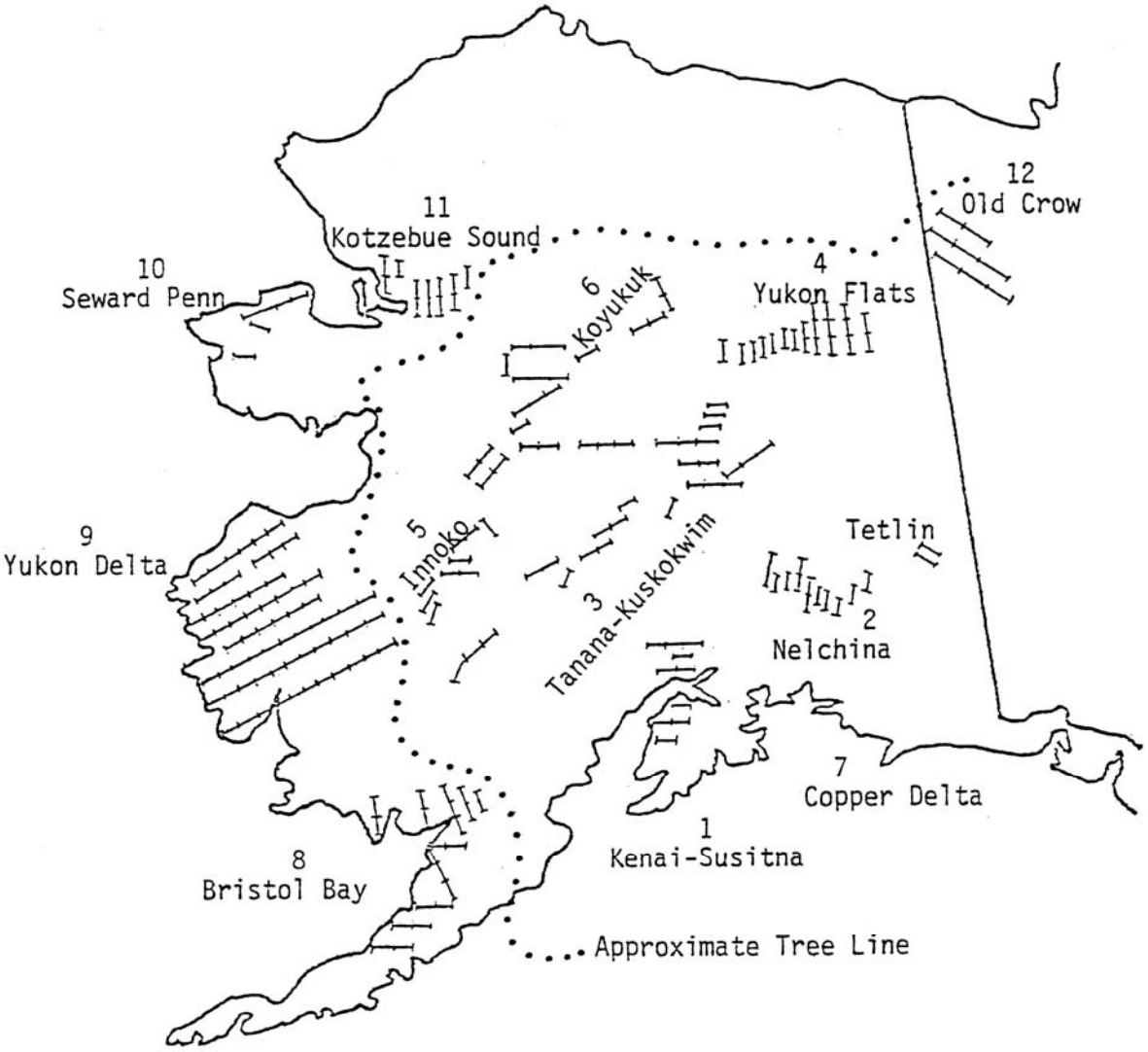
ALASKA - YUKON

WATERFOWL BREEDING POPULATION SURVEY

May 15 to June 6, 2008




By

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**TITLE:** Waterfowl Breeding Population Survey: Alaska-Yukon (Crew Area 1)

**STRATA COVERED:** 01, 02, 03, 04, 05, 06, 07, 08, 09, 10, 11, 12

**DATES:** May 15 to June 6, 2008

**DATA SUPPLIED BY:** Ed Mallek[1] and Deborah J. Groves[2]
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## ABSTRACT

The survey area experienced relatively normal spring breakup, except for the Copper River Delta, Bristol Bay, and the northern Seward Peninsula where normal-late phenology occurred. There was only normal flooding (typical spring flood areas). This should generally provide for average waterfowl production throughout the survey area.

Total duck numbers were down from the previous 10-year mean by 8%. Dabbler ducks decreased from the previous 10-year mean by 11% while divers and "miscellaneous" species varied by -1% and +2% from their previous 10-year means, respectively. Duck production is expected to be average.

Goose and swan (trumpeter and tundra) production should be about average throughout the survey area.

## INTRODUCTION

This year the standardized waterfowl breeding pair survey in Alaska was conducted for the 52nd consecutive year. These data collected from this survey continue to increase in value and are the basis for management decisions at the state, flyway, and continental level.

The survey was flown in the specially modified de Havilland Turbine Beaver (N754). This aircraft has been used on this survey since 1977 and provides extremely high visibility and reliability. Continued use of N754 for this survey (and others) is highly recommended.

## METHODS

Survey methods followed "Standard Operating Procedures for Aerial Waterfowl Breeding Ground Population and Habitat Surveys in North America" (USFWS and CWS 1987). We used two panel mounted computers (Sony VAIO VGN-UX490N) that ran survey software developed by John I. Hodges, USFWS-Alaska (retired). The software provided a moving map for situational awareness and recorded observations through a microphone (sound files) that were linked to coordinates from the aircraft GPS (latitude and longitude). We then used a second computer program on the ground to transcribe the linked sound files and produce a text file. The

text files contained all relevant data for each observation and were used for analyses and production of stratum summaries and tables. All data and summaries were provided to the Division of Migratory Bird Management (DMBM) upon completion of the survey.

The survey design consisted of 12 strata and a total of 232 segments. The Alaska portion of the survey consisted of 214 segments each 16 miles in length and 10 segments each 8 miles in length. The Yukon portion of the survey (Old Crow Flats) consisted of 8 segments each 18 miles in length. All segments were flown in 2008 although 2 segments on the pilot's side (one on the Yukon Flats and one on the Yukon Delta) were not recorded and are not included in the totals due to minor computer problems encountered while recording the data.

We incorporated visibility correction factors (VCFs) in the estimates of ducks. The VCFs were obtained from a six-year (1986-1991) helicopter/fixed-wing comparison study in Alaska (Conant et al. 1991). The VCFs were species and habitat specific: boreal forest (strata 1-7), tundra (strata 8-11), and Old Crow Flats in Canada (stratum 12). These VCFs have been used since 1992 and all data previous to 1992 have been corrected as well.

In 2002, the Waterfowl Management Branch in Alaska (following DMBM) decided to double all observations of single geese when calculating indicated total geese. The rationale for this decision was based on the premise that a single goose indicates a pair of geese with the unobserved goose on a nest. All historical data have been updated to reflect this change in analyses. Furthermore, we do not apply a VCF to Canada geese while the DMBM does apply a VCF of 2.89 for Canada geese. Finally, starting in 2002, the DMBM started deleting all flock sightings greater than 45 from the calculations of continental population indices while the results reported here include all flocked observations regardless of size.

## WEATHER AND HABITAT CONDITIONS

Spring breakup, while initially delayed, occurred normally throughout the majority of the survey area. During the time of this survey all areas were normal with exception of the Copper River Delta, Bristol Bay and northern Seward Peninsula, all of which were slightly late. Only minor flooding occurred in the interior in typical areas in strata 5 and 6 (Innoko/Iditarod and Koyukuk/Dulbi).

## BREEDING POPULATION ESTIMATES

Caution should be used when interpreting the graphs that include data previous to 1977. The specially modified turbine beaver (N754) has been used on this survey from 1977 to present. This aircraft has increased visibility when compared to aircraft used prior to 1977 on this survey. This suggests that any long-term declines may be more significant than depicted on the graphs and any long-term increases may be less significant than depicted on the graphs (depending on the span of years in question). Likewise, long-term averages that include pre-1977 could be somewhat misleading. Historical data from this survey (1957-1994) have been analyzed and are available in a report (Hodges et al 1996).

## Ducks

Estimates of ducks are provided in Tables 1, 2 and 9-20 and Figures 1-3.

Dabbler populations decreased from last year by 9% and were 11% below the previous 10-year mean. The northern pintail population was 18% above its previous 10-year mean. The northern pintail has traditionally been the most numerous dabbler in Alaska and in recent years the Alaska population has accounted for a significant portion of the Pacific Flyway total for that species. Results from this survey (2008, which does not include the Arctic Coastal Plain of Alaska) accounted for approximately 48% of the continental pintail population. American wigeon were down 10% from the previous 10-year mean. The American green-winged teal population was down 20% from the previous 10-year mean. Mallard and northern shoveler populations were down 26 and 30% from their previous 10-year means, respectively.

Scaup, which account for the vast majority of divers observed on this survey, were up 6% from the previous 10-year mean. The canvasback population was down 27% from the previous 10-year mean. Ringnecked duck and goldeneye populations were down 40 and 31% from their previous10-year means, respectively. The bufflehead population was up 20% from the previous 10-year mean. The long-tailed duck population was up 10% from the previous 10-year mean. Eider and scoter populations were up 21% and down 1%, respectively, from their previous 10-year means. Merganser observations were up 2% from the previous 10-year mean.

## Geese

Figure 3 includes the trend of all geese recorded on 5 segments of this survey within the coastal zone of the Yukon-Kuskokwim Delta (actual geese seen on transect only). Data from 1964 was excluded because of extreme weather conditions experienced that year. Two lines were fit to these data (1957-1984 and 1985-2007) due to restricted harvest regulations that were first applied in 1984 and in subsequent years based on the Yukon-Kuskokwim Delta Goose Management Plan. The general upward trend since 1984 probably reflects a response in goose populations (primarily white-fronted geese and cackling Canada geese) to the management plan. The 2008 data point is considerably higher than any previously recorded and comprises an increase in flocked and single/paired observations. This data point is likely a result of localized shifts in bird distribution at the time of survey.

## Swans

Estimates of swans are provided in Tables 3, 9-20 and Figure 3.

Trumpeter Swans – Trumpeter swan observations from this survey in boreal forest strata (1-4, 6, and 7) estimate the population at 16,900 adults and sub-adults, which is 5% below the previous 10-year mean. Overall, good production is expected this year for trumpeter swans in Alaska.

Tundra Swans – The population index from tundra strata (8-11), not including the Arctic Coastal Plain of Alaska, was 175,800, which is 26% above the previous 10-year mean. The breeding

index (singles and pairs) was 100,800 which is 25% above the previous 10-year mean. Overall, good production is expected this year for tundra swans in western Alaska.

## Cranes

Estimates for sandhill cranes are available in Tables 4, 9-20 and Figure 4.

The sandhill crane index for Alaska in 2008 was 55,800, which is 28% above the previous 10-year mean.

## Loons

Estimates for loons area available in Tables 5-7 and Figure 4.

The 2008 red-throated loon index for the Alaska portion of this survey (excludes Old Crow Flats) was 16,200, up 60% from the previous 10-year mean.

The 2008 pacific loon index for Alaska was 60,500, up 16% from the previous 10-year mean.

The 2008 common loon index for Alaska was 9,300, down 7% from the previous 10-year mean.

## CONCLUSION

The general normal to slightly late spring breakup, low winter snow fall, and lack of flooding should result in good waterfowl production within the survey area.

## TELEMETRY

A Telonics telemetry receiver-scanner is incorporated in the panel of the survey aircraft. This year we scanned for sandhill cranes (our only request) and located several birds with transmitters in the Bristol Bay area.

## ACKNOWLEDGMENTS

We thank John Pribbenow, John Alley, John Anderson and other OAS personnel for providing a fast yet thorough annual inspection to the aircraft prior to the survey and for installation of new survey computers in the aircraft. We also thank Doug Alcorn, Russ Oates, and Kevin Fox for their needed support. Special thanks to Mike Spindler, Daryle Lons, Mike Rearden, and Lee Anne Ayres for providing housing, vehicles, or other logistical support.

## LITERATURE CITED

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Table 1. Alaska-Yukon. Ten year trend in adjusted waterfowl breeding population estimates by species, 1999 - 2008 (estimates in thousands).

| Species | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
|---|---|---|---|---|---|---|---|---|---|---|
| Ducks: | | | | | | | | | | |
| Dabblers: | | | | | | | | | | |
| Mallard | 712.9 | 770.2 | 718.3 | 667.2 | 843.5 | 811.1 | 703.3 | 515.4 | 575.6 | 526.0 |
| Am. black duck | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Gadwall | 4.9 | 2.7 | 6.5 | 1.0 | 4.6 | 1.9 | 2.7 | 1.8 | 3.2 | 3.9 |
| Am. wigeon | 932.4 | 1141.3 | 1106.0 | 1036.5 | 1019.5 | 897.1 | 873.2 | 821.4 | 1102.9 | 910.2 |
| Am. green-winged teal | 679.5 | 946.4 | 1029.0 | 631.1 | 1035.4 | 818.6 | 713.1 | 779.7 | 814.6 | 646.1 |
| Blue-winged teal | 0.0 | 0.0 | 0.0 | 0.0 | 2.9 | 2.2 | 2.8 | 0.0 | 9.2 | 0.0 |
| N. shoveler | 658.3 | 846.5 | 666.2 | 580.7 | 671.0 | 642.5 | 666.2 | 408.4 | 573.1 | 459.7 |
| N. pintail | 1021.9 | 1452.4 | 1426.4 | 942.0 | 848.3 | 927.4 | 905.5 | 1040.3 | 1120.2 | 1259.1 |
| SUBTOTAL | 4009.9 | 5159.5 | 4952.4 | 3858.5 | 4425.2 | 4100.8 | 3866.8 | 3567.0 | 4198.8 | 3805.0 |
| Divers: | | | | | | | | | | |
| Redhead | 0.0 | 0.6 | 0.0 | 4.6 | 3.0 | 2.4 | 0.2 | 10.1 | 1.6 | 2.0 |
| Canvasback | 89.0 | 186.7 | 89.0 | 142.4 | 88.9 | 210.6 | 95.1 | 73.2 | 90.8 | 85.0 |
| Scaups | 956.1 | 1219.1 | 1148.1 | 815.4 | 1027.2 | 1001.0 | 960.8 | 883.0 | 1178.0 | 1069.1 |
| Ring-necked duck | 19.0 | 65.3 | 86.4 | 51.9 | 96.2 | 71.5 | 78.6 | 83.4 | 61.0 | 40.5 |
| Goldeneyes | 69.3 | 55.6 | 95.7 | 104.7 | 75.8 | 92.5 | 61.0 | 88.2 | 38.0 | 52.2 |
| Bufflehead | 41.1 | 39.7 | 54.3 | 38.3 | 46.7 | 43.9 | 51.7 | 46.2 | 60.6 | 56.1 |
| SUBTOTAL | 1174.5 | 1567.0 | 1473.5 | 1157.3 | 1337.8 | 1421.9 | 1247.4 | 1184.1 | 1430.0 | 1304.9 |
| Miscellaneous: | | | | | | | | | | |
| Long-tailed duck | 72.1 | 105.2 | 99.8 | 84.1 | 83.2 | 83.3 | 66.3 | 103.0 | 127.8 | 101.0 |
| Eiders | 15.7 | 13.0 | 6.2 | 24.1 | 17.5 | 17.4 | 7.9 | 13.7 | 16.0 | 17.5 |
| Scoters | 345.9 | 327.1 | 242.5 | 319.7 | 399.0 | 367.3 | 350.2 | 400.6 | 396.2 | 347.1 |
| Ruddy duck | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 | 0.8 | 0.0 | 0.0 | 0.0 | 0.0 |
| Mergansers | 15.0 | 32.9 | 27.2 | 22.9 | 20.6 | 22.0 | 36.3 | 27.0 | 36.3 | 26.9 |
| SUBTOTAL | 448.7 | 478.2 | 376.7 | 450.8 | 520.3 | 490.8 | 460.7 | 544.3 | 576.3 | 492.5 |
| TOTAL DUCKS | 5633.1 | 7204.7 | 6802.6 | 5466.6 | 6283.3 | 6013.5 | 5574.9 | 5295.4 | 6205.1 | 5602.4 |

Table 2. Status of Alaska-Yukon waterfowl breeding population estimates (thousands, adjusted for visibility bias) by species and strata in 2008, with comparisons to 2007, the previous 10-year mean, and the long-term mean.

| | Strata* | | | 2008 | 2007 | 10-Year | Long-Term | % Change From | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Species | 1-7 | 8-11 | 12 | Total | Total | Mean | Mean | 2007 | 10-Year Mean | Long-Term Mean |
| Ducks: | | | | | | | | | | |
| Dabblers: | | | | | | | | | | |
| Mallard | 253.6 | 252.0 | 20.4 | 526.0 | 575.6 | 715.4 | 372.9 | -9 | -26 | +41 |
| Am. black duck | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | -- | -- | -- |
| Gadwall | 0.0 | 3.9 | 0.0 | 3.9 | 3.2 | 3.0 | 2.0 | +22 | +32 | +95 |
| Am. wigeon | 509.7 | 343.4 | 57.1 | 910.2 | 1102.9 | 1012.7 | 543.3 | -17 | -10 | +68 |
| Am. green-winged teal | 260.6 | 367.5 | 18.0 | 646.1 | 814.6 | 812.6 | 389.5 | -21 | -20 | +66 |
| Blue-winged teal | 0.0 | 0.0 | 0.0 | 0.0 | 9.2 | 1.7 | 1.3 | -100 | -100 | -100 |
| N. shoveler | 191.9 | 252.1 | 15.7 | 459.7 | 573.1 | 656.5 | 285.3 | -20 | -30 | +61 |
| N. pintail | 310.8 | 912.3 | 36.0 | 1259.1 | 1120.2 | 1063.0 | 913.2 | +12 | +18 | +38 |
| Subtotal | 1526.6 | 2131.2 | 147.2 | 3805.0 | 4198.8 | 4265.0 | 2507.6 | -9 | -11 | +52 |
| Divers: | | | | | | | | | | |
| Redhead | 1.4 | 0.3 | 0.3 | 2.0 | 1.6 | 2.3 | 1.6 | +25 | -11 | +28 |
| Canvasback | 66.6 | 9.2 | 9.2 | 85.0 | 90.8 | 117.1 | 91.1 | -6 | -27 | -7 |
| Scaups | 383.3 | 618.3 | 67.5 | 1069.1 | 1178.0 | 1011.7 | 921.7 | -9 | +6 | +16 |
| Ring-necked duck | 39.2 | 1.3 | 0.0 | 40.5 | 61.0 | 67.4 | 22.9 | -34 | -40 | +77 |
| Goldeneyes | 44.0 | 7.8 | 0.4 | 52.2 | 38.0 | 75.8 | 70.9 | +37 | -31 | -26 |
| Bufflehead | 50.8 | 5.1 | 0.2 | 56.1 | 60.6 | 46.9 | 44.1 | -7 | +20 | +28 |
| Subtotal | 585.3 | 642.0 | 77.6 | 1304.9 | 1430.0 | 1321.1 | 1152.3 | -9 | -1 | +13 |
| Miscellaneous: | | | | | | | | | | |
| Long-tailed duck | 6.6 | 86.6 | 7.8 | 101.0 | 127.8 | 91.6 | 137.1 | -21 | +10 | -26 |
| Eiders | 0.0 | 17.5 | 0.0 | 17.5 | 16.0 | 14.5 | 27.0 | +9 | +21 | -36 |
| Scoters | 54.1 | 229.6 | 63.4 | 347.1 | 396.2 | 349.7 | 376.1 | -12 | -1 | -8 |
| Ruddy duck | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.1 | -- | -100 | -100 |
| Mergansers | 9.8 | 16.5 | 0.6 | 26.9 | 36.3 | 26.5 | 13.0 | -26 | +2 | +106 |
| Subtotal | 70.5 | 350.2 | 71.8 | 492.5 | 576.3 | 482.4 | 553.4 | -15 | +2 | -11 |
| Total Ducks | 2182.4 | 3123.4 | 296.6 | 5602.4 | 6205.1 | 6068.5 | 4213.2 | -10 | -8 | +33 |

* 1-7 Interior Alaska Taiga; 8-11 Coastal Alaska Tundra; 12 Old Crow Flats, Yukon Territory, Canada

Table 3. Alaska. Ten year trend in tundra swan breeding population observations, 1999 - 2008 (estimates in thousands).

| Stratum | Status | Y E A R 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 1998 - 2007 Average | % Change from 2007 | % Change from Avg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8 | Singles & pairs | 10.9 | 10.9 | 11.2 | 12.7 | 13.7 | 10.9 | 8.5 | 12.4 | 8.4 | 9.3 | 11.2 | +11 | -17 |
| Bristol Bay | Flocks | 3.8 | 5.4 | 3.2 | 5.1 | 1.2 | 2.4 | 15.6 | 5.4 | 7.5 | 3.6 | 5.1 | -52 | -29 |
| | Total | 14.7 | 16.3 | 14.4 | 17.8 | 14.9 | 13.3 | 24.1 | 17.8 | 15.9 | 12.9 | 16.3 | -19 | -21 |
| 9 | Singles & pairs | 62.3 | 52.6 | 49.8 | 50.7 | 51.6 | 49.8 | 53.2 | 52.9 | 66.2 | 73.4 | 54.8 | +11 | +34 |
| Yukon Delta | Flocks | 35.4 | 15.1 | 32.7 | 26.6 | 6.8 | 143.1 | 52.2 | 58.2 | 67.6 | 46.7 | 49.6 | -31 | -6 |
| | Total | 97.7 | 67.7 | 82.5 | 77.3 | 58.4 | 192.9 | 105.4 | 111.1 | 133.8 | 120.1 | 104.3 | -10 | +15 |
| 10 | Singles & pairs | 8.1 | 7.3 | 6.2 | 8.1 | 7.4 | 8.3 | 5.5 | 4.1 | 7.3 | 7.2 | 6.8 | -1 | +6 |
| Seward Pen. | Flocks | 0.0 | 0.0 | 4.0 | 0.0 | 0.8 | 0.6 | 0.0 | 0.0 | 4.5 | 0.0 | 1.3 | -100 | -100 |
| | Total | 8.1 | 7.3 | 10.2 | 8.1 | 8.2 | 8.9 | 5.5 | 4.1 | 11.8 | 7.2 | 8.1 | -39 | -11 |
| 11 | Singles & pairs | 8.5 | 8.5 | 6.8 | 8.9 | 7.8 | 5.6 | 6.7 | 7.2 | 11.4 | 10.9 | 7.8 | -4 | +40 |
| Kotzebue So. | Flocks | 0.0 | 1.7 | 1.1 | 3.0 | 0.8 | 6.1 | 0.0 | 1.4 | 6.0 | 24.9 | 3.1 | +315 | +703 |
| | Total | 8.5 | 10.2 | 7.9 | 11.9 | 8.6 | 11.7 | 6.7 | 8.6 | 17.4 | 35.8 | 10.9 | +106 | +228 |
| | Singles & pairs | 89.8 | 79.3 | 74.0 | 80.4 | 80.5 | 74.6 | 73.9 | 76.6 | 93.3 | 100.8 | 80.6 | +8 | +25 |
| Total | Flocks | 39.2 | 22.2 | 41.0 | 34.7 | 9.6 | 152.2 | 67.8 | 65.0 | 85.6 | 75.2 | 59.1 | -12 | +27 |
| | Total | 129.0 | 101.5 | 115.0 | 115.1 | 90.1 | 226.8 | 141.7 | 141.6 | 178.9 | 176.0 | 139.7 | -2 | +26 |

Note: There are additional tundra swans nesting in Alaska outside of these strata.
Actual swans observed are expanded for area only.

Table 4. Alaska-Yukon. Ten year trend in sandhill crane breeding population observations, 1999 - 2008 (estimates in thousands).

| Stratum | Y E A R 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 1998 - 2007 Average | % Change from 2007 | % Change from Avg. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Kenai-Susitna | 0.0 | 0.7 | 0.1 | 0.3 | 0.0 | 0.4 | 0.2 | 0.2 | 0.1 | 0.1 | 0.2 | +0 | -50 |
| 2. Nelchina | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | - | - |
| 3. Tanana-Kusko. | 0.2 | 1.3 | 1.3 | 0.7 | 1.3 | 1.0 | 0.6 | 0.4 | 0.6 | 1.1 | 0.8 | +83 | +38 |
| 4. Yukon Flats | 0.4 | 1.8 | 0.5 | 1.4 | 1.5 | 1.5 | 1.1 | 0.4 | 0.9 | 1.4 | 1.3 | +56 | +8 |
| 5. Innoko | 1.5 | 0.5 | 0.7 | 0.4 | 0.2 | 0.4 | 0.5 | 0.2 | 0.2 | 1.1 | 0.6 | +450 | +83 |
| 6. Koyukuk | 0.9 | 1.4 | 1.4 | 0.6 | 0.8 | 2.3 | 0.6 | 0.8 | 0.9 | 1.2 | 1.0 | +33 | +20 |
| 7. Copper Delta | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | - | - |
| Subtotal - Interior | 3.0 | 5.7 | 4.0 | 3.4 | 3.8 | 5.6 | 3.0 | 2.0 | 2.7 | 4.9 | 3.9 | +81 | +26 |
| 8. Bristol Bay | 2.9 | 5.1 | 6.1 | 5.9 | 3.8 | 2.4 | 2.5 | 4.5 | 5.1 | 7.7 | 4.1 | +51 | +88 |
| 9. Yukon Delta | 22.2 | 18.2 | 34.6 | 19.5 | 23.2 | 22.5 | 22.3 | 36.3 | 27.7 | 33.9 | 25.6 | +22 | +32 |
| 10. Seward Pen. | 4.0 | 5.2 | 6.3 | 7.6 | 5.1 | 9.2 | 2.2 | 4.7 | 6.0 | 5.2 | 5.8 | -13 | -10 |
| 11. Kotzebue So. | 4.8 | 7.2 | 5.8 | 2.3 | 3.6 | 2.6 | 3.1 | 6.1 | 2.5 | 4.1 | 4.1 | +64 | +0 |
| Subtotal - Tundra | 33.9 | 35.7 | 52.8 | 35.3 | 35.7 | 36.7 | 30.1 | 51.6 | 41.3 | 50.9 | 39.6 | +23 | +29 |
| TOTAL - ALASKA | 36.9 | 41.4 | 56.8 | 38.7 | 39.5 | 42.3 | 33.1 | 53.6 | 44.0 | 55.8 | 43.5 | +27 | +28 |
| 12. Old Crow Flats Yukon | 0.0 | 0.1 | 0.0 | 0.1 | 0.0 | 0.0 | 0.3 | 0.1 | 0.1 | 0.1 | 0.1 | +0 | +0 |

Note: There are additional sandhill cranes nesting in Alaska - Yukon outside of these strata.
Actual sandhill cranes observed are expanded for area only.

Table 5. Alaska-Yukon. Ten year trend in red-throated loon breeding population observations, 1999 - 2008 (estimates in thousands).

| Stratum | Y E A R 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 1998 - 2007 Average | % Change from 2007 | % Change from Avg. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Kenai-Susitna | 0.0 | 0.1 | 0.0 | 0.1 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | - | - |
| 2. Nelchina | 0.1 | 0.0 | 0.1 | 0.1 | 0.1 | 0.0 | 0.1 | 0.0 | 0.0 | 0.3 | 0.1 | - | +200 |
| 3. Tanana-Kusko. | 0.1 | 0.1 | 0.2 | 0.3 | 0.1 | 0.1 | 0.1 | 0.2 | 0.4 | 0.5 | 0.2 | +25 | +150 |
| 4. Yukon Flats | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | - | - |
| 5. Innoko | 0.5 | 0.3 | 0.0 | 0.3 | 0.9 | 1.0 | 0.5 | 0.2 | 0.5 | 0.8 | 0.4 | +60 | +100 |
| 6. Koyukuk | 0.2 | 0.2 | 0.1 | 0.2 | 0.3 | 0.1 | 0.2 | 0.2 | 0.3 | 0.3 | 0.2 | +0 | +50 |
| 7. Copper Delta | 0.1 | 0.1 | 0.3 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.1 | - | -100 |
| Subtotal - Interior | 1.0 | 0.8 | 0.7 | 1.0 | 1.4 | 1.3 | 1.0 | 0.6 | 1.2 | 2.0 | 1.0 | +67 | +100 |
| 8. Bristol Bay | 1.1 | 1.2 | 0.9 | 0.6 | 1.3 | 1.3 | 1.2 | 0.8 | 2.0 | 0.6 | 1.2 | -70 | -50 |
| 9. Yukon Delta | 3.8 | 2.6 | 4.9 | 3.9 | 3.6 | 5.4 | 4.4 | 5.7 | 5.9 | 7.6 | 4.3 | +29 | +77 |
| 10. Seward Pen. | 2.3 | 2.6 | 0.3 | 1.9 | 3.4 | 2.9 | 3.2 | 5.2 | 6.6 | 4.7 | 3.1 | -29 | +52 |
| 11. Kotzebue So. | 0.1 | 0.6 | 0.3 | 0.3 | 0.9 | 0.3 | 0.2 | 1.0 | 0.9 | 1.3 | 0.5 | +44 | +160 |
| Subtotal - Tundra | 7.3 | 7.0 | 6.4 | 6.7 | 9.2 | 9.9 | 9.0 | 12.7 | 15.4 | 14.2 | 9.1 | -8 | +56 |
| TOTAL - ALASKA | 8.3 | 7.8 | 7.1 | 7.7 | 10.6 | 11.2 | 10.0 | 13.3 | 16.6 | 16.2 | 10.1 | -2 | +60 |
| 12. Old Crow Flats Yukon | 0.1 | 0.1 | 0.0 | 0.1 | 0.2 | 0.2 | 0.4 | 0.4 | 0.3 | 0.4 | 0.2 | +33 | +100 |

Note: There are additional red-throated loons nesting in Alaska - Yukon outside of these strata.
Actual red-throated loons observed are expanded for area only.

Table 6. Alaska-Yukon. Ten year trend in Pacific loon breeding population observations, 1999 - 2008 (estimates in thousands).

| Stratum | 1999 | 2000 | 2001 | 2002 | 2003 | Y E A R 2004 | 2005 | 2006 | 2007 | 2008 | 1998 - 2007 Average | % Change from 2007 | % Change from Avg. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Kenai-Susitna | 0.4 | 0.4 | 0.6 | 0.4 | 0.3 | 0.3 | 0.6 | 0.2 | 0.4 | 0.3 | 0.4 | -25 | -25 |
| 2. Nelchina | 0.1 | 0.4 | 0.1 | 0.7 | 0.1 | 0.1 | 0.0 | 0.1 | 0.0 | 0.6 | 0.2 | - | +200 |
| 3. Tanana-Kusko. | 0.7 | 0.7 | 1.0 | 0.6 | 1.1 | 0.7 | 0.6 | 0.8 | 0.7 | 1.3 | 0.8 | +86 | +62 |
| 4. Yukon Flats | 2.8 | 3.8 | 2.7 | 3.5 | 4.9 | 4.2 | 4.0 | 2.8 | 4.0 | 4.3 | 3.4 | +8 | +26 |
| 5. Innoko | 0.5 | 0.5 | 0.6 | 0.2 | 0.6 | 0.5 | 0.3 | 0.2 | 0.5 | 0.3 | 0.4 | -40 | -25 |
| 6. Koyukuk | 0.3 | 0.3 | 1.0 | 1.0 | 0.8 | 0.9 | 0.3 | 0.1 | 0.8 | 0.5 | 0.6 | -38 | -17 |
| 7. Copper Delta | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | - | - |
| Subtotal - Interior | 4.8 | 6.1 | 6.0 | 6.4 | 7.8 | 6.7 | 5.8 | 4.2 | 6.4 | 7.3 | 5.7 | +14 | +28 |
| 8. Bristol Bay | 4.1 | 2.2 | 1.4 | 4.2 | 1.1 | 2.9 | 0.3 | 2.3 | 0.6 | 1.7 | 2.5 | +183 | -32 |
| 9. Yukon Delta | 24.8 | 41.1 | 33.9 | 45.1 | 40.2 | 39.1 | 29.7 | 36.6 | 52.0 | 44.3 | 38.1 | -15 | +16 |
| 10. Seward Pen. | 2.5 | 6.3 | 2.5 | 5.2 | 1.4 | 2.6 | 4.3 | 1.9 | 2.5 | 1.9 | 3.2 | -24 | -41 |
| 11. Kotzebue So. | 0.8 | 4.7 | 2.2 | 2.9 | 3.0 | 2.0 | 3.1 | 2.5 | 4.9 | 5.3 | 2.8 | +8 | +89 |
| Subtotal - Tundra | 32.2 | 54.3 | 40.0 | 57.4 | 45.7 | 46.6 | 37.4 | 43.3 | 60.0 | 53.2 | 46.5 | -11 | +14 |
| TOTAL - ALASKA | 37.0 | 60.4 | 46.0 | 63.8 | 53.5 | 53.3 | 43.2 | 47.5 | 66.4 | 60.5 | 52.3 | -9 | +16 |
| 12. Old Crow Flats Yukon | 2.6 | 1.7 | 3.3 | 3.9 | 3.0 | 3.4 | 3.6 | 2.8 | 2.1 | 3.0 | 2.8 | +43 | +7 |

Note: There are additional Pacific loons nesting in Alaska - Yukon outside of these strata.
Actual Pacific loons observed are expanded for area only.

Table 7. Alaska-Yukon. Ten year trend in common loon breeding population observations, 1999 - 2008 (estimates in thousands).

| Stratum | Y E A R 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 1998 - 2007 Average | % Change from 2007 | % Change from Avg. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Kenai-Susitna | 1.6 | 2.0 | 2.6 | 1.9 | 1.7 | 1.6 | 2.0 | 1.8 | 1.3 | 1.6 | 1.8 | +23 | -11 |
| 2. Nelchina | 0.4 | 0.1 | 0.5 | 0.1 | 0.3 | 0.5 | 0.0 | 0.5 | 0.2 | 0.1 | 0.3 | -50 | -67 |
| 3. Tanana-Kusko. | 2.1 | 2.5 | 0.4 | 2.0 | 2.4 | 1.3 | 1.2 | 0.9 | 0.4 | 1.8 | 1.4 | +350 | +29 |
| 4. Yukon Flats | 1.4 | 0.9 | 0.3 | 1.8 | 3.1 | 1.9 | 1.1 | 2.3 | 1.4 | 1.1 | 1.5 | -21 | -27 |
| 5. Innoko | 0.4 | 0.2 | 0.2 | 0.2 | 0.5 | 0.0 | 0.5 | 0.2 | 0.3 | 0.6 | 0.3 | +100 | +100 |
| 6. Koyukuk | 0.6 | 0.5 | 1.2 | 0.8 | 0.8 | 1.3 | 0.6 | 0.2 | 0.3 | 0.3 | 0.7 | +0 | -57 |
| 7. Copper Delta | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | - | - |
| Subtotal - Interior | 6.5 | 6.2 | 5.2 | 6.8 | 8.8 | 6.6 | 5.4 | 5.9 | 3.9 | 5.5 | 5.9 | +41 | -7 |
| 8. Bristol Bay | 0.8 | 0.8 | 0.1 | 1.2 | 1.4 | 1.5 | 1.1 | 1.1 | 2.6 | 1.2 | 1.1 | -54 | +9 |
| 9. Yukon Delta | 2.1 | 2.4 | 1.6 | 2.6 | 2.3 | 2.9 | 3.3 | 4.1 | 2.3 | 2.6 | 2.7 | +13 | -4 |
| 10. Seward Pen. | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | - | - |
| 11. Kotzebue So. | 0.4 | 0.3 | 0.1 | 0.1 | 0.2 | 0.2 | 0.6 | 0.2 | 0.0 | 0.0 | 0.2 | - | -100 |
| Subtotal - Tundra | 3.4 | 3.5 | 1.8 | 3.9 | 3.9 | 4.7 | 5.1 | 5.4 | 4.9 | 3.8 | 4.1 | -22 | -7 |
| TOTAL - ALASKA | 9.9 | 9.7 | 7.0 | 10.7 | 12.7 | 11.3 | 10.5 | 11.3 | 8.8 | 9.3 | 10.0 | +6 | -7 |
| 12. Old Crow Flats Yukon | 0.0 | 0.1 | 0.3 | 0.2 | 0.5 | 0.1 | 0.2 | 0.3 | 0.2 | 0.2 | 0.2 | +0 | +0 |

Note: There are additional common loons nesting in Alaska - Yukon outside of these strata.
Actual common loons observed are expanded for area only.

Table 8. Alaska-Yukon. Stratum data sheet, 2008 , strata 1 through 12.

| | Stratum | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Survey Design | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | Total |
| Square miles in stratum | 2200 | 3900 | 9300 | 10800 | 3400 | 4100 | 400 | 9900 | 26600 | 3850 | 5350 | 1970 | 81,770 |
| Square miles in sample | 40 | 52 | 132 | 80 | 44 | 80 | 20 | 92 | 260 | 28 | 48 | 36 | 912 |
| Linear miles in sample | 160 | 208 | 528 | 320 | 176 | 320 | 80 | 368 | 1040 | 112 | 192 | 144 | 3,648 |
| No. of transects in sample | 6 | 10 | 18 | 12 | 7 | 10 | 7 | 11 | 8 | 4 | 7 | 3 | 103 |
| No. of segments in sample | 10 | 13 | 33 | 20 | 11 | 20 | 10 | 23 | 65 | 7 | 12 | 8 | 232 |
| Expansion factor | 55.000 | 75.000 | 70.455 | 135.000 | 77.273 | 51.250 | 20.000 | 107.609 | 102.308 | 137.500 | 111.458 | 54.722 | - |

| | Stratum | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Current Year Design | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | Total |
| Square miles in sample | 40 | 52 | 132 | 78 | 44 | 80 | 20 | 92 | 258 | 28 | 48 | 36 | 908 |
| Linear miles in sample | 160 | 208 | 528 | 312 | 176 | 320 | 80 | 368 | 1032 | 112 | 192 | 144 | 3,632 |
| No. of transects in sample | 6 | 10 | 18 | 12 | 7 | 10 | 7 | 11 | 8 | 4 | 7 | 3 | 103 |
| No. of segments in sample | 10 | 13 | 33 | 20 | 11 | 20 | 10 | 23 | 65 | 7 | 12 | 8 | 231 |
| Expansion factor | 55.000 | 75.000 | 70.455 | 138.462 | 77.273 | 51.250 | 20.000 | 107.609 | 103.101 | 137.500 | 111.458 | 54.722 | - |

Note: Stratum 7 has 8 mile segments; stratum 12 has 18 mile segments.

TABLE 9.

WATERFOWL BREEDING POPULATION SURVEY STRATUM: 1 KENAI-SUSITNA

DATES: 5 / 17 / 2008 THRU 5 / 17 / 2008

| SPECIES | DRAKES | PAIRS | GROUPED BIRDS | INDICATED TOTAL BIRDS (T) | VISIBILITY RATIO (V) | POPULATION INDEX (P) | |
|---|---|---|---|---|---|---|---|
| MALLARD | 11 | 7 | 5 | 41 | 3.57 | 8050 | 8.1 |
| BLACK DUCK | | | | | 1.57 | | |
| GADWALL | | | | | 3.04 | | |
| AMERICAN WIGEON | 8 | 13 | | 42 | 3.65 | 8432 | 8.4 |
| GREEN-WINGED TEAL | 2 | 3 | | 10 | 8.88 | 4884 | 4.9 |
| BLUE-WINGED TEAL | | | | | 10.31 | | |
| SHOVELER | 1 | 3 | | 8 | 3.35 | 1474 | 1.5 |
| PINTAIL | 9 | 7 | | 32 | 2.51 | 4418 | 4.4 |
| REDHEAD a | | | | | 3.11 | | |
| CANVASBACK | | | | | 2.43 | | |
| SCAUP a | 5 | 1 | 30 | 37 | 1.82 | 3704 | 3.7 |
| RING-NECKED DUCK a | | 3 | | 6 | 4.02 | 1327 | 1.3 |
| GOLDENEYE | 8 | 3 | 6 | 28 | 3.61 | 5559 | 5.6 |
| BUFFLEHEAD | 4 | 6 | | 20 | 1.86 | 2046 | 2.0 |
| LONG-TAILED DUCK | | | | | 1.99 | | |
| EIDER | | | | | 3.58 | | |
| SCOTER | 7 | 6 | 40 | 66 | 1.08 | 3920 | 3.9 |
| RUDDY DUCK | | | | | 5.94 | | |
| MERGANSER | 3 | 2 | | 10 | 1.27 | 699 | 0.7 |
| SUB - TOTAL | 58 | 54 | 81 | 300 | | 44512 | 44.5 |
| | | | | | | | |
| CANADA GOOSE | | | 30 | 30 | 1.00 | 1650 | 1.6 |
| SWAN | 6 | 2 | | 10 | 1.00 | 550 | 0.6 |
| CRANE | | 1 | | 2 | 1.00 | 110 | 0.1 |

| COMPUTATION OF THE POPULATION INDEX |
|---|
| P = POPULATION INDEX |
| A = SQUARE MILES IN THE STRATUM |
| T = INDICATED TOTAL BIRDS |
| S = SQUARE MILES IN THE SAMPLE |
| V = VISIBILITY RATIO |
| P = A * (T/S) * V |

| | |
|---|---|
| NUMBER OF OBSERVED PONDS (x2) | 0 |
| POND INDEX | 0 |
| SQUARE MILES IN THE STRATUM (A) | 2200 |
| SQUARE MILES IN THE SAMPLE (S) | 40 |
| NUMBER OF SEGMENTS | 10 |
| EXPANSION FACTOR | 55.000 |

a Drakes not doubled in arriving at indicated total birds (T).

TABLE 10.

WATERFOWL BREEDING POPULATION SURVEY STRATUM: 2 NELCHINA

DATES: 6 / 6 / 2008 THRU 6 / 6 / 2008

| SPECIES | DRAKES | PAIRS | GROUPED BIRDS | INDICATED TOTAL BIRDS (T) | VISIBILITY RATIO (V) | POPULATION INDEX (P) | |
|---|---|---|---|---|---|---|---|
| MALLARD | 20 | 8 | | 56 | 3.57 | 14994 | 15.0 |
| BLACK DUCK | | | | | 1.57 | | |
| GADWALL | | | | | 3.04 | | |
| AMERICAN WIGEON | 25 | 14 | | 78 | 3.65 | 21353 | 21.4 |
| GREEN-WINGED TEAL | 11 | 6 | | 34 | 8.88 | 22644 | 22.6 |
| BLUE-WINGED TEAL | | | | | 10.31 | | |
| SHOVELER | 6 | 4 | | 20 | 3.35 | 5025 | 5.0 |
| PINTAIL | 15 | 8 | 15 | 61 | 2.51 | 11483 | 11.5 |
| REDHEAD a | | | | | 3.11 | | |
| CANVASBACK | | 1 | | 2 | 2.43 | 365 | 0.4 |
| SCAUP a | 64 | 105 | 6 | 280 | 1.82 | 38220 | 38.2 |
| RING-NECKED DUCK a | 3 | 3 | | 9 | 4.02 | 2714 | 2.7 |
| GOLDENEYE | 2 | | | 4 | 3.61 | 1083 | 1.1 |
| BUFFLEHEAD | 20 | 17 | | 74 | 1.86 | 10323 | 10.3 |
| LONG-TAILED DUCK | 3 | 1 | | 8 | 1.99 | 1194 | 1.2 |
| EIDER | | | | | 3.58 | | |
| SCOTER | 17 | 34 | 8 | 110 | 1.08 | 8910 | 8.9 |
| RUDDY DUCK | | | | | 5.94 | | |
| MERGANSER | 4 | | | 8 | 1.27 | 762 | 0.8 |
| SUB - TOTAL | 190 | 201 | 29 | 744 | | 139069 | 139.1 |
| | | | | | | | |
| CANADA GOOSE | | | | | 1.00 | | |
| SWAN | 11 | 17 | 3 | 48 | 1.00 | 3600 | 3.6 |
| CRANE | | | | | 1.00 | | |

COMPUTATION OF THE POPULATION INDEX

P = POPULATION INDEX

A = SQUARE MILES IN THE STRATUM

T = INDICATED TOTAL BIRDS

S = SQUARE MILES IN THE SAMPLE

V = VISIBILITY RATIO

P = A * (T/S) * V

| | |
|---|---|
| NUMBER OF OBSERVED PONDS (x2) | 0 |
| POND INDEX | 0 |
| SQUARE MILES IN THE STRATUM (A) | 3900 |
| SQUARE MILES IN THE SAMPLE (S) | 52 |
| NUMBER OF SEGMENTS | 13 |
| EXPANSION FACTOR | 75.000 |

a Drakes not doubled in arriving at indicated total birds (T).

TABLE 11.

WATERFOWL BREEDING POPULATION SURVEY STRATUM: 3 TANANA-KUSKOKWIM

DATES: 5 / 20 / 2008 THRU 5 / 26 / 2008

| SPECIES | DRAKES | PAIRS | GROUPED BIRDS | INDICATED TOTAL BIRDS (T) | VISIBILITY RATIO (V) | POPULATION INDEX (P) | |
|---|---|---|---|---|---|---|---|
| MALLARD | 78 | 52 | | 260 | 3.57 | 65396 | 65.4 |
| BLACK DUCK | | | | | 1.57 | | |
| GADWALL | | | | | 3.04 | | |
| AMERICAN WIGEON | 65 | 126 | | 382 | 3.65 | 98235 | 98.2 |
| GREEN-WINGED TEAL | 34 | 26 | | 120 | 8.88 | 75076 | 75.1 |
| BLUE-WINGED TEAL | | | | | 10.31 | | |
| SHOVELER | 28 | 42 | | 140 | 3.35 | 33043 | 33.0 |
| PINTAIL | 96 | 51 | 30 | 324 | 2.51 | 57296 | 57.3 |
| REDHEAD a | | | | | 3.11 | | |
| CANVASBACK | 11 | 17 | 88 | 144 | 2.43 | 24653 | 24.7 |
| SCAUP a | 119 | 222 | 212 | 775 | 1.82 | 99376 | 99.4 |
| RING-NECKED DUCK a | 13 | 19 | | 51 | 4.02 | 14445 | 14.4 |
| GOLDENEYE | 10 | 20 | | 60 | 3.61 | 15260 | 15.3 |
| BUFFLEHEAD | 38 | 30 | | 136 | 1.86 | 17822 | 17.8 |
| LONG-TAILED DUCK | | 2 | | 4 | 1.99 | 561 | 0.6 |
| EIDER | | | | | 3.58 | | |
| SCOTER | 21 | 59 | 30 | 190 | 1.08 | 14457 | 14.5 |
| RUDDY DUCK | | | | | 5.94 | | |
| MERGANSER | 6 | 8 | | 28 | 1.27 | 2505 | 2.5 |
| SUB - TOTAL | 519 | 674 | 360 | 2614 | | 518127 | 518.2 |
| | | | | | | | |
| CANADA GOOSE | 1 | 2 | | 6 | 1.00 | 423 | 0.4 |
| SWAN | 20 | 35 | 32 | 122 | 1.00 | 8595 | 8.6 |
| CRANE | 9 | 1 | 4 | 15 | 1.00 | 1057 | 1.1 |

COMPUTATION OF THE POPULATION INDEX

P = POPULATION INDEX

A = SQUARE MILES IN THE STRATUM

T = INDICATED TOTAL BIRDS

S = SQUARE MILES IN THE SAMPLE

V = VISIBILITY RATIO

P = A * (T/S) * V

| | |
|---|---|
| NUMBER OF OBSERVED PONDS (x2) | 0 |
| POND INDEX | 0 |
| SQUARE MILES IN THE STRATUM (A) | 9300 |
| SQUARE MILES IN THE SAMPLE (S) | 132 |
| NUMBER OF SEGMENTS | 33 |
| EXPANSION FACTOR | 70.455 |

a Drakes not doubled in arriving at indicated total birds (T).

TABLE 12.

WATERFOWL BREEDING POPULATION SURVEY STRATUM: 4 YUKON FLATS

DATES: 5 / 22 / 2008 THRU 5 / 22 / 2008

| SPECIES | DRAKES | PAIRS | GROUPED BIRDS | INDICATED TOTAL BIRDS (T) | VISIBILITY RATIO (V) | POPULATION INDEX (P) | |
|---|---|---|---|---|---|---|---|
| MALLARD | 73 | 47 | 8 | 248 | 3.57 | 122588 | 122.6 |
| BLACK DUCK | | | | | 1.57 | | |
| GADWALL | | | | | 3.04 | | |
| AMERICAN WIGEON | 89 | 211 | 33 | 633 | 3.65 | 319908 | 319.9 |
| GREEN-WINGED TEAL | 13 | 26 | | 78 | 8.88 | 95904 | 95.9 |
| BLUE-WINGED TEAL | | | | | 10.31 | | |
| SHOVELER | 41 | 88 | | 258 | 3.35 | 119672 | 119.7 |
| PINTAIL | 83 | 98 | 76 | 438 | 2.51 | 152222 | 152.2 |
| REDHEAD a | 1 | 1 | | 3 | 3.11 | 1292 | 1.3 |
| CANVASBACK | 23 | 27 | 20 | 120 | 2.43 | 40375 | 40.4 |
| SCAUP a | 86 | 275 | 202 | 838 | 1.82 | 211176 | 211.2 |
| RING-NECKED DUCK a | 1 | 10 | 5 | 26 | 4.02 | 14472 | 14.5 |
| GOLDENEYE | 8 | 10 | | 36 | 3.61 | 17994 | 18.0 |
| BUFFLEHEAD | 15 | 17 | | 64 | 1.86 | 16482 | 16.5 |
| LONG-TAILED DUCK | | | 15 | 15 | 1.99 | 4133 | 4.1 |
| EIDER | | | | | 3.58 | | |
| SCOTER | 7 | 34 | 61 | 143 | 1.08 | 21384 | 21.4 |
| RUDDY DUCK | | | | | 5.94 | | |
| MERGANSER | 1 | 4 | | 10 | 1.27 | 1758 | 1.8 |
| SUB - TOTAL | 441 | 848 | 420 | 2910 | | 1139363 | 1139.5 |
| | | | | | | | |
| CANADA GOOSE | 4 | 11 | 22 | 52 | 1.00 | 7200 | 7.2 |
| SWAN | 3 | 3 | 3 | 12 | 1.00 | 1662 | 1.7 |
| CRANE | 6 | 2 | | 10 | 1.00 | 1385 | 1.4 |

| COMPUTATION OF THE POPULATION INDEX |
|---|
| P = POPULATION INDEX |
| A = SQUARE MILES IN THE STRATUM |
| T = INDICATED TOTAL BIRDS |
| S = SQUARE MILES IN THE SAMPLE |
| V = VISIBILITY RATIO |
| P = A * (T/S) * V |

| | |
|---|---|
| NUMBER OF OBSERVED PONDS (x2) | 0 |
| POND INDEX | 0 |
| SQUARE MILES IN THE STRATUM (A) | 10800 |
| SQUARE MILES IN THE SAMPLE (S) | 78 |
| NUMBER OF SEGMENTS | 20 |
| EXPANSION FACTOR | 138.462 |

a Drakes not doubled in arriving at indicated total birds (T).

TABLE 13.

WATERFOWL BREEDING POPULATION SURVEY STRATUM: 5 INNOKO

DATES: 5 / 26 / 2008 THRU 5 / 26 / 2008

| SPECIES | DRAKES | PAIRS | GROUPED BIRDS | INDICATED TOTAL BIRDS (T) | VISIBILITY RATIO (V) | POPULATION INDEX (P) | |
|---|---|---|---|---|---|---|---|
| MALLARD | 27 | 8 | | 70 | 3.57 | 19310 | 19.3 |
| BLACK DUCK | | | | | 1.57 | | |
| GADWALL | | | | | 3.04 | | |
| AMERICAN WIGEON | 18 | 28 | | 92 | 3.65 | 25948 | 25.9 |
| GREEN-WINGED TEAL | 24 | 12 | | 72 | 8.88 | 49405 | 49.4 |
| BLUE-WINGED TEAL | | | | | 10.31 | | |
| SHOVELER | 22 | 16 | | 76 | 3.35 | 19674 | 19.7 |
| PINTAIL | 97 | 26 | 5 | 251 | 2.51 | 48683 | 48.7 |
| REDHEAD a | | | | | 3.11 | | |
| CANVASBACK | 1 | 1 | | 4 | 2.43 | 751 | 0.8 |
| SCAUP a | 25 | 33 | 5 | 96 | 1.82 | 13501 | 13.5 |
| RING-NECKED DUCK a | | 4 | | 8 | 4.02 | 2485 | 2.5 |
| GOLDENEYE | | 4 | | 8 | 3.61 | 2232 | 2.2 |
| BUFFLEHEAD | 1 | 2 | | 6 | 1.86 | 862 | 0.9 |
| LONG-TAILED DUCK | 1 | | | 2 | 1.99 | 308 | 0.3 |
| EIDER | | | | | 3.58 | | |
| SCOTER | 7 | 8 | 4 | 34 | 1.08 | 2837 | 2.8 |
| RUDDY DUCK | | | | | 5.94 | | |
| MERGANSER | 6 | 6 | | 24 | 1.27 | 2355 | 2.4 |
| SUB - TOTAL | 229 | 148 | 14 | 743 | | 188352 | 188.4 |
| | | | | | | | |
| CANADA GOOSE | 4 | 7 | | 22 | 1.00 | 1700 | 1.7 |
| SWAN | 1 | 6 | 18 | 31 | 1.00 | 2395 | 2.4 |
| CRANE | 6 | 4 | | 14 | 1.00 | 1082 | 1.1 |

COMPUTATION OF THE POPULATION INDEX

P = POPULATION INDEX

A = SQUARE MILES IN THE STRATUM

T = INDICATED TOTAL BIRDS

S = SQUARE MILES IN THE SAMPLE

V = VISIBILITY RATIO

P = A * (T/S) * V

| | |
|---|---|
| NUMBER OF OBSERVED PONDS (x2) | 0 |
| POND INDEX | 0 |
| SQUARE MILES IN THE STRATUM (A) | 3400 |
| SQUARE MILES IN THE SAMPLE (S) | 44 |
| NUMBER OF SEGMENTS | 11 |
| EXPANSION FACTOR | 77.273 |

a Drakes not doubled in arriving at indicated total birds (T).

TABLE 14.

WATERFOWL BREEDING POPULATION SURVEY STRATUM: 6 KOYUKUK

DATES: 5 / 23 / 2008 THRU 5 / 23 / 2008

| SPECIES | DRAKES | PAIRS | GROUPED BIRDS | INDICATED TOTAL BIRDS (T) | VISIBILITY RATIO (V) | POPULATION INDEX (P) | |
|---|---|---|---|---|---|---|---|
| MALLARD | 29 | 10 | | 78 | 3.57 | 14271 | 14.3 |
| BLACK DUCK | | | | | 1.57 | | |
| GADWALL | | | | | 3.04 | | |
| AMERICAN WIGEON | 38 | 32 | 30 | 170 | 3.65 | 31801 | 31.8 |
| GREEN-WINGED TEAL | 4 | 8 | | 24 | 8.88 | 10922 | 10.9 |
| BLUE-WINGED TEAL | | | | | 10.31 | | |
| SHOVELER | 10 | 22 | | 64 | 3.35 | 10988 | 11.0 |
| PINTAIL | 68 | 28 | 31 | 223 | 2.51 | 28686 | 28.7 |
| REDHEAD a | | | | | 3.11 | | |
| CANVASBACK | 1 | | | 2 | 2.43 | 249 | 0.2 |
| SCAUP a | 21 | 65 | 19 | 170 | 1.82 | 15857 | 15.9 |
| RING-NECKED DUCK a | 7 | 3 | | 13 | 4.02 | 2678 | 2.7 |
| GOLDENEYE | 1 | 3 | | 8 | 3.61 | 1480 | 1.5 |
| BUFFLEHEAD | 8 | 9 | | 34 | 1.86 | 3241 | 3.2 |
| LONG-TAILED DUCK | | 1 | | 2 | 1.99 | 204 | 0.2 |
| EIDER | | | | | 3.58 | | |
| SCOTER | 4 | 19 | | 46 | 1.08 | 2546 | 2.5 |
| RUDDY DUCK | | | | | 5.94 | | |
| MERGANSER | 5 | 3 | | 16 | 1.27 | 1041 | 1.0 |
| SUB - TOTAL | 196 | 203 | 80 | 850 | | 123965 | 123.9 |
| | | | | | | | |
| CANADA GOOSE | 1 | 3 | | 8 | 1.00 | 410 | 0.4 |
| SWAN | 7 | 9 | | 25 | 1.00 | 1281 | 1.3 |
| CRANE | 10 | 5 | 4 | 24 | 1.00 | 1230 | 1.2 |

COMPUTATION OF THE POPULATION INDEX

P = POPULATION INDEX

A = SQUARE MILES IN THE STRATUM

T = INDICATED TOTAL BIRDS

S = SQUARE MILES IN THE SAMPLE

V = VISIBILITY RATIO

P = A * (T/S) * V

| | |
|---|---|
| NUMBER OF OBSERVED PONDS (x2) | 0 |
| POND INDEX | 0 |
| SQUARE MILES IN THE STRATUM (A) | 4100 |
| SQUARE MILES IN THE SAMPLE (S) | 80 |
| NUMBER OF SEGMENTS | 20 |
| EXPANSION FACTOR | 51.250 |

a Drakes not doubled in arriving at indicated total birds (T).

TABLE 15.

WATERFOWL BREEDING POPULATION SURVEY STRATUM: 7 COPPER DELTA

DATES: 5 / 16 / 2008 THRU 5 / 16 / 2008

| SPECIES | DRAKES | PAIRS | GROUPED BIRDS | INDICATED TOTAL BIRDS (T) | VISIBILITY RATIO (V) | POPULATION INDEX (P) | |
|---|---|---|---|---|---|---|---|
| MALLARD | 46 | 16 | | 124 | 3.57 | 8854 | 8.9 |
| BLACK DUCK | | | | | 1.57 | | |
| GADWALL | | | | | 3.04 | | |
| AMERICAN WIGEON | 5 | 18 | 10 | 56 | 3.65 | 4088 | 4.1 |
| GREEN-WINGED TEAL | 3 | 2 | | 10 | 8.88 | 1776 | 1.8 |
| BLUE-WINGED TEAL | | | | | 10.31 | | |
| SHOVELER | 8 | 7 | | 30 | 3.35 | 2010 | 2.0 |
| PINTAIL | 14 | 10 | 112 | 160 | 2.51 | 8032 | 8.0 |
| REDHEAD a | | 1 | | 2 | 3.11 | 124 | 0.1 |
| CANVASBACK | 1 | | | 2 | 2.43 | 97 | 0.1 |
| SCAUP a | 6 | 16 | | 38 | 1.82 | 1383 | 1.4 |
| RING-NECKED DUCK a | | 7 | | 14 | 4.02 | 1126 | 1.1 |
| GOLDENEYE | 1 | 1 | | 4 | 3.61 | 289 | 0.3 |
| BUFFLEHEAD | 1 | 1 | | 4 | 1.86 | 149 | 0.1 |
| LONG-TAILED DUCK | | 3 | | 6 | 1.99 | 239 | 0.2 |
| EIDER | | | | | 3.58 | | |
| SCOTER | 1 | 1 | | 4 | 1.08 | 86 | 0.1 |
| RUDDY DUCK | | | | | 5.94 | | |
| MERGANSER | 1 | 3 | 14 | 22 | 1.27 | 559 | 0.6 |
| SUB - TOTAL | 87 | 86 | 136 | 476 | | 28812 | 28.8 |
| | | | | | | | |
| CANADA GOOSE | 40 | 37 | 113 | 267 | 1.00 | 5340 | 5.3 |
| SWAN | 7 | 22 | 12 | 63 | 1.00 | 1260 | 1.3 |
| CRANE | | | | | 1.00 | | |

COMPUTATION OF THE POPULATION INDEX

P = POPULATION INDEX

A = SQUARE MILES IN THE STRATUM

T = INDICATED TOTAL BIRDS

S = SQUARE MILES IN THE SAMPLE

V = VISIBILITY RATIO

P = A * (T/S) * V

| | |
|---|---|
| NUMBER OF OBSERVED PONDS (x2) | 0 |
| POND INDEX | 0 |
| SQUARE MILES IN THE STRATUM (A) | 400 |
| SQUARE MILES IN THE SAMPLE (S) | 20 |
| NUMBER OF SEGMENTS | 10 |
| EXPANSION FACTOR | 20.000 |

a Drakes not doubled in arriving at indicated total birds (T).

TABLE 16.

WATERFOWL BREEDING POPULATION SURVEY STRATUM: 8 BRISTOL BAY

DATES: 5 / 26 / 2008 THRU 5 / 28 / 2008

| SPECIES | DRAKES | PAIRS | GROUPED BIRDS | INDICATED TOTAL BIRDS (T) | VISIBILITY RATIO (V) | POPULATION INDEX (P) | |
|---|---|---|---|---|---|---|---|
| MALLARD | 62 | 14 | | 152 | 4.01 | 65590 | 65.6 |
| BLACK DUCK | | | | | 1.56 | | |
| GADWALL | 3 | 3 | | 12 | 3.04 | 3926 | 3.9 |
| AMERICAN WIGEON | 23 | 38 | | 122 | 3.84 | 50413 | 50.4 |
| GREEN-WINGED TEAL | 13 | 13 | | 52 | 8.36 | 46780 | 46.8 |
| BLUE-WINGED TEAL | | | | | 10.31 | | |
| SHOVELER | 15 | 24 | | 78 | 3.79 | 31811 | 31.8 |
| PINTAIL | 99 | 40 | | 278 | 3.05 | 91241 | 91.2 |
| REDHEAD a | | | | | 3.11 | | |
| CANVASBACK | | | | | 2.43 | | |
| SCAUP a | 67 | 131 | 118 | 447 | 1.93 | 92835 | 92.8 |
| RING-NECKED DUCK a | | | | | 4.02 | | |
| GOLDENEYE | 1 | 4 | | 10 | 3.61 | 3885 | 3.9 |
| BUFFLEHEAD | 3 | 3 | | 12 | 1.86 | 2402 | 2.4 |
| LONG-TAILED DUCK | 5 | 1 | | 12 | 1.87 | 2415 | 2.4 |
| EIDER | | | | | 3.58 | | |
| SCOTER | 56 | 144 | 227 | 627 | 1.17 | 78941 | 78.9 |
| RUDDY DUCK | | | | | 5.94 | | |
| MERGANSER | 2 | 12 | 11 | 39 | 1.27 | 5330 | 5.3 |
| SUB - TOTAL | 349 | 427 | 356 | 1841 | | 475567 | 475.4 |
| | | | | | | | |
| CANADA GOOSE | 5 | 5 | 26 | 46 | 1.00 | 4950 | 4.9 |
| SWAN | 22 | 32 | 33 | 119 | 1.00 | 12805 | 12.8 |
| CRANE | 23 | 15 | 19 | 72 | 1.00 | 7748 | 7.7 |

COMPUTATION OF THE POPULATION INDEX

P = POPULATION INDEX

A = SQUARE MILES IN THE STRATUM

T = INDICATED TOTAL BIRDS

S = SQUARE MILES IN THE SAMPLE

V = VISIBILITY RATIO

P = A * (T/S) * V

| | |
|---|---|
| NUMBER OF OBSERVED PONDS (x2) | 0 |
| POND INDEX | 0 |
| SQUARE MILES IN THE STRATUM (A) | 9900 |
| SQUARE MILES IN THE SAMPLE (S) | 92 |
| NUMBER OF SEGMENTS | 23 |
| EXPANSION FACTOR | 107.609 |

a Drakes not doubled in arriving at indicated total birds (T).

TABLE 17.

WATERFOWL BREEDING POPULATION SURVEY STRATUM: 9 YUKON DELTA

DATES: 5 / 29 / 2008 THRU 6 / 2 / 2008

| SPECIES | DRAKES | PAIRS | GROUPED BIRDS | INDICATED TOTAL BIRDS (T) | VISIBILITY RATIO (V) | POPULATION INDEX (P) | |
|---|---|---|---|---|---|---|---|
| MALLARD | 92 | 54 | 30 | 322 | 4.01 | 133126 | 133.1 |
| BLACK DUCK | | | | | 1.56 | | |
| GADWALL | | | | | 3.04 | | |
| AMERICAN WIGEON | 86 | 106 | 53 | 437 | 3.84 | 173011 | 173.0 |
| GREEN-WINGED TEAL | 95 | 44 | | 278 | 8.36 | 239614 | 239.6 |
| BLUE-WINGED TEAL | | | | | 10.31 | | |
| SHOVELER | 87 | 85 | | 344 | 3.79 | 134419 | 134.4 |
| PINTAIL | 522 | 194 | 173 | 1605 | 3.05 | 504704 | 504.7 |
| REDHEAD a | 1 | | | 1 | 3.11 | 321 | 0.3 |
| CANVASBACK | 2 | 7 | | 18 | 2.43 | 4510 | 4.5 |
| SCAUP a | 257 | 694 | 388 | 2033 | 1.93 | 404535 | 404.5 |
| RING-NECKED DUCK a | 1 | | | 1 | 4.02 | 414 | 0.4 |
| GOLDENEYE | 1 | 1 | | 4 | 3.61 | 1489 | 1.5 |
| BUFFLEHEAD | | 3 | | 6 | 1.86 | 1151 | 1.2 |
| LONG-TAILED DUCK | 58 | 75 | | 266 | 1.87 | 51284 | 51.3 |
| EIDER | 14 | 7 | | 42 | 3.58 | 15502 | 15.5 |
| SCOTER | 99 | 287 | 145 | 917 | 1.17 | 110616 | 110.6 |
| RUDDY DUCK | | | | | 5.94 | | |
| MERGANSER | 14 | 17 | | 62 | 1.27 | 8118 | 8.1 |
| SUB - TOTAL | 1329 | 1574 | 789 | 6336 | | 1782814 | 1782.7 |
| | | | | | | | |
| CANADA GOOSE | 127 | 193 | 341 | 981 | 1.00 | 101142 | 101.1 |
| SWAN | 270 | 221 | 453 | 1165 | 1.00 | 120112 | 120.1 |
| CRANE | 161 | 71 | 26 | 329 | 1.00 | 33920 | 33.9 |

| COMPUTATION OF THE POPULATION INDEX |
|---|
| P = POPULATION INDEX |
| A = SQUARE MILES IN THE STRATUM |
| T = INDICATED TOTAL BIRDS |
| S = SQUARE MILES IN THE SAMPLE |
| V = VISIBILITY RATIO |
| P = A * (T/S) * V |

| | |
|---|---|
| NUMBER OF OBSERVED PONDS (x2) | 0 |
| POND INDEX | 0 |
| SQUARE MILES IN THE STRATUM (A) | 26600 |
| SQUARE MILES IN THE SAMPLE (S) | 258 |
| NUMBER OF SEGMENTS | 65 |
| EXPANSION FACTOR | 103.101 |

a Drakes not doubled in arriving at indicated total birds (T).

TABLE 18.

WATERFOWL BREEDING POPULATION SURVEY STRATUM: 10 SEWARD PENINSULA

DATES: 6 / 2 / 2008 THRU 6 / 2 / 2008

| SPECIES | DRAKES | PAIRS | GROUPED BIRDS | INDICATED TOTAL BIRDS (T) | VISIBILITY RATIO (V) | POPULATION INDEX (P) | |
|---|---|---|---|---|---|---|---|
| MALLARD | 5 | 2 | | 14 | 4.01 | 7719 | 7.7 |
| BLACK DUCK | | | | | 1.56 | | |
| GADWALL | | | | | 3.04 | | |
| AMERICAN WIGEON | 7 | 11 | | 36 | 3.84 | 19008 | 19.0 |
| GREEN-WINGED TEAL | 8 | 7 | | 30 | 8.36 | 34485 | 34.5 |
| BLUE-WINGED TEAL | | | | | 10.31 | | |
| SHOVELER | 15 | 18 | | 66 | 3.79 | 34394 | 34.4 |
| PINTAIL | 156 | 45 | 93 | 495 | 3.05 | 207591 | 207.6 |
| REDHEAD a | | | | | 3.11 | | |
| CANVASBACK | 2 | 1 | | 6 | 2.43 | 2005 | 2.0 |
| SCAUP a | 26 | 50 | 8 | 134 | 1.93 | 35560 | 35.6 |
| RING-NECKED DUCK a | | | | | 4.02 | | |
| GOLDENEYE | | | | | 3.61 | | |
| BUFFLEHEAD | 1 | 2 | | 6 | 1.86 | 1535 | 1.5 |
| LONG-TAILED DUCK | 19 | 21 | 6 | 86 | 1.87 | 22113 | 22.1 |
| EIDER | | 2 | | 4 | 3.58 | 1969 | 2.0 |
| SCOTER | 6 | 46 | 25 | 129 | 1.17 | 20753 | 20.8 |
| RUDDY DUCK | | | | | 5.94 | | |
| MERGANSER | 2 | 3 | | 10 | 1.27 | 1746 | 1.7 |
| SUB - TOTAL | 247 | 208 | 132 | 1016 | | 388878 | 388.9 |
| | | | | | | | |
| CANADA GOOSE | 19 | 10 | 3 | 61 | 1.00 | 8388 | 8.4 |
| SWAN | 26 | 13 | | 52 | 1.00 | 7150 | 7.2 |
| CRANE | 22 | 8 | | 38 | 1.00 | 5225 | 5.2 |

| COMPUTATION OF THE POPULATION INDEX |
|---|
| P = POPULATION INDEX |
| A = SQUARE MILES IN THE STRATUM |
| T = INDICATED TOTAL BIRDS |
| S = SQUARE MILES IN THE SAMPLE |
| V = VISIBILITY RATIO |
| P = A * (T/S) * V |

| | |
|---|---|
| NUMBER OF OBSERVED PONDS (x2) | 0 |
| POND INDEX | 0 |
| SQUARE MILES IN THE STRATUM (A) | 3850 |
| SQUARE MILES IN THE SAMPLE (S) | 28 |
| NUMBER OF SEGMENTS | 7 |
| EXPANSION FACTOR | 137.500 |

a Drakes not doubled in arriving at indicated total birds (T).

TABLE 19.

WATERFOWL BREEDING POPULATION SURVEY STRATUM: 11 KOTZEBUE SOUND

DATES: 6 / 3 / 2008 THRU 6 / 3 / 2008

| SPECIES | DRAKES | PAIRS | GROUPED BIRDS | INDICATED TOTAL BIRDS (T) | VISIBILITY RATIO (V) | POPULATION INDEX (P) | |
|---|---|---|---|---|---|---|---|
| MALLARD | 36 | 15 | | 102 | 4.01 | 45589 | 45.6 |
| BLACK DUCK | | | | | 1.56 | | |
| GADWALL | | | | | 3.04 | | |
| AMERICAN WIGEON | 64 | 51 | 6 | 236 | 3.84 | 101008 | 101.0 |
| GREEN-WINGED TEAL | 16 | 9 | | 50 | 8.36 | 46590 | 46.6 |
| BLUE-WINGED TEAL | | | | | 10.31 | | |
| SHOVELER | 36 | 25 | | 122 | 3.79 | 51536 | 51.5 |
| PINTAIL | 118 | 37 | 10 | 320 | 3.05 | 108783 | 108.8 |
| REDHEAD a | | | | | 3.11 | | |
| CANVASBACK | 4 | 1 | | 10 | 2.43 | 2708 | 2.7 |
| SCAUP a | 51 | 159 | 28 | 397 | 1.93 | 85400 | 85.4 |
| RING-NECKED DUCK a | | 1 | | 2 | 4.02 | 896 | 0.9 |
| GOLDENEYE | | 3 | | 6 | 3.61 | 2414 | 2.4 |
| BUFFLEHEAD | | | | | 1.86 | | |
| LONG-TAILED DUCK | 16 | 10 | | 52 | 1.87 | 10838 | 10.8 |
| EIDER | | | | | 3.58 | | |
| SCOTER | 23 | 45 | 12 | 148 | 1.17 | 19300 | 19.3 |
| RUDDY DUCK | | | | | 5.94 | | |
| MERGANSER | 2 | 3 | | 10 | 1.27 | 1416 | 1.4 |
| SUB - TOTAL | 366 | 359 | 56 | 1455 | | 476479 | 476.4 |
| | | | | | | | |
| CANADA GOOSE | 8 | 15 | 8 | 54 | 1.00 | 6019 | 6.0 |
| SWAN | 32 | 33 | 223 | 321 | 1.00 | 35778 | 35.8 |
| CRANE | 25 | 6 | | 37 | 1.00 | 4124 | 4.1 |

COMPUTATION OF THE POPULATION INDEX

P = POPULATION INDEX

A = SQUARE MILES IN THE STRATUM

T = INDICATED TOTAL BIRDS

S = SQUARE MILES IN THE SAMPLE

V = VISIBILITY RATIO

P = A * (T/S) * V

| | |
|---|---|
| NUMBER OF OBSERVED PONDS (x2) | 0 |
| POND INDEX | 0 |
| SQUARE MILES IN THE STRATUM (A) | 5350 |
| SQUARE MILES IN THE SAMPLE (S) | 48 |
| NUMBER OF SEGMENTS | 12 |
| EXPANSION FACTOR | 111.458 |

a Drakes not doubled in arriving at indicated total birds (T).

TABLE 20.

WATERFOWL BREEDING POPULATION SURVEY STRATUM: 12 OLD CROW FLATS

DATES: 6 / 5 / 2008 THRU 6 / 5 / 2008

| SPECIES | DRAKES | PAIRS | GROUPED BIRDS | INDICATED TOTAL BIRDS (T) | VISIBILITY RATIO (V) | POPULATION INDEX (P) | |
|---|---|---|---|---|---|---|---|
| MALLARD | 41 | 27 | | 136 | 2.74 | 20392 | 20.4 |
| BLACK DUCK | | | | | 1.57 | | |
| GADWALL | | | | | 3.04 | | |
| AMERICAN WIGEON | 40 | 44 | | 168 | 6.21 | 57091 | 57.1 |
| GREEN-WINGED TEAL | 11 | 10 | | 42 | 7.84 | 18019 | 18.0 |
| BLUE-WINGED TEAL | | | | | 10.31 | | |
| SHOVELER | 18 | 23 | | 82 | 3.49 | 15660 | 15.7 |
| PINTAIL | 75 | 32 | 33 | 247 | 2.66 | 35954 | 36.0 |
| REDHEAD a | | 1 | | 2 | 3.11 | 340 | 0.3 |
| CANVASBACK | 11 | 15 | 13 | 65 | 2.59 | 9212 | 9.2 |
| SCAUP a | 80 | 208 | 43 | 539 | 2.29 | 67544 | 67.5 |
| RING-NECKED DUCK a | | | | | 4.02 | | |
| GOLDENEYE | | 1 | | 2 | 3.61 | 395 | 0.4 |
| BUFFLEHEAD | | 1 | | 2 | 2.21 | 242 | 0.2 |
| LONG-TAILED DUCK | 24 | 12 | | 72 | 1.99 | 7841 | 7.8 |
| EIDER | | | | | 3.58 | | |
| SCOTER | 110 | 220 | 150 | 810 | 1.43 | 63385 | 63.4 |
| RUDDY DUCK | | | | | 5.94 | | |
| MERGANSER | 3 | 1 | | 8 | 1.27 | 556 | 0.6 |
| SUB - TOTAL | 413 | 595 | 239 | 2175 | | 296631 | 296.6 |
| | | | | | | | |
| CANADA GOOSE | 7 | 2 | | 18 | 1.00 | 985 | 1.0 |
| SWAN | 10 | 2 | | 14 | 1.00 | 766 | 0.8 |
| CRANE | 1 | | | 1 | 1.00 | 55 | 0.1 |

COMPUTATION OF THE POPULATION INDEX

P = POPULATION INDEX

A = SQUARE MILES IN THE STRATUM

T = INDICATED TOTAL BIRDS

S = SQUARE MILES IN THE SAMPLE

V = VISIBILITY RATIO

P = A * (T/S) * V

| | |
|---|---|
| NUMBER OF OBSERVED PONDS (x2) | 0 |
| POND INDEX | 0 |
| SQUARE MILES IN THE STRATUM (A) | 1970 |
| SQUARE MILES IN THE SAMPLE (S) | 36 |
| NUMBER OF SEGMENTS | 8 |
| EXPANSION FACTOR | 54.722 |

a Drakes not doubled in arriving at indicated total birds (T).


Figure 1. Trends in dabbler ducks from the Alaska-Yukon Waterfowl Breeding Population Survey.

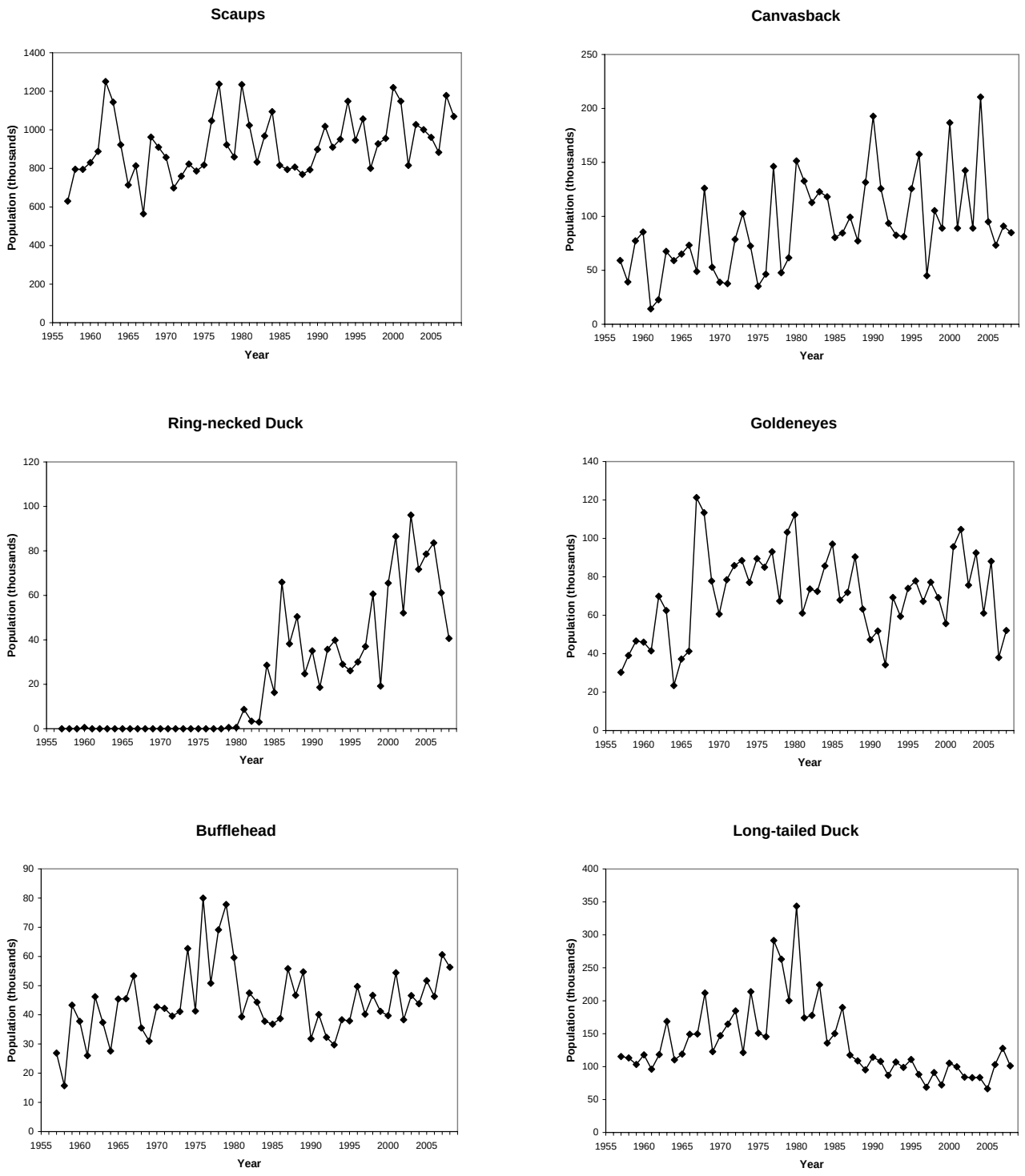


Figure 2. Trends in diver ducks from the Alaska-Yukon Waterfowl Breeding Population Survey.

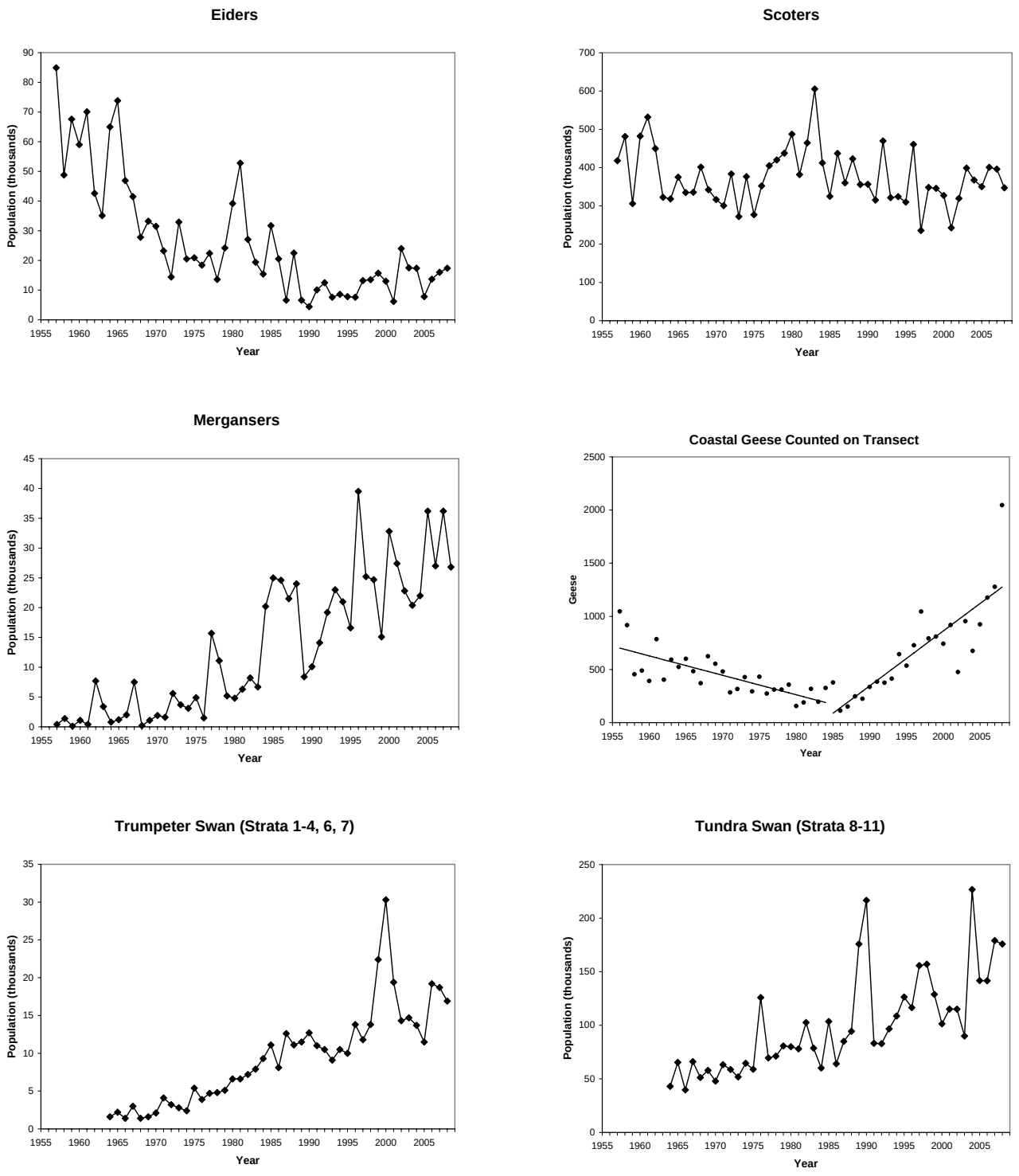


Figure 3. Trends in diver ducks, coastal geese, and swans from the Alaska-Yukon Waterfowl Breeding Population Survey.

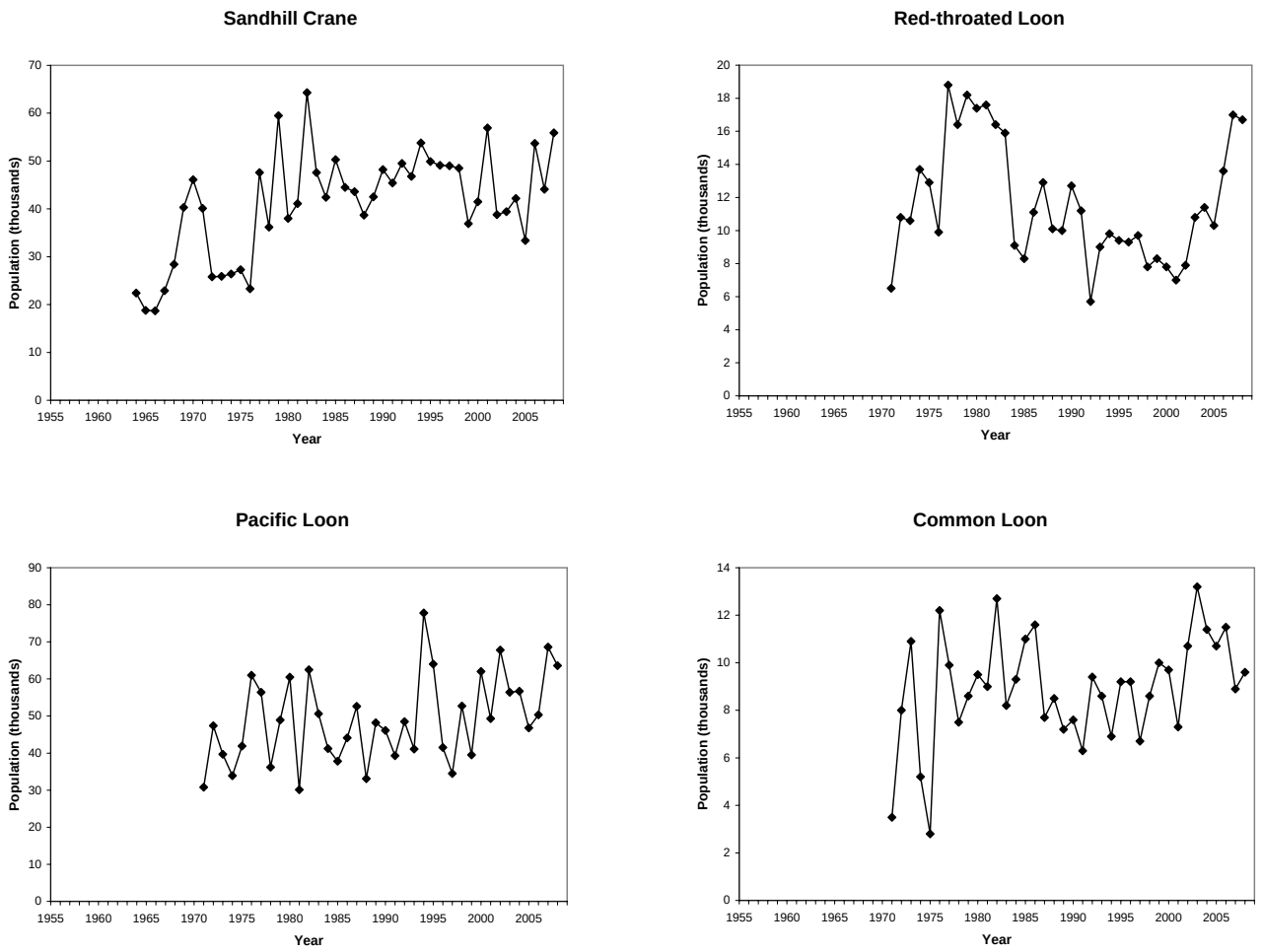


Figure 4. Trends in sandhill cranes and loons from the Alaska-Yukon Waterfowl Breeding Population Survey.