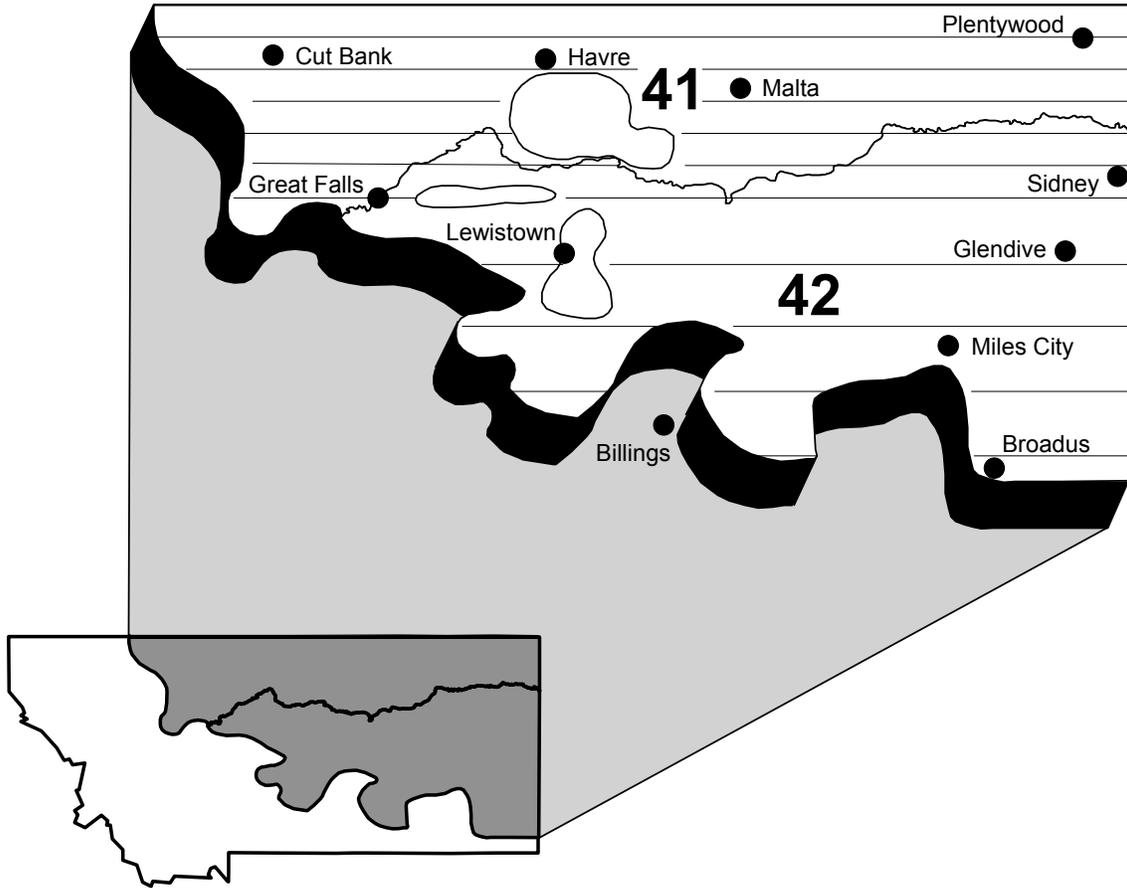


Waterfowl Breeding Population Survey  
for

# MONTANA



2006

**Title:** Waterfowl Breeding Population Survey for Montana

**Strata Surveyed:** 41 and 42

**Dates:** May 1-16 2006

**Data Supplied by:** U.S. Fish and Wildlife Service (USFWS)  
Division of Migratory Bird Management (WPS)

Aerial Crew:

Pilot/Observer: Ray Bentley  
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**Abstract:**

The 2006 waterfowl breeding population and habitat survey for Montana was completed on May 16 with all transects and segments covered as outlined in the survey design. Continued precipitation at or above normal levels following a mild winter served to generally improve habitat conditions from 2005. Central and southeastern portions of stratum 41 and 42 exhibited robust carry-over vegetation and water conditions favorable to waterfowl nesting. Pond counts were 15% and 7% above the long term and 10-year mean respectively. Observations of waterfowl showed an overall increase in populations of dabbling species from 2005 and from the long term mean (14%). Mallard estimates were 22% above the long term mean while Northern pintail showed a 21% increase from the long term mean. American widgeon and green-wing teal however showed declines from established reference points. Estimates for diving species were quite variable with apparent increases in redhead and canvasback but a continued decline of 63% from the long term mean for scaup. Canada goose population estimates were slightly below short term reference points but remain 26% above the long term mean. While habitat

conditions in eastern Montana are typically variable, a general improvement has provided conditions more favorable to waterfowl nesting than recent years. The outlook for much of the region is expected to be slightly above average for nest success and given continued normal precipitation favorable for subsequent production.

### **Methods:**

Procedures followed in conducting this survey are described in the Standard Operating Procedures for Aerial Breeding Ground Surveys in North America, Section III, revised 2003. The survey design for Montana included 14 air/ground comparison segments comprising 5.7% of the total 193 segments flown. All segments specified in the survey design were counted (Table 3).

Air and ground crew members met in Pierre SD on April 29. On April 30 ground crew training and ground reconnaissance for waterfowl breeding status was conducted north of Pierre. Aerial observer orientation and data recording system checks were also completed. Aerial surveys were initiated on May 1 and continued through May 16. Flights were canceled on May 2, 3, and 10 due to adverse weather conditions. Data files and habitat summaries for stratum 43 and 44 (Western Dakotas) were submitted to John Solberg (USFWS) for inclusion in the overall Dakotas report.

A single engine Cessna 182R (N702) was used to conduct surveys over approximately 67 flight hours. Survey personnel included Ray Bentley as pilot/observer, Ken Richkus as observer, Pam Garrettson as ground crew leader, and Mike Carpenter as ground crew assistant. 2006 served as Ray's 6th season flying in Montana. This was Ken's first season as aerial observer following 4 years as ground crew leader. Pam Garrettson has served as ground crew leader in the eastern Dakotas the previous 4 years with 2006 representing her 2<sup>nd</sup> season in western Dakotas/Montana.

As in other years aerial crews utilized on-board laptop computers, interfaced with the aircraft's GPS for data recording. Geo-referenced data files were generated after daily transcription with compilation and summaries generated using software developed by Jack Hodges, USFWS/DMBM, Juneau, AK. Processed data files were submitted to Mark Otto, Population and Habitat Assessment Section (PHAS) USFWS/DMBM and to Khristi Wilkins (PHAS) in Laurel, MD for application of visibility correction factors and table generation.

### **Weather and Habitat Conditions:**

Beginning in mid summer of 2005 eastern Montana began receiving normal levels of precipitation followed by a relatively mild winter and generally above normal early spring precipitation. Drought indices (PDI, SPI, etc) showed much of the region at or near 100% of normal with specific areas up to 115% of average. Interestingly some of the areas usually receiving the most precipitation in both stratum 41 and 42 rated below average in 2006 while historically dry areas were well above normal for rainfall and soil moisture. Initial aerial reconnaissance of the southern portions of stratum 42 showed most wetland basins full, carry over vegetation from 2005 robust, and most streams

flowing. As is normal for eastern Montana, waterfowl habitat is largely a function of winter and spring storm tracks resulting in a mosaic of variable habitat quality frequently alternating between favorable and poor over relatively short distances. However 2006 represented somewhat of an inverse of historic habitat quality patterns. The southeast portion of stratum 42 east of Billings had improved substantially from 10-year and long term mean values. Actual pond counts were below 2005 however due likely to anomalies in pond counting methods in stream habitats. The region north and east of Lewistown extending to the Dakota border was quite favorable showing robust type III wetlands, flowing streams, and generally excellent shoreline and upland vegetation. Conversely the northwestern region of stratum 41 showed a continuation of drought conditions with little or no improvement over 2005. The northeastern region near Plentywood also failed to improve over 05 showing many dry basins and marginal stream flow. The entire northern border with Canada presented only average to below average habitat quality. Overall eastern Montana experienced an improvement in waterfowl habitat particularly in the central and southeastern regions. Drought conditions prevalent since 2001 for nearly half of the region have been restored to those much more favorable for waterfowl nesting success. With the exception of the afore mentioned areas, subsequent waterfowl production is expected to follow this trend of improvement.

#### Stratum 41 (North of the Missouri River)

This region showed pond estimates at 148,100 (Table 2). This represents a 13.5% increase from the long term mean and a 2.4% increase from the 10-year mean. Apparent declines from 2005 are suspect and represent an example an increase in recorded pond numbers following stream fragmentation during drought years. May SPI and PDI ratings concur with aerial and ground observations of favorable habitat conditions in the south central portion of the stratum and declines in habitat quality between Havre and Cutbank. Conditions along the Canada border and far northeast were rated as only fair or poor. The area south and east of Malta has improved greatly over the previous 5 years with robust upland vegetation and many semi-permanent wetland basins full. In 2005 most of the stratum was in the early stages of recovery from 5 seasons of below average precipitation and 2006 shows a continued improvement for some of the region. The result is that overall waterfowl habitat was variable with a slight net improvement. Nesting success in the central region is expected to be above average but partially offset by predicted below average potential further to the north.

#### Stratum 42 (South of the Missouri River)

The portion of eastern Montana south of the Missouri River also showed improvements in habitat quality. Pond estimates were 12% above the 10-year mean at 153,300 as well as 16.4% above the long term mean. Again the apparent reductions in pond numbers from 2005 are suspected to be the result of stream fragmentation during drought years yielding higher pond numbers than during full flow years. Stratum 42 contained large portions north and east of Lewistown considered much improved over the last several years. Ground observations by James Hansen and others of Montana Game, Fish, and Parks (Billings, MT) support this theme (pers com). Average to above average precipitation during the mild winter and early spring months also improved habitat east of Billings extending to the Dakota border. The remaining portions of the region were considered to

be average with adequate carry over vegetation from 2005 and normal pond/water impoundment density. Timing of the above average precipitation particularly in the central and eastern half of the stratum is expected to provide good nesting conditions and subsequent favorable production potential through summer.

### **Breeding Population Estimates**

Initial ground reconnaissance and pre-survey aerial observation indicated that survey timing was appropriate with all expected species present and exhibiting paired behavior or territorial defense. Crowding was not prevalent on breeding ponds however the usual grouping of both paired and flocked birds were observed on large reservoirs.

Population estimates for dabbling species totaled 970,500 (Table 1). This represents an increase from the long-term mean of 14.3% and nearly matches the 10-year mean. Mallard, Blue-wing teal, and Northern pintail all showed increases over 2005 observations as well as 10-year and long term mean values. Northern pintail were particularly noteworthy in that 2006 observations were 83% above the 10-year mean and 21% above the long term mean. In contrast however Gadwall were 40% below the 10-year mean and slightly below (-3.5%) the long term mean. Similarly green-wing teal show declines from 10-year and long term mean values of 54% and 28% respectively. Other dabbling species displayed variable results with both increases and declines from traditional endpoints.

Population estimates for diving species showed an overall decline of 22% from the long term mean and 7% decline from the 10-year mean. Scaup being the most frequently encountered diver species were estimated to be 48% below the 10-year mean and 63% below the long term mean. Redhead and canvasback showed increases in population estimates over 2005 and both 10-year and long term means however as sample size decreases the year to year variability increase tends to inflated apparent changes in population estimate. This becomes particularly evident with infrequently encountered species such as bufflehead, ring-necked duck, and ruddy duck.

Canada goose population estimates remained similar to 2005 at 70,300 or 26% above the long term mean. However with the data set still under the influence of the recent expanded populations of the late 90s, 2006 estimates are 14% below the 10-year mean.

American coot showed continued declines from 10-year (-76%) and long term mean (-80%) values at 11,900.

As in previous surveys waterfowl population estimates were slightly greater in stratum 41 than in stratum 42. This trend was consistent for all species except Canada goose with the greatest stratum difference being observed in Northern pintail.

Graphs #1 through #26 provide visual depiction of long term trends in waterfowl population while appendix 1 lists historic population estimates for all species.

### **Conclusions:**

Observations in 2006 generally showed marked improvements in habitat quality and increases in waterfowl population estimates over 2005 and over long term historical records. By mid summer 2005 increases in precipitation had initiated a recovery from existing drought conditions even though timing was too late to have significant effect on 2005 production. By mid winter 2006 a frost seal had formed which would prove to be beneficial when early spring precipitation reached above normal levels. The result is that waterfowl habitat in southeast and central portions of eastern Montana are considerably more favorable to successful nesting and production than in the previous 5 years. Over half of dabbling species showed increases in population estimates over long term data sets as well as from 2005. Some apparently large increases in population estimates for both dabbling and diving species from 2005 are thought to be somewhat inflated yet remain as indicators of an overall increase in the breeding waterfowl population. Combining factors serve to artificially raise short term percentage changes in population estimates including the significant improvement of habitat from late 2005 into 2006, the low frequency of occurrence of certain species resulting in large variability in recorded individuals, as well as crew training. The resulting observational scenario is that of going from quite poor conditions with low waterfowl numbers to much improved conditions with relatively high numbers over a one year time span. Mallards show a strong potential for production in the region and Northern pintail, a species of concern, appear at least for the short term to have partially rebounded from recent low numbers. Goose population estimates appear to have stabilized from recent peak numbers while American coots remain at low numbers. Observations of pond density also support the concept of an improvement in habitat at least so far as pond numbers is concerned. The recorded reduction in pond numbers from 2005 is due to the previously mentioned artifact of semi dry stream beds being classified as multiple water bodies. Diving species did not show the increases that key dabbling species displayed. Given that most divers utilize the more established and permanent wetland habitats of class IV or higher, it would be expected that dabblers using semi-permanent wetlands would be first to respond to habitat improvements. If normal levels of precipitation continue through June brood habitat should also be favorable to successful production and subsequent recruitment. Overall production is expected to be slightly above the long term average and more markedly above 2005.

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 Montana.

Species/Ponds	Stratum (2006)		% Change From						
	41	42	2006 Total	2005 Total	10-Year Mean	Long-Term Mean	2005	10-Year Mean	Long-Term Mean
Ducks									
Dabblers									
Mallard	175.3	173.2	348.5	177.5	334.6	285.8	96.3%	4.2%	22.0%
Am. black duck	0.0	0.0	0.0	0.0	0.0	0.0	--	--	--
Gadwall	62.4	48.8	111.2	94.3	185.0	115.2	17.9%	-39.9%	-3.5%
Am. wigeon	41.5	28.9	70.4	43.6	62.4	79.2	61.4%	12.9%	-11.1%
Am. green-winged teal	13.3	3.6	16.9	34.5	37.1	23.7	-50.9%	-54.3%	-28.5%
Blue-winged teal	79.0	72.9	151.9	144.1	135.2	101.7	5.4%	12.4%	49.3%
N. shoveler	66.0	24.3	90.3	82.7	123.4	93.5	9.2%	-26.8%	-3.4%
N. pintail	134.2	47.1	181.3	45.6	99.1	150.3	297.6%	83.0%	20.7%
Subtotal	571.8	398.8	970.5	622.4	976.7	849.3	55.9%	-0.6%	14.3%
Divers									
Redhead	6.5	2.0	8.5	1.2	6.7	6.1	612.1%	26.1%	38.4%
Canvasback	6.4	4.1	10.5	3.4	5.9	5.6	207.9%	77.0%	86.4%
Scaups	6.3	6.6	12.9	12.8	24.7	35.4	0.4%	-47.9%	-63.5%
Ring-necked duck	6.0	2.3	8.4	1.8	1.4	2.3	375.4%	495.4%	263.9%
Goldeneyes	0.0	0.0	0.0	0.0	0.6	0.8	--	-100.0%	-100.0%
Bufflehead	0.6	1.1	1.7	3.0	1.2	1.4	-42.5%	44.2%	23.5%
Ruddy Duck	1.3	3.5	4.8	0.3	10.0	8.4	1308.2%	-51.8%	-42.5%
Subtotal	27.1	19.7	46.8	22.6	50.6	60.0	107.3%	-7.4%	-21.9%
Miscellaneous									
Long-tailed duck	0.0	0.0	0.0	0.0	0.1	0.0	--	-100.0%	-100.0%
Eiders	0.0	0.0	0.0	0.0	0.0	0.0	--	--	--
Scoters	0.0	0.0	0.0	0.0	0.1	0.0	--	-100.0%	-100.0%
Mergansers	0.6	1.0	1.5	1.9	4.6	2.5	-18.3%	-66.8%	-39.2%
Subtotal	0.6	1.0	1.5	1.9	4.7	2.5	-18.3%	-68.1%	-40.5%
Total Ducks	599.5	419.4	1018.9	646.8	1032.0	911.8	57.5%	-1.3%	11.7%
Canada Goose	32.8	37.5	70.3	73.9	82.2	55.9	-4.9%	-14.5%	25.7%
Am. coot	8.3	3.6	11.9	5.1	50.0	60.6	130.9%	-76.2%	-80.4%
Ponds	148.1	153.3	301.4	373.0	281.4	262.1	-19.2%	7.1%	15.0%

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 Montana.

Year	Stratum (2006)		Total
	41	42	
1974	142.4	66.9	209.2
1975	150.6	128.8	279.4
1976	109.3	126.3	235.5
1977	70.4	88.2	158.6
1978	145.7	156.2	301.9
1979	135.0	106.2	241.2
1980	77.9	74.4	152.3
1981	103.3	73.0	176.3
1982	147.1	126.5	273.5
1983	85.2	88.7	173.9
1984	88.6	117.5	206.2
1985	127.3	160.0	287.3
1986	190.4	206.3	396.7
1987	102.2	127.1	229.3
1988	78.3	92.0	170.3
1989	160.5	177.3	337.8
1990	121.7	124.3	246.0
1991	111.6	130.1	241.6
1992	95.6	140.0	235.5
1993	94.3	100.5	194.8
1994	227.4	251.1	478.5
1995	164.1	184.7	348.8
1996	209.4	174.7	384.1
1997	154.3	160.2	314.5
1998	149.4	176.0	325.4
1999	227.6	149.8	377.3
2000	74.6	88.0	162.6
2001	74.2	79.7	154.0
2002	71.3	93.4	164.7
2003	136.4	124.4	260.8
2004	161.5	135.8	297.3
2005	187.9	185.1	373.0
2006	148.1	153.3	301.4
10-year Mean	144.7	136.7	281.4
Long-term Mean	130.5	131.7	262.1
Percent Change:			
From 2005	-21.2%	-17.2%	-19.2%
From 10-year Mean	2.4%	12.1%	7.1%
From Long-term Mean	13.5%	16.4%	15.0%

Table 3. Montana Stratum Data 2006

	strata	
Survey Design	41	42
Square miles in the stratum	32,902	40,755
Square miles in sample	504	365
Linear miles in sample	2,016	1.458
Number of transects in sample	7	7
Number of segments in sample	112	81
Expansion factor	65.2817	111.8107

	strata	
Current Year Design	41	42
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Square miles in sample	504	365
Linear miles in sample	2,016	1.458
Number of transects in sample	7	7
Number of segments in sample	112	81
Expansion factor	65.2817	111.8107

Appendix 1. Long-term trend in adjusted waterfowl breeding population estimates (thousands).

Species/Ponds	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974
<b>Ducks</b>										
<b>Dabblers</b>										
Mallard	363.3	489.4	320.9	198.5	291.3	311.5	273.9	374.2	261.3	198.2
Am. black duck	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gadwall	147.9	130.5	100.0	93.7	94.3	53.3	49.1	15.5	11.8	69.6
Am. wigeon	36.8	43.2	63.6	68.6	85.8	92.6	58.3	129.8	99.2	76.8
Am. green-winged teal	22.5	18.4	29.9	20.5	8.6	28.2	11.5	31.7	51.5	21.9
Blue-winged teal	137.5	133.3	82.9	53.2	149.9	99.3	87.1	17.0	8.5	77.7
N. shoveler	65.7	83.1	98.6	78.0	109.6	64.9	65.5	61.1	47.2	58.1
N. pintail	287.4	262.9	277.3	72.2	156.4	191.2	124.3	240.6	167.7	116.8
Subtotal	1061.2	1160.7	973.1	584.9	895.9	840.9	669.7	870.0	647.3	619.2
<b>Divers</b>										
Redhead	2.6	4.2	12.4	1.4	2.6	2.0	2.4	0.0	2.4	1.0
Canvasback	3.1	0.5	1.6	3.5	5.5	3.6	5.6	6.7	9.6	1.3
Scaups	27.8	44.7	43.0	27.0	50.0	33.2	15.6	39.5	49.2	35.8
Ring-necked duck	3.3	0.9	7.4	2.9	0.2	0.0	0.0	0.0	0.0	2.1
Goldeneyes	0.0	1.3	0.0	0.0	0.6	0.0	0.0	8.8	2.4	0.0
Bufflehead	1.3	1.3	0.4	2.1	1.4	0.4	0.0	1.7	0.6	1.7
Ruddy Duck	0.0	2.7	1.7	1.5	22.3	0.6	1.3	5.7	3.1	1.8
Subtotal	38.1	55.7	66.4	38.3	82.7	39.9	25.0	62.4	67.4	43.8
<b>Miscellaneous</b>										
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	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mergansers	1.4	0.0	7.7	0.7	0.0	0.0	0.0	0.7	0.8	3.5
Subtotal	1.4	0.0	7.8	0.7	0.0	0.0	0.0	0.7	0.8	3.5
Total Ducks	1100.7	1216.4	1047.3	623.9	978.6	880.8	694.6	933.1	715.5	666.6
Canada Goose	19.0	0.0	44.9	42.2	42.2	50.4	61.2	31.6	14.0	22.1
Am. coot	13.9	19.4	23.4	58.1	31.0	22.3	9.6	17.5	38.0	22.2
Ponds										209.2
<hr/>										
Species/Ponds	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
<b>Ducks</b>										
<b>Dabblers</b>										
Mallard	478.4	168.0	171.0	282.5	258.3	256.2	245.8	323.5	230.1	189.8
Am. black duck	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gadwall	72.9	55.3	19.7	174.8	78.6	83.5	119.9	95.1	71.0	38.3
Am. wigeon	110.6	99.7	77.1	157.0	87.9	148.9	65.2	89.4	77.9	73.0
Am. green-winged teal	53.1	13.6	3.9	18.2	40.1	9.9	9.1	13.4	18.9	10.6
Blue-winged teal	98.3	207.1	93.8	93.9	117.5	103.4	81.8	211.0	79.9	52.1
N. shoveler	100.2	102.2	31.1	179.2	189.6	52.2	121.8	160.7	61.8	65.0
N. pintail	259.2	226.0	118.5	348.9	324.8	146.6	157.3	306.9	88.3	99.8
Subtotal	1172.8	871.9	514.9	1254.7	1096.7	800.7	801.0	1200.0	627.9	528.6
<b>Divers</b>										
Redhead	0.7	2.7	3.2	7.0	14.7	4.4	25.0	15.0	10.5	19.2
Canvasback	2.1	16.2	3.2	6.4	10.4	4.8	5.4	12.5	5.0	3.5
Scaups	26.4	29.9	34.4	72.1	88.6	36.8	35.8	61.0	47.1	53.3
Ring-necked duck	0.0	1.4	0.2	0.8	0.0	0.9	0.9	2.4	16.3	3.0
Goldeneyes	0.0	0.0	0.6	0.0	1.1	1.6	0.0	0.0	0.0	0.6
Bufflehead	0.4	0.6	0.0	1.3	3.6	1.0	2.4	5.6	0.4	1.8
Ruddy Duck	2.6	1.9	1.2	14.1	12.4	0.7	17.1	17.8	9.1	11.8
Subtotal	32.2	52.7	42.8	101.7	130.8	50.1	86.6	114.2	88.3	93.1
<b>Miscellaneous</b>										
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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0
Mergansers	1.4	0.8	2.7	1.9	4.1	0.0	8.5	1.8	0.0	1.4
Subtotal	1.4	0.8	2.7	1.9	4.1	0.0	8.5	1.8	0.2	1.4
Total Ducks	1206.4	925.4	560.3	1358.3	1231.5	850.8	896.0	1316.0	716.5	623.1
Canada Goose	23.1	27.0	26.3	27.9	41.6	36.6	31.3	37.1	34.6	51.1
Am. coot	13.8	59.5	16.4	83.1	319.4	104.2	197.7	53.3	42.9	103.5
Ponds	279.4	235.5	158.6	301.9	241.2	152.3	176.3	273.5	173.9	206.2

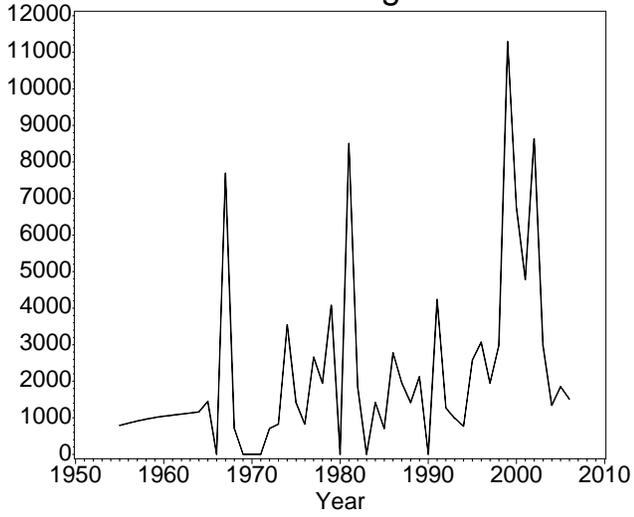
Appendix 1 (continued). Long-term trend in adjusted waterfowl breeding population estimates (thousands).

Species/Ponds	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
<b>Ducks</b>										
<b>Dabblers</b>										
Mallard	152.0	156.9	240.9	218.0	282.8	148.4	222.7	239.9	288.6	368.7
Am. black duck	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gadwall	40.8	33.8	32.6	30.7	128.5	56.7	96.9	154.4	181.5	182.9
Am. wigeon	58.7	52.0	64.9	44.0	58.8	126.2	70.3	88.2	65.5	137.7
Am. green-winged teal	6.4	6.2	6.0	12.0	17.0	15.7	12.4	16.3	8.4	34.0
Blue-winged teal	38.6	21.6	40.2	83.5	65.9	76.3	77.7	89.0	60.3	186.4
N. shoveler	34.1	69.3	73.2	33.7	58.6	86.3	51.5	27.1	92.7	194.3
N. pintail	56.5	95.9	146.0	61.6	58.0	131.2	43.1	75.5	130.4	244.5
Subtotal	387.0	435.6	603.8	483.6	669.6	640.6	574.7	690.4	827.4	1348.5
<b>Divers</b>										
Redhead	2.7	3.6	3.4	2.7	7.0	7.8	6.4	5.5	5.3	3.4
Canvasback	2.1	2.8	1.0	2.1	5.1	10.8	1.0	5.6	9.3	12.5
Scaups	20.0	33.4	44.7	55.9	46.9	33.1	25.2	14.0	28.3	28.6
Ring-necked duck	4.3	7.1	0.4	1.2	3.8	0.4	0.5	3.9	4.0	5.0
Goldeneyes	1.3	2.5	0.0	0.0	1.1	0.6	0.7	0.0	1.5	0.0
Bufflehead	1.0	0.4	0.0	4.1	1.7	6.0	2.2	1.3	0.4	0.3
Ruddy Duck	8.0	4.6	0.6	25.1	5.8	9.2	38.0	9.2	1.8	4.7
Subtotal	39.3	54.5	50.2	91.2	71.4	67.9	73.9	39.6	50.6	54.5
<b>Miscellaneous</b>										
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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mergansers	0.7	2.8	1.9	1.4	2.1	0.0	4.2	1.3	1.0	0.8
Subtotal	0.7	2.8	1.9	1.4	2.1	0.0	4.2	1.3	1.0	0.8
Total Ducks	427.1	492.9	656.0	576.2	743.1	708.6	652.8	731.3	879.0	1403.7
Canada Goose	49.4	32.9	39.4	67.1	79.3	97.7	70.8	90.5	103.3	76.3
Am. coot	145.2	32.1	27.2	95.5	65.9	153.4	52.9	15.3	58.3	56.8
Ponds	287.3	396.7	229.3	170.3	337.8	246.0	241.6	235.5	194.8	478.5
<b>Species/Ponds</b>										
<b>Ducks</b>										
<b>Dabblers</b>										
Mallard	366.0	386.9	641.2	549.5	319.0	304.1	239.1	185.8	279.7	262.8
Am. black duck	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gadwall	359.3	201.7	513.5	232.7	205.3	125.9	179.0	87.3	109.1	101.3
Am. wigeon	116.9	100.2	122.4	92.9	63.1	57.6	41.6	28.6	30.7	42.8
Am. green-winged teal	30.3	56.1	58.1	13.3	27.2	16.5	18.1	40.6	50.2	56.4
Blue-winged teal	94.4	89.3	138.1	225.5	241.5	50.0	72.8	73.3	171.2	145.9
N. shoveler	81.4	109.3	209.1	90.5	235.6	60.3	86.1	76.2	158.5	125.6
N. pintail	154.5	135.6	209.3	110.9	131.8	58.7	79.0	47.0	95.0	77.9
Subtotal	1202.8	1079.1	1891.7	1315.4	1223.5	673.1	715.7	538.7	894.3	812.7
<b>Divers</b>										
Redhead	3.4	8.1	4.3	6.1	6.3	1.8	4.8	9.5	14.2	11.2
Canvasback	8.0	4.6	9.6	6.1	4.9	3.5	4.5	1.2	10.9	10.4
Scaups	21.4	35.9	32.7	14.1	28.0	30.7	31.5	20.6	24.6	16.3
Ring-necked duck	7.0	0.4	0.0	2.1	2.4	0.0	2.9	1.1	0.4	3.0
Goldeneyes	0.4	0.0	0.9	0.7	1.4	0.5	0.0	1.6	0.0	0.5
Bufflehead	0.5	0.0	2.2	1.5	1.1	1.7	0.6	0.5	0.7	0.6
Ruddy Duck	7.0	1.2	8.9	11.8	8.3	2.4	24.9	14.9	17.1	10.2
Subtotal	47.7	50.1	58.6	42.4	52.5	40.6	69.3	49.5	67.8	52.2
<b>Miscellaneous</b>										
Long-tailed duck	0.0	0.0	0.0	0.0	0.5	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	0.0	0.3	0.5	0.0	0.0	0.0	0.0	0.0	0.5	0.0
Mergansers	2.6	3.1	1.9	3.0	11.3	6.7	4.8	8.6	3.0	1.3
Subtotal	2.6	3.4	2.4	3.0	11.8	6.7	4.8	8.6	3.5	1.3
Total Ducks	1253.1	1132.6	1952.7	1360.8	1287.9	720.4	789.8	596.8	965.6	866.3
Canada Goose	98.6	106.6	78.5	84.9	84.2	94.9	88.2	82.8	56.9	70.9
Am. coot	33.2	38.8	80.1	12.8	174.7	69.1	21.6	36.3	17.7	43.4
Ponds	348.8	384.1	314.5	325.4	377.3	162.6	154.0	164.7	260.8	297.3

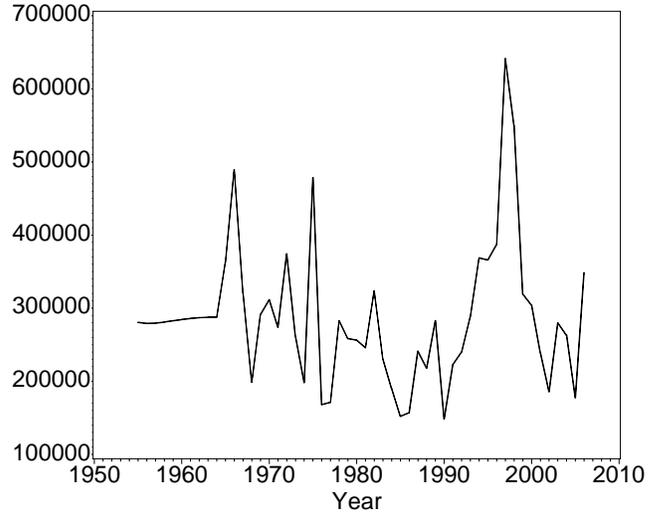
Appendix 1 (continued). Long-term trend in adjusted waterfowl breeding population estimates (thousands).

Species/Ponds	2005	2006
Ducks		
Dabblers		
Mallard	177.5	348.5
Am. black duck	0.0	0.0
Gadwall	94.3	111.2
Am. wigeon	43.6	70.4
Am. green-winged teal	34.5	16.9
Blue-winged teal	144.1	151.9
N. shoveler	82.7	90.3
N. pintail	45.6	181.3
Subtotal	622.4	970.5
Divers		
Redhead	1.2	8.5
Canvasback	3.4	10.5
Scaups	12.8	12.9
Ring-necked duck	1.8	8.4
Goldeneyes	0.0	0.0
Bufflehead	3.0	1.7
Ruddy Duck	0.3	4.8
Subtotal	22.6	46.8
Miscellaneous		
Long-tailed duck	0.0	0.0
Eiders	0.0	0.0
Scoters	0.0	0.0
Mergansers	1.9	1.5
Subtotal	1.9	1.5
Total Ducks	646.8	1018.9
Canada Goose	73.9	70.3
Am. coot	5.1	11.9
Ponds	373.0	301.4

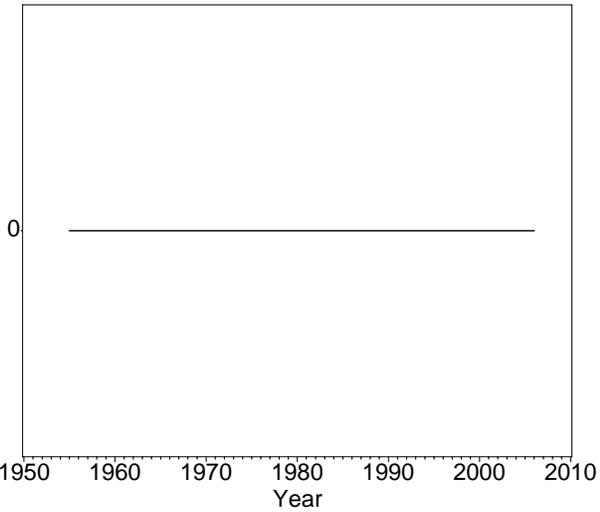
Strata 41-42 Mergansers



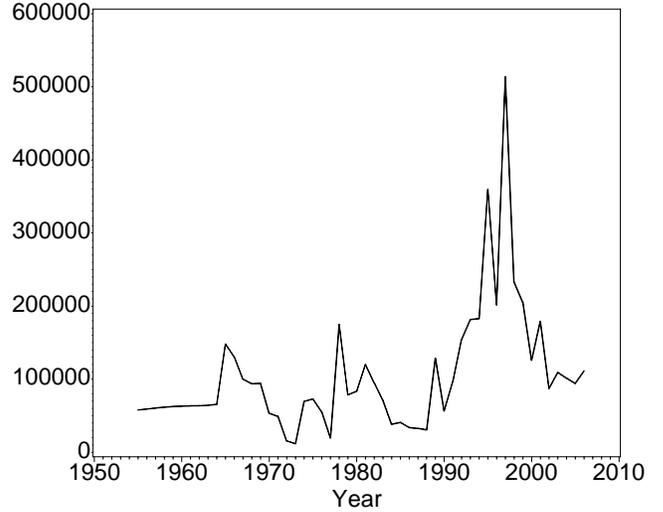
Strata 41-42 Mallard



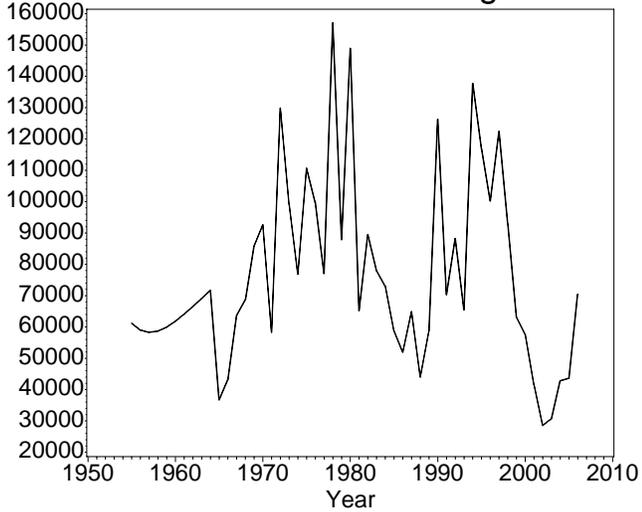
Strata 41-42 American black duck



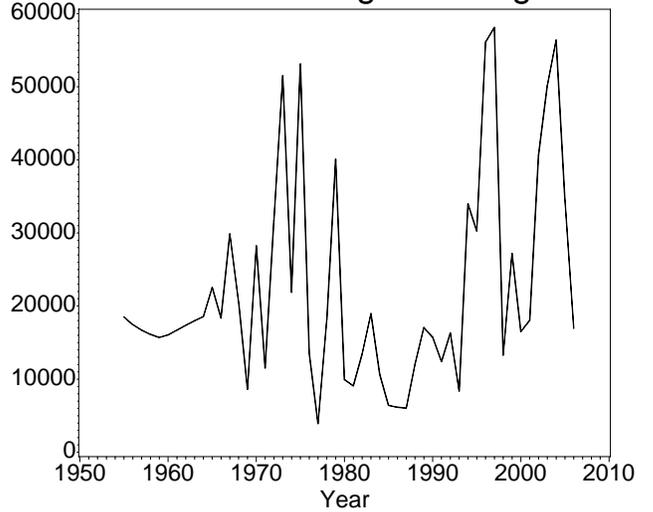
Strata 41-42 Gadwall



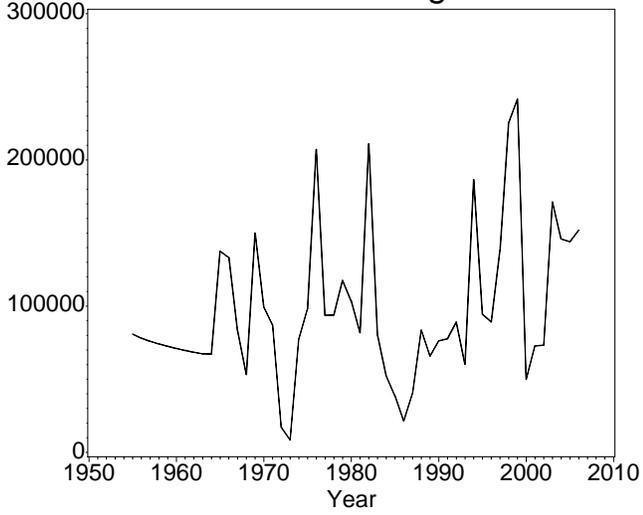
Strata 41-42 American wigeon



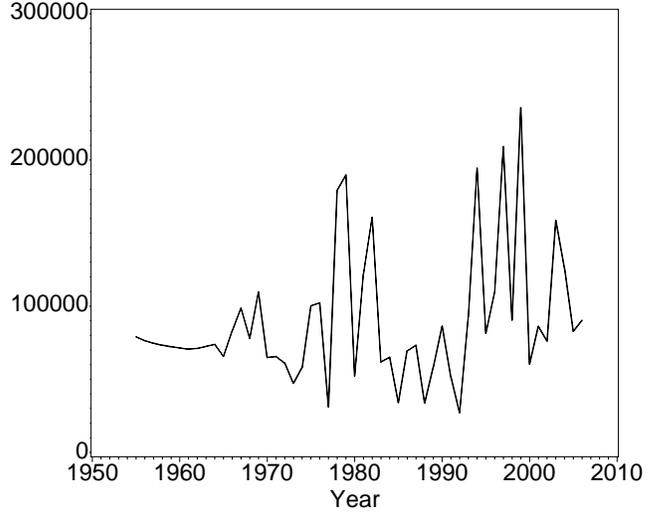
Strata 41-42 American green-winged teal



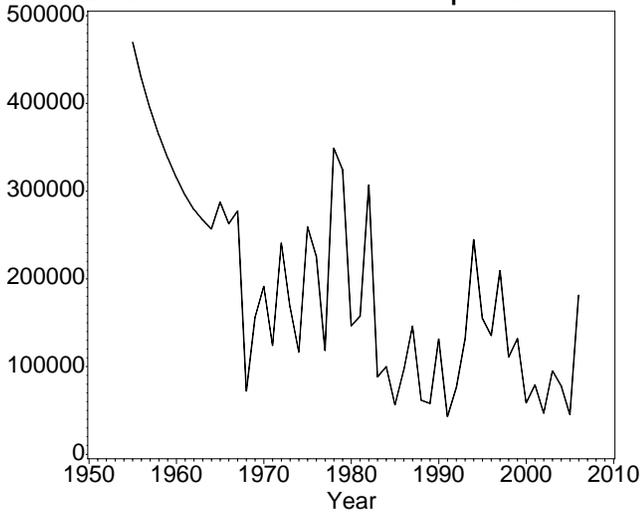
Strata 41-42 Blue-winged teal



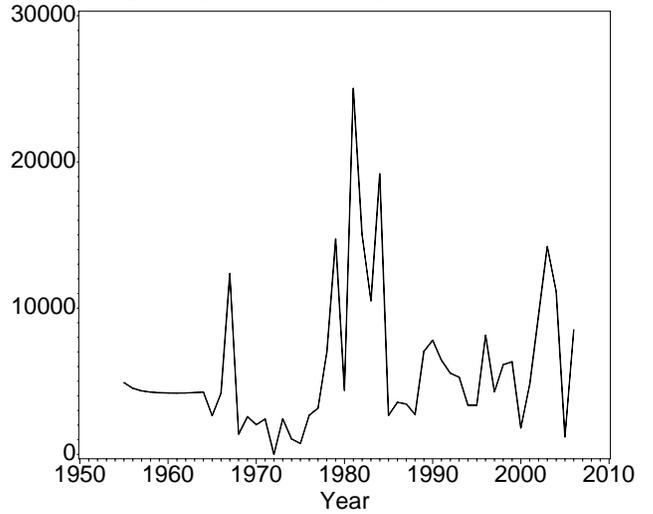
Strata 41-42 Northern shoveler



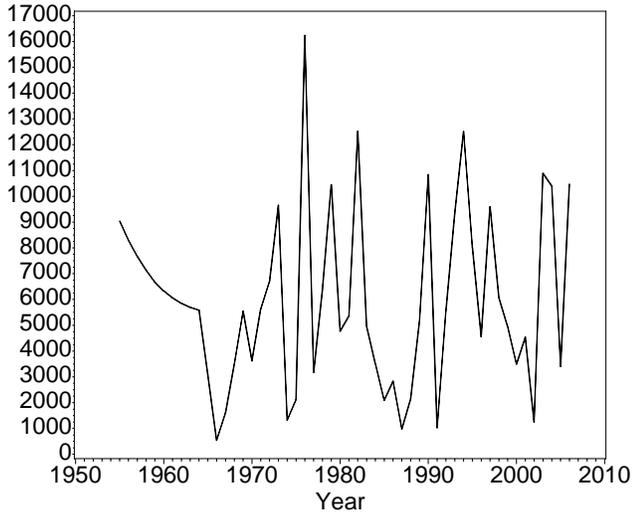
Strata 41-42 Northern pintail



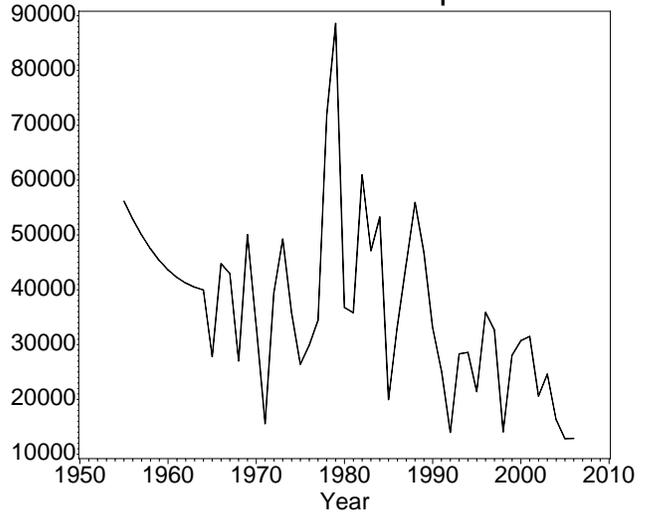
Strata 41-42 Redhead



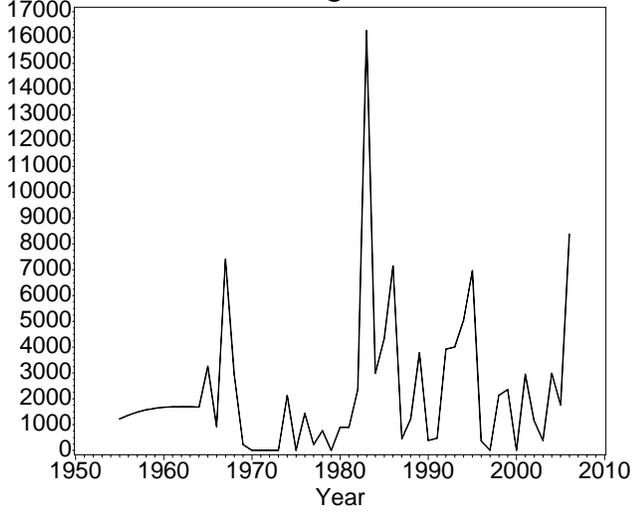
Strata 41-42 Canvasback



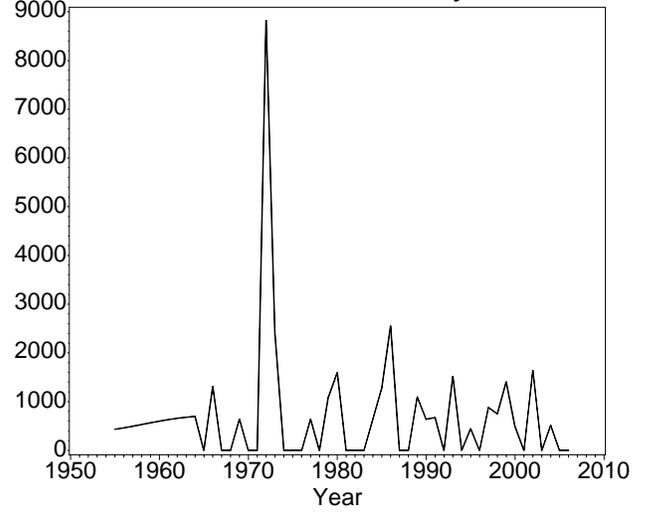
Strata 41-42 Scaups



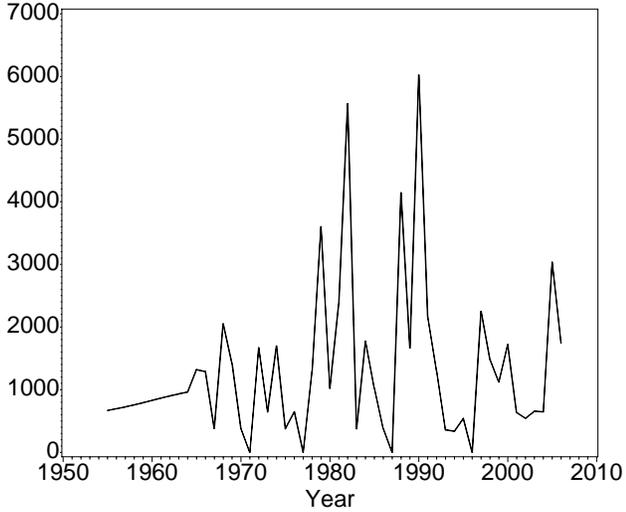
Strata 41-42 Ring-necked duck



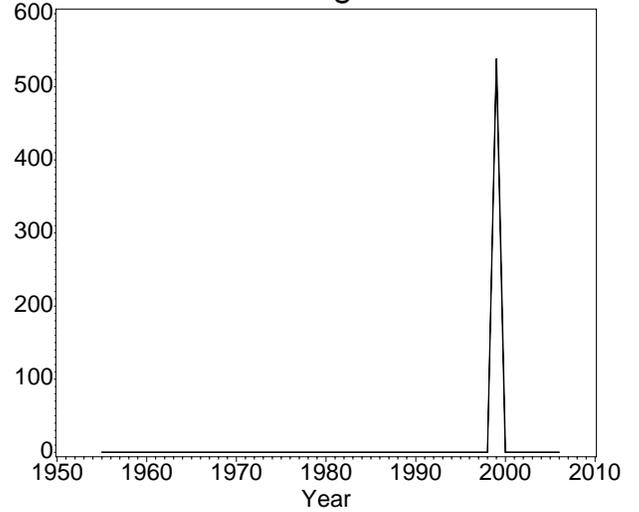
Strata 41-42 Goldeneyes



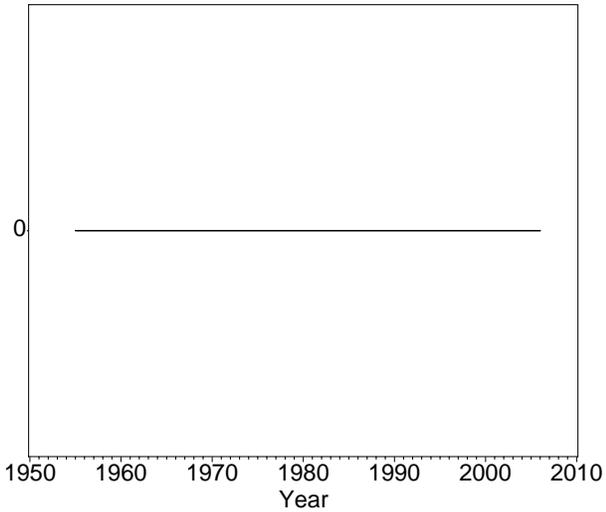
Strata 41-42 Bufflehead



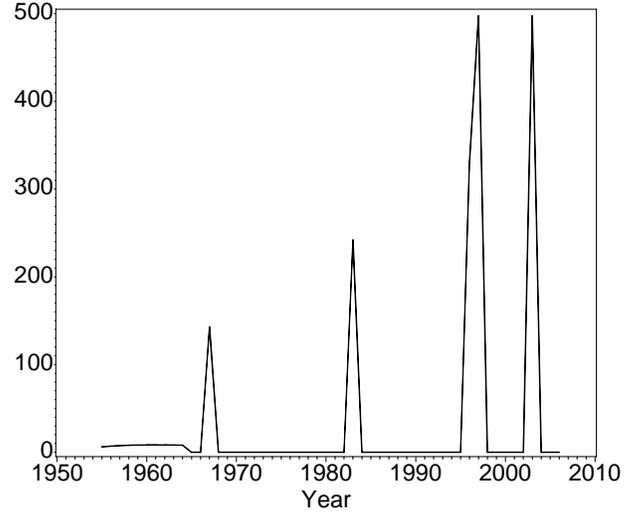
Strata 41-42 Long-tailed duck



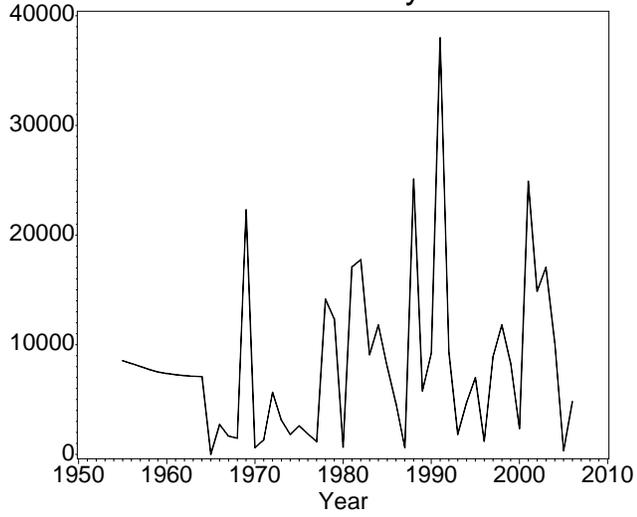
Strata 41-42 Eiders



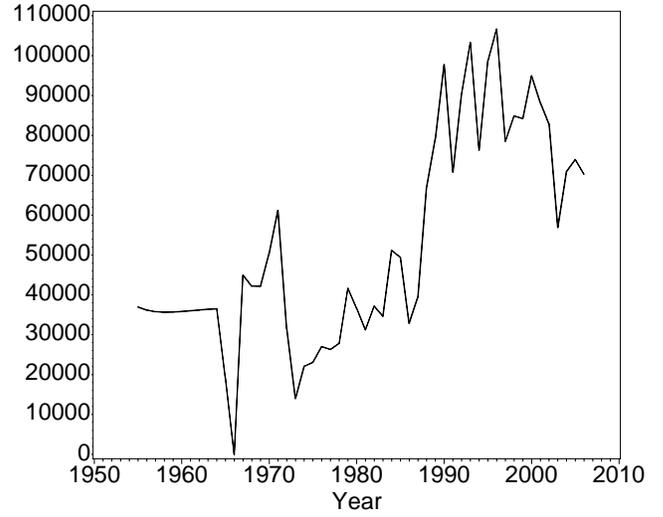
Strata 41-42 Scoters



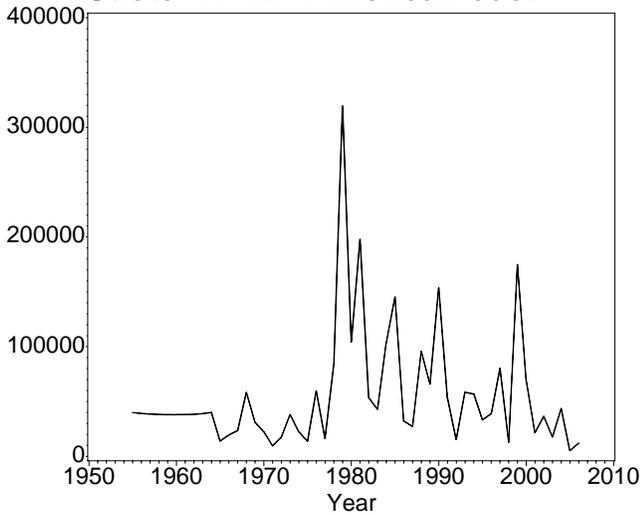
Strata 41-42 Ruddy Duck



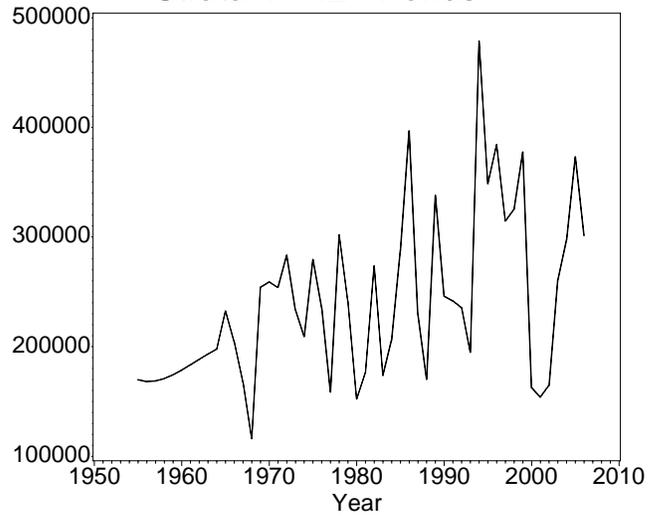
Strata 41-42 Canada Goose



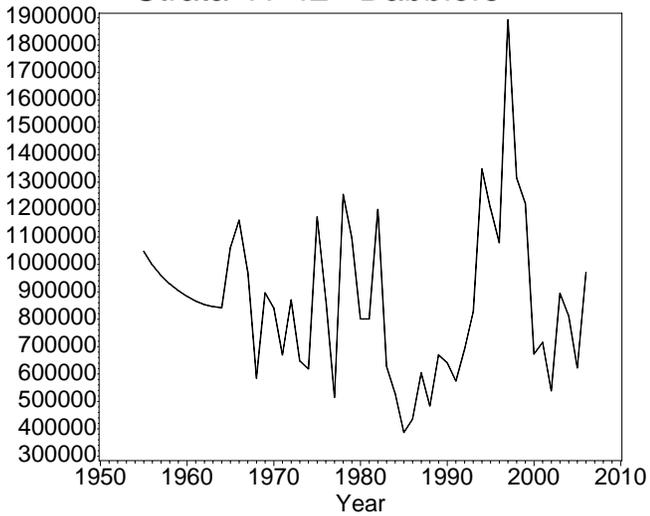
Strata 41-42 American coot



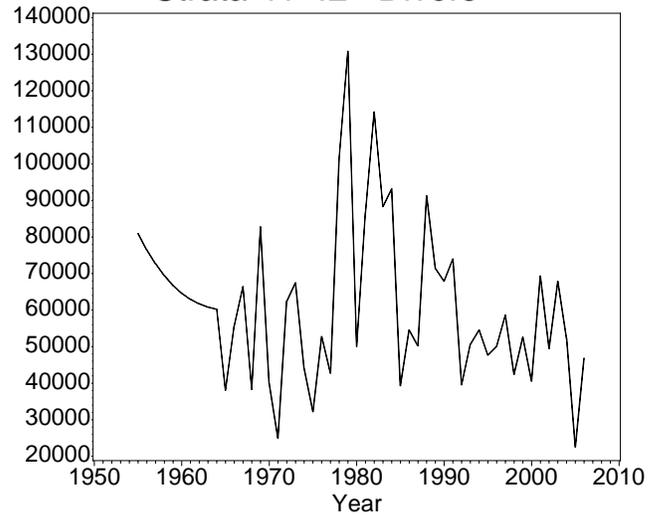
Strata 41-42 Ponds



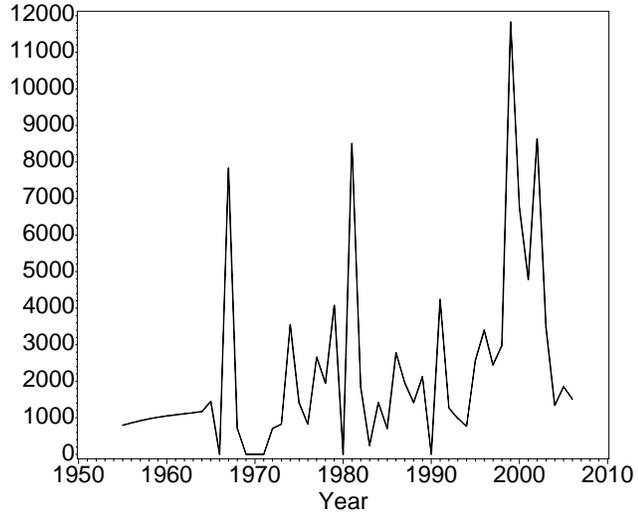
Strata 41-42 Dabblers



Strata 41-42 Divers



Strata 41-42 Miscellaneous



Strata 41-42 Total Ducks

