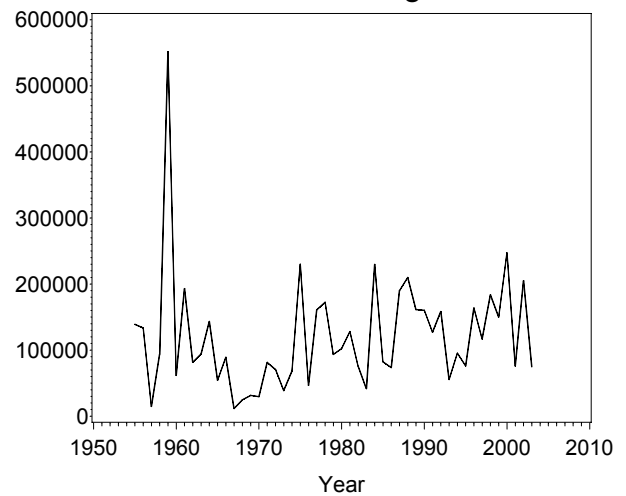
Strata 75-76 American wigeon



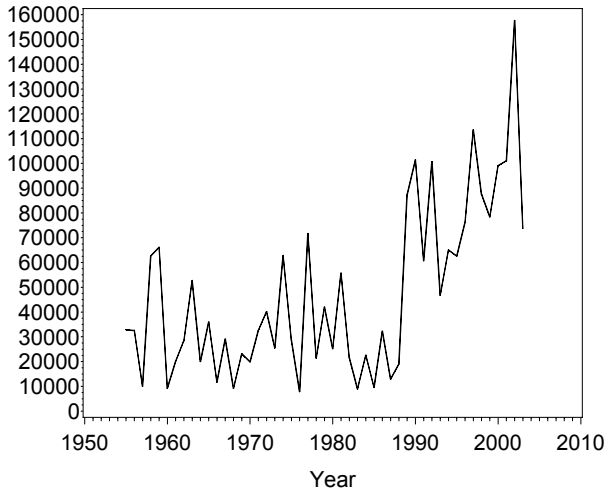
Strata 75-76 American green-winged teal



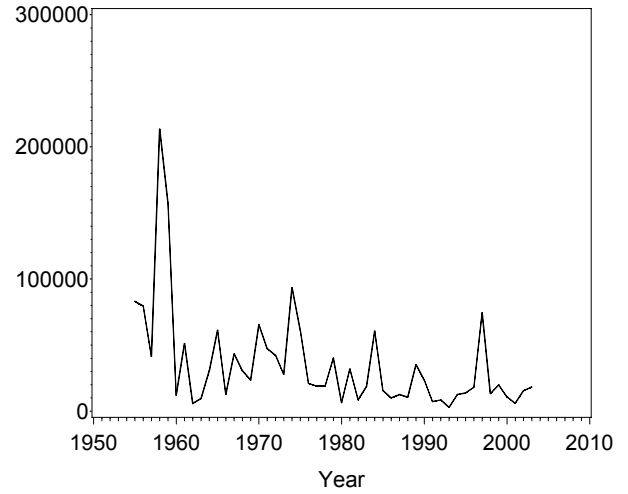
Strata 75-76 Blue-winged teal



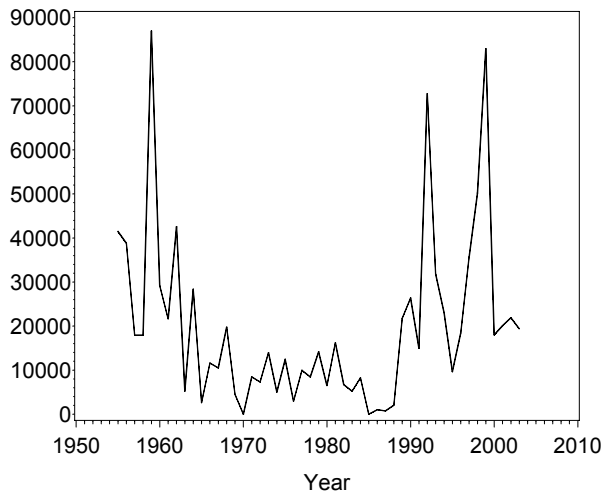
Strata 75-76 Northern shoveler



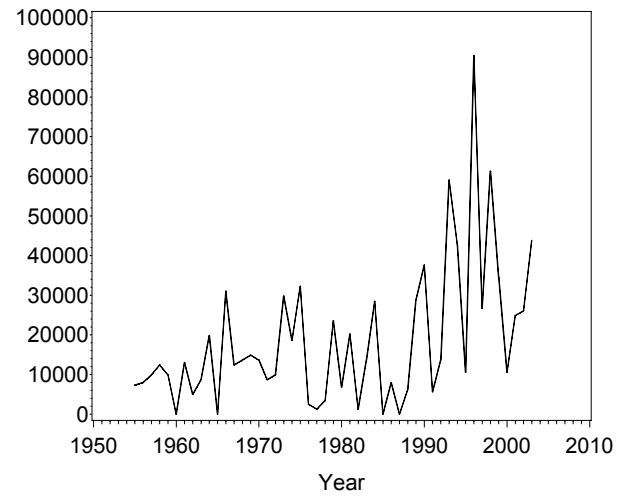
Strata 75-76 Northern pintail



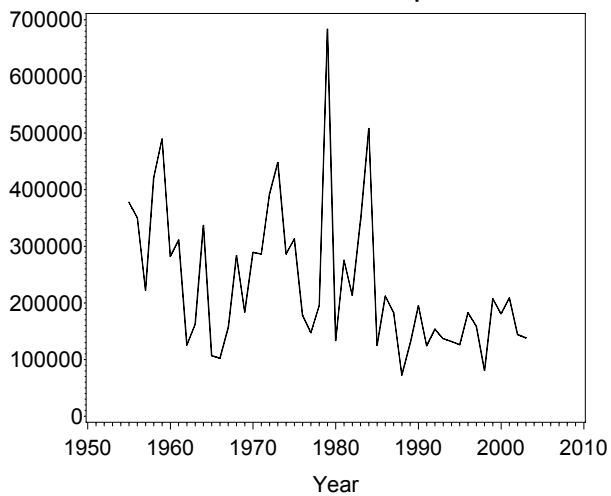
Strata 75-76 Redhead



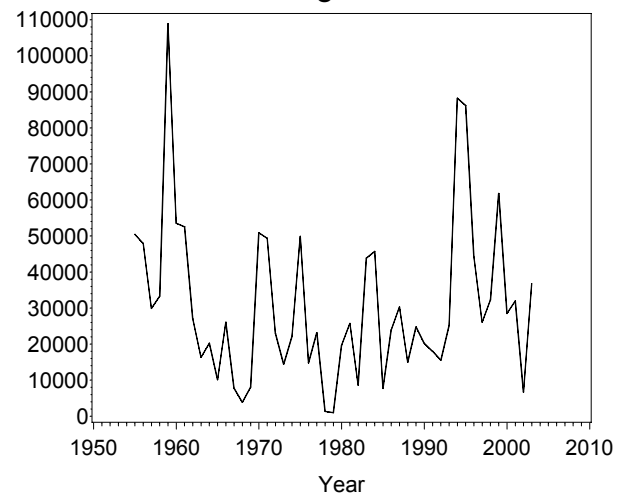
Strata 75-76 Canvasback



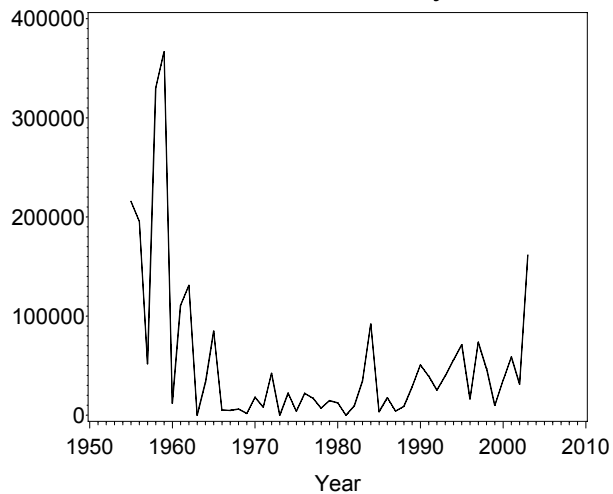
Strata 75-76 Scaups



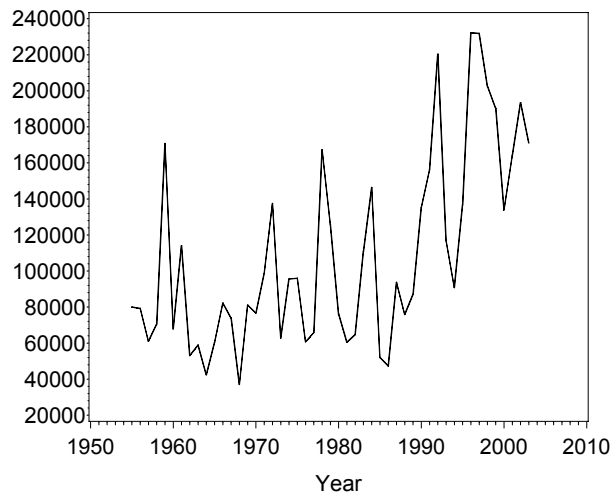
Strata 75-76 Ring-necked duck



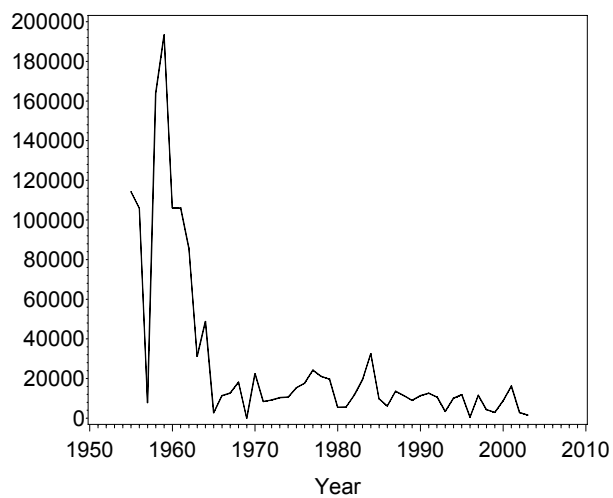
Strata 75-76 Goldeneyes



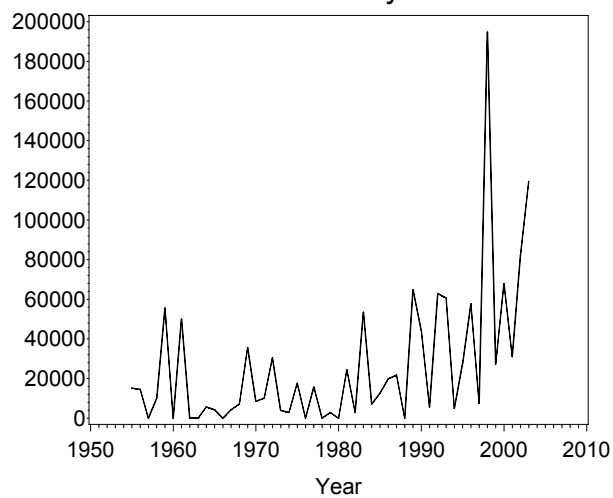
Strata 75-76 Bufflehead



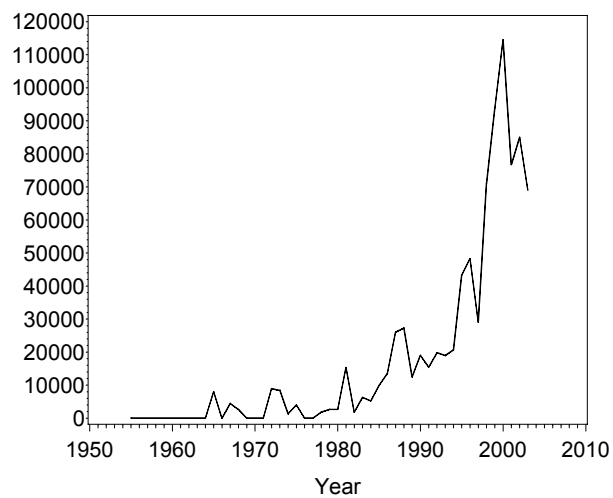
Strata 75-76 Scoters



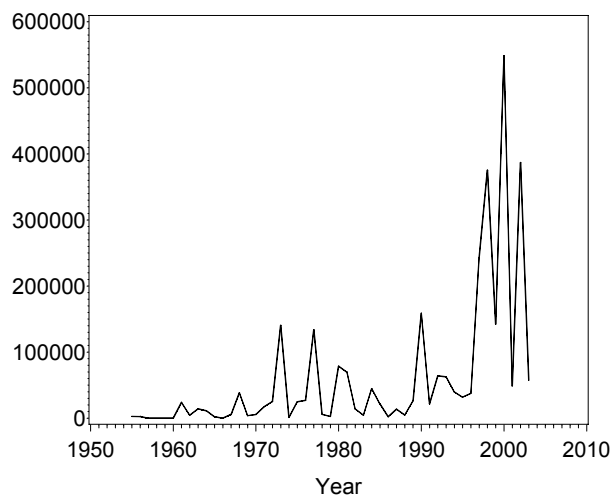
Strata 75-76 Ruddy Duck



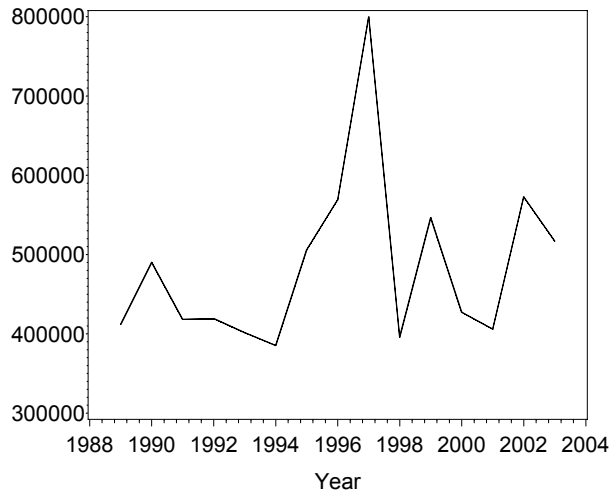
Strata 75-76 Canada Goose



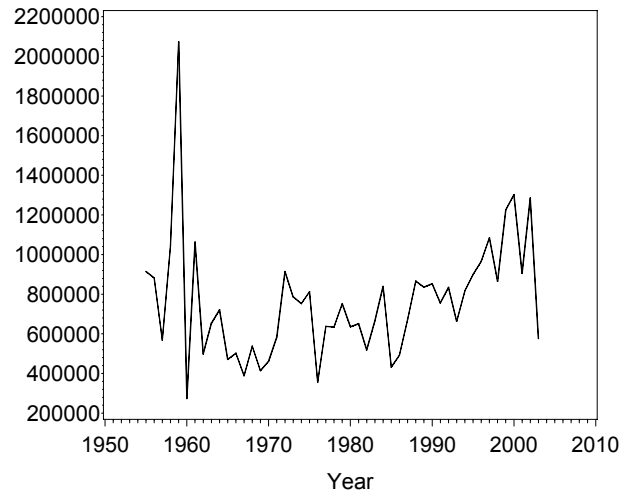
Strata 75-76 American coot



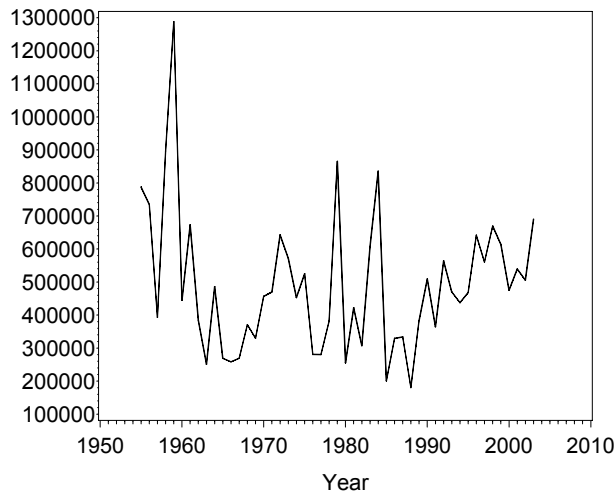
Strata 75-76 Ponds



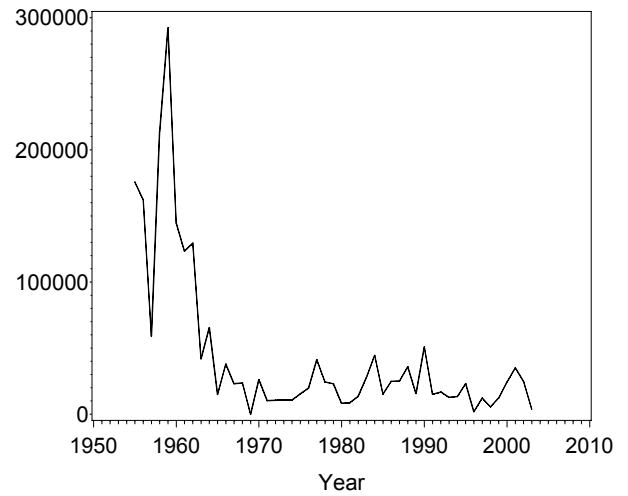
Strata 75-76 Dabblers



Strata 75-76 Divers



Strata 75-76 Miscellaneous



Strata 75-76 Total Ducks

