

# **Analysis of aerial survey indices monitoring waterbird populations of the Arctic Coastal Plain, Alaska, 1986-2012.**

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The intent of this report is to reconcile population indices from various aerial surveys on the Arctic Coastal Plain (ACP) of Alaska. Given the importance of the region to waterfowl, the U. S. Fish and Wildlife Service Division of Migratory Bird Management (MBM) has conducted surveys sampling the 60,000 km<sup>2</sup> of tundra wetlands to monitor the distribution, abundance, and trend of bird populations. The original ACP survey (1986-2006) and the North Slope Eider (NSE) survey (1992-2006) were established for different primary purposes. In 2007, we designed the current ACP survey (2007-2012) that merged the previous two, including the larger survey area of the old ACP survey and earlier survey timing of the NSE survey. Graphs overlaying population indices from the three surveys presented an array of results sometimes with conflicting patterns perhaps caused by differences in survey area and timing. In this report we describe an analysis procedure to combine all the available data and then present the population trends for 34 species over long-term (1986-2012, 27 years) and short-term (2003-2012, 10-year) periods.

Annual monitoring of waterfowl populations on the Arctic Coastal Plain (ACP) of Alaska was initiated in 1986 by R.J. King (USFWS, MBM, Fairbanks). Flight procedures and data recording on these low-level aerial transect surveys follow the protocol of the North American Waterfowl Breeding Population and Habitat Survey (USFWS and CWS 1987, Smith 1995). Results have been summarized annually in various unpublished reports (Brackney and King 1993, Mallek et al. 2006). Following the petition to list Spectacled eider as a threatened species in 1992, W.W. Larned (USFWS, MBM, Soldotna) started an aerial survey for eiders. The NSE survey sampled the northern half of the ACP area, was flown earlier in June, and sampled at a greater intensity in comparison to the ACP survey. Procedures and results of this NSE survey have also been reported annually (Larned et al. 2012).

The redesigned ACP survey (2007-2012) made several improvements over both previous sampling designs including changes in timing, stratification, sampling allocation, and area.

**Timing.** The new ACP survey has been flown with an average observation date of 15 June in an average duration of 9 days (range 6-12 days). This was similar to the NSE survey 1993-2006 that averaged 14 June and 8.5 days duration (Fig. 1). The survey crew arrives the first week of June and undertakes reconnaissance and training flights for a few days until warming temperature melts snow from tundra nest sites, clears ice from shallow wetlands and margins of deeper lakes, and allows waterfowl to establish breeding territories. Sampling generally begins on the more southern transects where snow melts earlier, inland from the still ice-covered Beaufort Sea coast. The survey is completed by about 20 June. This early survey timing is prior to departure of most male spectacled and king eiders, prior to the aggregation and movement of other birds following early nest failures, and prior to the arrival of immature non-nesting birds or failed breeding birds

from sites outside the ACP. The old ACP survey 1986-2006 was flown in 3-14 days with an average duration of 7 days. Observations averaged 29 June with a maximum range from 21 June to 14 July (Fig. 1). Due to aircraft scheduling conflicts in 1992, the NSE survey was flown 20-29 June, too late for eider observations, and is considered a "late" survey in this analysis.

**Stratification.** The redesigned ACP survey used four strata: Teshekpuk Lake (TESH), High, Medium, and Low density strata (Fig. 2). The TESH stratum included waterfowl habitat surrounding Teshekpuk Lake including the Bureau of Land Management (BLM) designated Teshekpuk Lake Special Area plus some additional peripheral areas. The High density strata includes the majority of tundra wetlands extending from Icy Cape, Wainwright, Barrow, and eastward to Cape Halkett, plus a non-contiguous coastal section further east including the Colville Delta, Kuparuk, and Prudhoe Bay. The Low density stratum extends from Point Lay on the Chukchi coast along wetlands north of the foothills region to the Arctic National Wildlife Refuge near the Canadian border. The Medium stratum is intermediate in density and is located between the northern High and the southern Low strata. The previous sampling designs had equally spaced transects throughout the area. For previous analyses, we used either 9 (NSE) or 12 (old ACP) strata. These stratification boundaries delineated relatively homogeneous physiographic areas considering features of habitat structure, lake sizes, and river drainages visible on satellite imagery. With the increased number of strata and greater uniformity within strata, the earlier analyses generally had lower estimates of sampling error for eiders and geese than the current design with only four strata, but differences were not large (CVs within  $\pm 25\%$  of previous CVs).

**Sampling allocation.** In the new ACP design, sampling effort was adjusted across the four strata by increasing the distance between systematic transects where the density of birds was lower. One exception was the area near Teshekpuk Lake that was sampled at greater intensity because of increased management interest by BLM rather than because of a higher density of birds. Averaging 2007-2012, the observed sampling fractions (transect area observed per total stratum area) in the four strata were 8.2% for TESH, 4.2% for High, 2.1% for Medium, and 1.3% for Low. The result was greater observation effort where more birds were present, thereby greatly increasing the total number of bird observations relative to previous survey designs. The current survey has averaged 20,900 bird observations per year (2007-2012) versus 7,700 birds for the old ACP survey (2001-2006) and 10,900 for the NSE survey (2001-2006).

**Reduction in area.** Some peripheral habitat areas were eliminated near the southern boundary of the old survey because of very low densities of birds. The new ACP survey area is 57,336 km<sup>2</sup>, 7% less than the original ACP survey area of 61,645 km<sup>2</sup>. The NSE survey area was 30,755 km<sup>2</sup>.

## Methods

Our objective in this report is to use the data from the old ACP, NSE, and new ACP surveys (1986-2012) to provide the most comprehensive index to population size and trend for all species observed. Differences among the surveys made the estimation difficult. We initially attempted to develop a multiple regression model with various coefficients to account for the influences of date, observers, experience, seat, species, and stratum. Because of high sampling error and many highly correlated or confounded variables, we

were not able to find a reasonable regression approach. Instead, we adopted a simpler method that involved developing adjustment ratios between the old ACP survey data and the new earlier-timed NSE survey. This allowed us to convert aerial index densities observed on the late (old ACP) survey to density values as if they had been observed on the new earlier-flown ACP survey.

To accomplish this we first reanalyzed the old ACP and NSE data sets with the four strata (TESH, High, Medium, Low) of the current ACP survey design (Fig. 2). We used ArcGIS analysis tools to split the transect data at the new stratification boundaries based on the geographic location of each sighting and the polygons of transect areas observed (200m width strips) from each observer on each transect. Systematic placement of transects in the original designs still provided a valid systematic sample in a new design provided that areas of different sampling intensity were kept distinct. Due to slight boundary changes between the NSE survey and the current survey, the historic data pooled into the High stratum resulted in small deviations from a strictly systematic sample, but this involved only 1.3% of the total area and therefore we ignored it as trivial. The higher sampling intensity within the TESH stratum was delineated in both the new and old designs. The pooled observation data on transects from the earlier stratification design also provided an adequate unbiased sample within the current survey strata. We calculated the average density for each stratum and year using ratio estimates to allow for the unequal length transect sections (Caughley 1977). We then multiplied the average density by the total area of each stratum and summed the four strata to calculate the total aerial population index.

For each species (Table 1) and group size (Table 2), we calculated an adjustment ratio between the early-flown NSE survey and the late-flown old ACP survey. We used the data from two strata (High and TESH) where both surveys were flown in the same 14 years (1993-2006). The adjustment ratio was the average density in the early-flown survey divided by the average density in the late-flown survey. We assumed this adjustment ratio would apply equally to other strata and years where we did not have data from both surveys. We calculated the early (NSE survey) and late (old ACP survey) density estimates using all bird sightings and transect areas observed in all 14 years. We calculated the estimated variance with each transect section considered as an independent sampling unit rather than grouping by years or former stratum designations. The variance of the adjustment ratio was calculated as the quotient of the two independent variables (Bart et al. 1998). The adjustment ratio measured the averaged relative difference between observed densities due to the combination of factors such as seasonal chronology, survey timing, weather conditions, movement of birds, and observers. This adjustment ratio is not a visibility detection rate. Rather, the adjustment ratio reflected changes in distribution, behavior, group size, and arrival or departure of population components for each species as observed by the early versus the late survey. The adjustment ratio can be larger or smaller than 1.00. Preliminary analyses showed that early:late ratios had only small and inconsistent differences as a function of seat (left-front vs. right-front) or stratum (TESH vs. High), therefore we combined these categories. For several species, group size (singles, pairs, groups of 3-5 birds, medium flocks of 6-30, and larger flocks) showed considerable differences in adjustment ratios between the early and late surveys. Therefore, we calculated separate adjustment ratios for each group size as well as for each combined aerial index measure (number of observations, breeding birds, total birds) (Table

2). Although the distribution of group sizes may also be influenced by year-specific conditions such as nesting success, survey timing, or seasonal chronology, the adjustment factors that we calculated represented the average of such factors over the 14 years from 1993-2006.

We used the adjustment ratio to convert aerial index densities observed on the late survey as if they had been observed on an early survey. The adjustment ratio was applied to the late survey indices in 1986-1992 for all four strata, and in 1993-2006, for the Medium and Low strata (Table 3). The indices from the TESH and High strata in 1993-2006 (NSE survey) and all strata 2007-2012 (new ACP survey) needed no adjustment (Table 3). The late survey density for each year and stratum was multiplied by the adjustment ratio with the variance calculated as the product of the independent variables, the aerial index and the adjustment ratio, each with estimates of variance. If inadequate number of sightings ( $n < 5$ ) were available from either the early or late survey for a specific group size (i.e., the adjustment ratio was not adequately estimated), then the adjustment ratio for the total number of sightings was substituted for the singles or pairs adjustment ratio. If an inadequate number of flocks ( $n < 5$ ) for birds in small flocks, medium flocks, or large flocks was recorded, then we based the adjustment ratio on the total birds observed. Because we calculated separate adjustment ratios for singles, pairs, flocked birds, breeding birds, and total bird indices, the components did not necessarily add to equal the total bird or indicated total bird indices. The adjustment ratios were pooled estimates rather than year-specific, and each ratio had sampling error. Therefore, although singles + 2\*pairs + birds in flocks equals total birds in the unadjusted 2007-2012 data (except for rounding errors), this does not hold for the 1993-2006 or 1986-1992 data. The inequality was particularly noticeable for infrequently observed species such as Steller's eider (STEI), common raven (CORA), and scoters in the 1986-1992 data (see Appendix Tables).

We calculated annual aerial population indices by first determining the density of observations in each of the four strata using adjusted late survey data or unadjusted early survey data, as shown in Table 3. Density multiplied by stratum area gave a population index in each stratum. We summed the population indices in the four strata and their variances to calculate the total population index for each year. For each species, indices were calculated for singles, pairs, flocks, breeding birds, and total birds. Singles were doubled in most waterfowl species (except scaup, snow geese, swans) providing indicated breeding bird and indicated total bird indices. Singles were not doubled for gulls, terns, loons, shorebirds, owls, and ravens.

In years with no observations of a species, we set the population index to 50% of the minimum observed index  $> 0$ . This was necessary to allow calculation of log-linear slopes that were then exponentiated to estimate the average annual growth rate.

For unidentified shorebird species (UNSB, all large-, medium- and small-size shorebirds), we only used observations from the left-front observer in all years. Right-front observers were relatively less experienced and, in a few years, they did not record shorebird observations. For all other species, we pooled both the left-front and right front data to calculate index densities.

In years when piloting was shared between two pilots, all observations of WWL or RJK were classified as left front, the so-called majority seat, even though roughly half of their observations were actually from the right-front seat position.

## Results

Figures 3 and 4 show adjustment ratios for n singles, n pairs, breeding birds, and total birds for all species with the species ordered by decreasing size of the early:late ratio for the number of sightings index. Spectacled eider (SPEI) and King eider (KIEI) had the highest adjustment ratios with early-flown densities much greater than later aerial index densities (Table 4). The return of the male eiders to marine habitat before the later survey was flown caused these high ratios of early:late densities. Because of very low detection rate for cryptic females, essentially no single female eiders are seen, and also, according to standard survey protocol, lone females of eiders and other ducks are not recorded even if seen. The early survey also had greater densities of sightings, 1.3 - 2.2 times the number of observations (nobs), for American green-winged teal (AGWT), red-necked grebe (RNGR), northern shoveler (NSHO), black brant (BLBR), common raven (CORA), jaeger species (JAEG), greater white-fronted geese (WFGO), and common eider (COEI) (Table 4). For these species, a plausible explanation may be that more secretive behavior and a reduced tendency to flush from near a nest site dominates nesting behavior later in incubation.

The early survey had lower densities of sightings (adjustment ratios of 0.16 - 0.76, Table 4) for red-throated loon (RTLO), snow goose (SNGO), yellow-billed loon (YBLO), red-breasted merganser (RBME), white-winged scoter (WWSC), Steller's eider (STEI), surf scoter (SUSC), black scoter (BLSC), and golden eagle (GOEA). The other species showed approximately equivalent densities of sightings in the early- vs. late-flown surveys (Table 4). An increased number of sightings in the later surveys was likely caused by additional birds arriving in the third or fourth week of June. Late arrivals may be associated with later nesting chronology (e.g., scoters) or a delayed spring migration of younger birds or non-breeders of some species.

Many species including WFGO, COEI, sandhill cranes (SACR), long-tailed ducks (LTDU), Pacific loons (PALO), unidentified scaup (SCAU), American widgeon (AMWI), unidentified shorebirds (UNSB), RTLO, YBLO, and RBME, had higher densities of pairs but lower densities of singles in the early survey (Table 4). This pattern would be consistent with pairs being visible during laying or early in nesting but only single birds (males but not the incubating females) detected later in incubation. The opposite pattern of more singles early and fewer pairs late was not shown for any species, at least with data pooled across years. If it had been seen, this might be consistent with single males and unseen incubating females on nests early and more failed nesters in pairs observed later. Observations on the later (old ACP) survey had increased densities of medium and large flocks for BLBR, WFGO, Sabine's gull (SAGU), northern pintail (NOPI), LTDU, SCAU, Canada goose (CAGO), Tundra swan (SWAN), and UNSB. Either aggregation of failed breeders, later arrival of younger non-breeding birds, or arrival of molting birds, may account for the greater number of flocked birds for these species seen in later-flown surveys.

Aerial indices based on combined measures, the number of observations, breeding birds, and total birds (Table 2) rather than singles or pairs alone, were generally closer to an adjustment ratio of 1.00, and they showed less variation among the species (Figs. 3, 4). The annual indices for breeding birds and total birds tabulated for each species (Appendix 1) use the corresponding adjustment ratios calculated for breeding or total birds. The

single, pair, and flock components for each species and year (tabulated in columns to the left, Appendix 1) were calculated with adjustment ratios specific for each component, and as such, the estimates have more sampling error and are generally less reliable. The lack of additivity ( $n$  singles +  $2*n$  pairs + birds in flocks not equaling total birds) is noticeable especially for less common species with 1986-1992 data in the Appendix figures.

We tabulated and graphed the aerial indices of population size for each of the 34 species for breeding birds and total birds (Appendix 1). Of the 34 species or species groups monitored, total bird indices in 17 species showed significant positive overall growth rate (GR) as determined by the 90% confidence interval not including 1.00 (Table 5). Sixteen other species were stable. The only species to show a significant decline (GR = 0.991, 0.984-0.999) was Long-tailed Duck, but this slight decline was not supported by the trend of the breeding bird index or the rapid growth seen over the last 10 years for LTDU. Over the last 10 years 2003-2012, only 4 species, RTLO, SPEI, STEI, and SUSC, showed an average growth rate  $<1.00$  and none of these were considered significant declines (Table 5). Positive 10-year growth rates with a 90% confidence interval greater than 1.00 were shown in 19 species (Table 5).

Averaging 2003-2012 estimates, we tabulated the average proportion of the total bird index for each species (total or indicated total index, see Table 1) seen as singles, pairs, small flocks (3-5), medium (6-30), or large flocks (31+) (Table 6). SNGO, BLBR, CAGO, WFGO, AMWI, and NOPI had  $>25\%$  of the birds observed in flocks of 6 or more birds, indicative of a sizeable non-breeding component in these populations. At the opposite extreme,  $>80\%$  of snowy owl (SNOW), short-eared owl (SEOW), GOEA, and CORA are observed as single birds.

Averaging 2003-2012, we tabulated the average proportion of total birds for each species seen in the four strata (Table 7). The two coastal northern strata, TESH and High, that included 45% of the total area, had  $>90\%$  of the STEI, BLBR, SNGO, and SPEI,  $>80\%$  of COEI and SNOW, and  $>70\%$  of the SAGU, RTLO, and UNSB. The two more southern strata with 55% of the total area, had  $>80\%$  of WWSC and CORA,  $>70\%$  of SEOW, SUSC, and AGWT, and  $>60\%$  of SCAU, GOEA, mallard (MALL), and JAEG.

Combining all species, the 2003-2012 average total bird index showed an estimated population of 533,371 birds on 57,336 km<sup>2</sup> of the ACP, not including any corrections for visibility rate. Comparing the four strata, TESH showed 16%, High had 49%, Medium had 17%, and Low had 18% of the total bird indices. Average observed densities based on total bird indices were TESH at 14.9, High at 13.0, Medium at 6.8, and Low at 5.3 total bird index per km<sup>2</sup>.

## Discussion

Calculation of an average adjustment ratio provided a suitable method to combine the early- and late-flown aerial survey data from all years and previous strata. The method used the current four strata design of the ACP survey and was reasonably precise. Examination of all species graphs (Appendix 1) showed no sudden changes or discontinuities in the trends of population indices in 1993 or 2007, the years when data components, adjustments, and survey designs changed. We concluded that the average adjustment ratio successfully corrected for changes in timing and other differences between the early and late surveys, and therefore, provided a data set spanning 27 years with comparable data.

We documented increasing population trends in total bird indices in about half the species and stable population size in the others. We concluded that positive or stable trends 1986-2012 indicated the balance of climate and other factors have been generally favorable for these avian populations on the Arctic Coastal Plain during this period. Our data show no widespread increase in avian predators on the ACP. Although we observed positive growth for Glaucous gulls (GLGU) at 1.020 (1.007-1.033, 90% c.i.), this was less than the estimated growth rates for 17 other species (Table 5), suggesting that, at least for those species, the increase in GLGU was not limiting their population size. Our observations showed similar slightly increasing or stable population indices for CORA and JAEG. The most important species in local subsistence harvest were WFGO, KIEI, BLBR, and COEI (Table 23 in Naves 2011). All these species had increasing or stable population indices indicating that combined subsistence and fall season harvest rates are apparently not causing declines. Nevertheless, any conclusion drawn from this correlation is limited because a large portion of birds harvested on the North Slope may be migrants from other breeding populations in Arctic Canada or Alaska rather than local breeding birds.

The most rapid growth rate among all species (Table 5) was for Snow Goose (SNGO). If the observed growth rate of 1.237 from the last 10-years continues, the population will double every 3.3 years, increasing 8-fold in 10 years. The 2008 average population size of 6,171 total birds may number 50,000 by 2018. As has been observed in Arctic Canada, rapidly increasing Snow goose populations may cause considerable destruction of vegetation in nesting areas (Alisauskas et al. 2006) and their growth can exceed the ability to control the population size by hunting (Alisauskas et al. 2011). The population trends for SNGO and BLBR from the ACP survey are supported by more intensive monitoring studies that have been conducted along the coast from Barrow to the Colville Delta (Burgess et al. 2011).

We remain cautious in interpreting the aerial index trend data for scoters and shorebirds. A relatively high number of BLSC and few WWSC were identified up to 1996, and then beginning in 1997, the reverse became typical. Scoter species are difficult to distinguish at greater distance or with poor light conditions, and it is possible that identification of these species has changed and probably improved over time. Thus, the declining trend of BLSC and the increase in WWSC may not be as pronounced as the graphs indicate. Over the last three years, 2010-2012, observations in all three scoter species have been relatively high in at least one year. With relatively few observations of scoter species on the ACP, more years of data are needed to confirm population trends. We restricted our analysis of combined shorebird species to the data recorded by the left-front observer. This eliminated considerable variability in numbers perhaps related to the lower experience level of right-seat observers. Also, the number of shorebirds recorded in the first 4 years (1993-1996) by the left-front observer indicated markedly lower density. We considered that the search image and ability to record shorebirds probably improved over first several years for the left-front observer. Therefore, the indicated growth rate that included those data was overestimated.

Steller's Eider (STEI), Spectacled Eider (SPEI), and Yellow-billed Loon (YBLO) population size and trend are of particular interest due to the threatened or candidate status of these species. Previous analyses have relied on selecting subsets of the data to avoid bias caused by changes in timing, observers, or other differences between the ACP and

NSE surveys (Stehn et al. 2006, Stehn and Platte 2009, Stehn 2012). In this report, we used all the data combined from both the surveys, as described in methods, to estimate population indices and trends. We considered that the adjustment ratios calculated from the pooled 1993-2006 data in the TESH and High strata provided adequate correction for the previously noted differences between surveys.

The indicated total bird index for STEI from 1989-2012 showed an average growth rate of 0.946 ( $\sim$ SE = 0.0379, 90% c.i. = 0.8855-1.0104). Although declining, the trend was very imprecisely estimated. These data do not support a definitive conclusion on population trend. The statistical analysis shows that with an additional year of data, or with selection of different subsets of these data, a wide range in the estimated trend is to be expected. In the 5 years when no STEI were observed, we substituted an index of 12 birds to allow the calculation of trend using loglinear regression. Some arbitrary adjustment must be used because the log of zero is undefined, further weakening a completely objective determination of trend for STEI. The estimate is almost the same as the previous analysis (Stehn 2012) using the average of 4 slopes calculated from 4 separate subsets of the data and that estimated the average growth rate up to 2011 as 0.956 with a 90% c.i. = 0.884-1.033. With high sampling error from so few observations, and apparently an irregular tendency for nesting and occupancy among years, the estimated STEI trend cannot be determined with a useful degree of precision. The average size over all years of the indicated total bird index was 204 (SE = 48, 90% c.i. = 124-283). The 1986-1992 data, and the 1993-2006 data from the Medium and Low strata were multiplied by an adjustment ratio of 0.27 (Table 4) to correct for the greater number of STEI seen on later-flown surveys. Based on very limited information, a reasonable approximation of visibility detection rate for STEI was 30% (Stehn and Platte 2009). Therefore, an estimated population size at the time of an early aerial survey is approximately 680 ( $= 204 / 0.3$ ) birds.

From 1992-2012, the growth rate of the indicated total bird aerial index of SPEI was 0.990 ( $\sim$ SE = 0.0081, 90% c.i. = 0.9767-1.0035). The slightly declining trend has a much narrower confidence interval compared to STEI. Any conclusion on whether population trend is significantly different from stable (GR = 1.00) depends on various assumptions such as appropriateness of the regression model, adequacy of the estimated variance, statistical theory of null hypothesis testing, or which subset or number of years are included in the analysis. For example, dropping the first years of 1992 and 1993 would "change" the answer to GR = 0.999 (90% c.i. = 0.984-1.014) which serves as a caution against making a definitive conclusion on trend or claiming some rather arbitrary level of statistical significance. The 10-year average of the indicated total bird index for 2003-2012 was 6,933 (SE = 618, 90% c.i. = 5915-7950) and the indicated breeding bird index was 6,540 (SE = 369). The aerial visibility rate and the number of nests on the North Slope are unknown, however these can be estimated by assuming similarity with data on nesting SPEI on coastal tundra wetlands of the Yukon-Kuskokwim Delta (YKD). The eider core nesting area on the YKD is annually sampled by random ground plots as well as aerial transects (Fischer et al. 2011). The average ratio of nest density (corrected for nest detection rate) to the SPEI density measured by the indicated breeding bird aerial index averaged 1.133 (SE = 0.190) nests per aerial index. This averages 10 years of data from 2002-2010, and 2012. If this same ratio of nests per breeding bird index holds on the ACP,



the 2003-12 average aerial index of 6,540 (SE = 369) birds would equate to 7,407 nests or 14,814 paired birds (SE = 798, 90% c.i. = 13,501-16,128).

For YBLO, the 1986-2012 total bird aerial index showed an increasing trend with average GR of 1.0135 (~SE = 0.0070, 90% c.i. = 1.0020-1.0251). Again, claiming statistically significant population growth and strict adherence to a null hypothesis testing framework are open to debate. The 10-year average total bird index for 2003-2012 was 2,174 (SE = 198, 90% c.i. = 1849-2500). This is greater than the average of 1,171 total birds reported for 1992-2011 from the smaller NSE survey area (Larned et al. 2011) because the data now included an additional 43% of the total population from Medium and Low strata. All the 1986-1992 data, and the 1993-2006 data from these 2 strata were multiplied by an adjustment ratio of 0.69 to correct for the greater number of YBLO seen on later-flown surveys. Actual population size is unknown but it can be approximated by using an estimated index ratio of 1.164 calculated from the number seen on intensive lake-circling surveys compared to transect surveys (Earnst et al. 2005). The resulting population size was a 10-year average of 2,531 (= 2174\*1.164) total YBLO as observed on early-flown surveys.

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Table 1. Species name, scientific name, and average abundance based on breeding bird and total bird index populations for 34 species or species groups observed on the ACP aerial survey over all years 1986-2012. Species are listed in decreasing order of total index abundance, not corrected for visibility rate.

Sppn	Species	Scientific name	Aerial index measure	n years	Average breeding bird index	Average total bird index
WFGO	White-fronted Goose	<i>Anser albifrons frontalis</i>	<i>Ind. total</i>	27	60,257	129,337
NOPI	Northern Pintail	<i>Anas acuta</i>	<i>Ind. total</i>	27	45,068	64,405
UNSB	Unidentified shorebird spp		<i>Total</i>	21	36,326	56,663
LTDU	Long-tailed Duck	<i>Clangula hyemalis</i>	<i>Ind. total</i>	27	44,215	52,243
PALO	Pacific Loon	<i>Gavia pacifica</i>	<i>Total</i>	27	31,504	32,289
ARTE	Arctic Tern	<i>Sterna paradisaea</i>	<i>Total</i>	21	15,792	18,700
GLGU	Glaucous Gull	<i>Larus hyperboreus</i>	<i>Total</i>	21	12,724	17,616
SCAU	Scaup spp	<i>Aythya spp.</i>	<i>Total</i>	27	12,234	15,736
KIEI	King Eider	<i>Somateria spectabilis</i>	<i>Ind. total</i>	27	14,265	15,734
CAGO	Canada Goose	<i>Branta hutchinsii</i>	<i>Ind. total</i>	27	3,436	10,926
SAGU	Sabine's Gull	<i>Xema sabini</i>	<i>Total</i>	21	6,609	9,181
SWAN	Tundra Swan	<i>Cygnus columbianus</i>	<i>Total</i>	27	8,540	9,030
JAEG	Jaeger spp	<i>Stercorarius spp.</i>	<i>Total</i>	27	8,529	8,784
SNGO	Snow Goose	<i>Chen caerulescens</i>	<i>Total</i>	27	1,429	7,721
BLBR	Black Brant	<i>Branta bernicla nigricans</i>	<i>Ind. total</i>	27	3,407	7,398
SPEI	Spectacled Eider	<i>Somateria fischeri</i>	<i>Ind. total</i>	21	6,896	7,158
RTLO	Red-throated Loon	<i>Gavia stellata</i>	<i>Total</i>	27	2,933	3,063
WWSC	White-winged Scoter	<i>Melanitta fusca</i>	<i>Ind. total</i>	27	2,028	2,800
YBLO	Yellow-billed Loon	<i>Gavia adamsii</i>	<i>Total</i>	27	1,848	1,934
SNOW	Snowy Owl	<i>Bubo scandiacus</i>	<i>Total</i>	27	1,018	1,034
RBME	Red-breasted Merganser	<i>Mergus serrator</i>	<i>Ind. total</i>	27	838	788
AGWT	Green-winged Teal	<i>Anas crecca</i>	<i>Ind. total</i>	27	684	660
AMWI	American Wigeon	<i>Anas americana</i>	<i>Ind. total</i>	27	475	609
COEI	Common Eider	<i>Somateria mollissima</i>	<i>Ind. total</i>	27	270	516
MALL	Mallard	<i>Anas platyrhynchos</i>	<i>Ind. total</i>	27	406	440
NSHO	Northern Shoveler	<i>Anas clypeata</i>	<i>Ind. total</i>	27	347	385
SEOW	Short-eared Owl	<i>Asio flammeus</i>	<i>Total</i>	21	336	336
BLSC	Black Scoter	<i>Melanitta americana</i>	<i>Ind. total</i>	27	285	312
CORA	Common Raven	<i>Corvus corax</i>	<i>Total</i>	21	265	309
SACR	Sandhill Crane	<i>Grus canadensis</i>	<i>Ind. total</i>	27	194	250
STEI	Steller's Eider	<i>Polysticta stelleri</i>	<i>Ind. total</i>	24	161	204
RNGR	Red-necked Grebe	<i>Podiceps grisegena</i>	<i>Total</i>	27	115	141
GOEA	Golden Eagle	<i>Aquila chrysaetos</i>	<i>Total</i>	27	118	118
SUSC	Surf Scoter	<i>Melanitta perspicillata</i>	<i>Ind. total</i>	21	42	118

Table 2. Aerial survey index measures used in comparisons of early and late aerial surveys flown on the ACP.

Index measure	Description
nsg	Number of singles
npr	Number of pairs
nobs	Number of sightings (sg, pr, or flock)
bsf	Birds in small flocks of 3-5 birds
bmf	Birds in medium flocks of 6-30 birds
blf	Birds in large flocks of 31 or more birds
bb = nsg + 2*npr	Breeding birds
ibb = 2*nsg+2*npr	Indicated breeding birds
total = nsg + 2*npr + flocks	Total birds observed
itotal = 2*nsg+2*npr+ flocks	Indicated total birds

Table 3. Diagram of data available from the early- and late-flown surveys that were used to calculate the combined population index. The Early:Late adjustment ratio was calculated with all the survey data in 14 years (1993-06) and 2 strata (TESH, High). The estimated adjustment ratio was then applied to the annual index density for each cell labeled "adj". No adjustment was applied to cells labeled "u" for unadjusted. The combined index summed the data, either adjusted or unadjusted, from the four strata (unshaded cells) in each year.

	Late-flown survey				Early-flown survey			
	TESH	High	Med.	Low	TESH	High	Med.	Low
1986	adj	adj	adj	adj	Not Flown			
1987	adj	adj	adj	adj				
1988	adj	adj	adj	adj				
1989	adj	adj	adj	adj				
1990	adj	adj	adj	adj				
1991	adj	adj	adj	adj				
1992	adj	adj	adj	adj				
1993	Data used		adj	adj	u	u	Partial sample	
1994	only for ratio		adj	adj	u	u	data not used	
1995			adj	adj	u	u		
1996			adj	adj	u	u		
1997			adj	adj	u	u		
1998			adj	adj	u	u		
1999			adj	adj	u	u		
2000			adj	adj	u	u		
2001			adj	adj	u	u		
2002			adj	adj	u	u		
2003			adj	adj	u	u		
2004			adj	adj	u	u		
2005			adj	adj	u	u		
2006			adj	adj	u	u		
2007	Not Flown				u	u	u	u
2008					u	u	u	u
2009					u	u	u	u
2010					u	u	u	u
2011					u	u	u	u
2012					u	u	u	u



Table 5. Average annual growth rate of species or species groups observed on the ACP survey. Species are listed in decreasing order by growth rate of total aerial index over all years, 1986-2012. Growth rates were also calculated for the last 10 years, 2003-2012.

sppn	Species	n years	Total bird index growth rate (all years)		Total bird index growth rate (last 10 yrs)	
				90% c.i.		90% c.i.
SNGO	Snow Goose	27	<b>1.249</b>	<b>1.192-1.310</b>	1.237	0.958-1.597
WWSC	White-winged Scoter	27	<b>1.137</b>	<b>1.101-1.174</b>	<b>1.411</b>	<b>1.288-1.547</b>
SEOW	Short-eared Owl	21	<b>1.101</b>	<b>1.042-1.164</b>	<b>1.232</b>	<b>1.032-1.472</b>
BLBR	Black Brant	27	<b>1.095</b>	<b>1.071-1.121</b>	1.020	0.966-1.076
UNSB	Shorebird spp	21	<b>1.094</b>	<b>1.071-1.118</b>	<b>1.103</b>	<b>1.065-1.143</b>
SACR	Sandhill Crane	27	<b>1.086</b>	<b>1.057-1.115</b>	<b>1.109</b>	<b>1.034-1.190</b>
GOEA	Golden Eagle	27	<b>1.073</b>	<b>1.042-1.105</b>	<b>1.374</b>	<b>1.264-1.492</b>
RBME	Red-breasted Merganser	27	<b>1.060</b>	<b>1.043-1.077</b>	<b>1.065</b>	<b>1.020-1.113</b>
SWAN	Tundra Swan	27	<b>1.046</b>	<b>1.038-1.053</b>	<b>1.092</b>	<b>1.069-1.115</b>
SAGU	Sabine's Gull	21	<b>1.044</b>	<b>1.026-1.062</b>	<b>1.096</b>	<b>1.058-1.135</b>
COEI	Common Eider	27	<b>1.044</b>	<b>1.000-1.091</b>	<b>1.358</b>	<b>1.149-1.606</b>
WFGO	White-fronted Goose	27	<b>1.043</b>	<b>1.032-1.054</b>	<b>1.137</b>	<b>1.092-1.184</b>
SNOW	Snowy Owl	27	1.038	0.983-1.096	1.224	0.953-1.573
KIEI	King Eider	27	<b>1.031</b>	<b>1.021-1.041</b>	<b>1.024</b>	<b>1.011-1.037</b>
CORA	Common Raven	21	1.030	0.981-1.081	<b>1.160</b>	<b>1.041-1.292</b>
ARTE	Arctic Tern	21	<b>1.026</b>	<b>1.018-1.034</b>	1.014	0.993-1.035
CAGO	Canada Goose	27	1.026	0.999-1.055	1.045	0.951-1.147
GLGU	Glaucous Gull	21	<b>1.020</b>	<b>1.007-1.033</b>	<b>1.058</b>	<b>1.023-1.095</b>
SCAU	Scaup spp	27	<b>1.018</b>	<b>1.004-1.031</b>	<b>1.080</b>	<b>1.042-1.120</b>
YBLO	Yellow-billed Loon	27	<b>1.014</b>	<b>1.002-1.025</b>	<b>1.050</b>	<b>1.006-1.096</b>
PALO	Pacific Loon	27	1.005	0.998-1.011	1.016	0.983-1.050
JAEG	Jaeger spp	27	1.004	0.992-1.015	1.034	0.981-1.089
AMWI	American Wigeon	27	1.000	0.959-1.044	1.178	0.949-1.463
NOPI	Northern Pintail	27	0.997	0.984-1.010	1.024	0.970-1.082
RTLO	Red-throated Loon	27	0.997	0.983-1.010	0.978	0.948-1.009
LTDU	Long-tailed Duck	27	<b>0.991</b>	<b>0.984-0.999</b>	<b>1.075</b>	<b>1.053-1.096</b>
SPEI	Spectacled Eider	21	0.990	0.997-1.003	0.976	0.932-1.023
MALL	Mallard	27	0.989	0.949-1.031	<b>1.269</b>	<b>1.086-1.482</b>
NSHO	Northern Shoveler	27	0.985	0.931-1.042	1.217	0.978-1.514
RNGR	Red-necked Grebe	27	0.977	0.927-1.031	1.167	0.979-1.391
AGWT	Green-winged Teal	27	0.970	0.933-1.009	<b>1.203</b>	<b>1.095-1.321</b>
BLSC	Black Scoter	27	0.965	0.917-1.014	<b>1.338</b>	<b>1.142-1.569</b>
STEI	Steller's Eider	24	0.946	0.885-1.010	0.958	0.769-1.193
SUSC	Surf Scoter	21	0.936	0.876-1.001	0.965	0.766-1.215

Table 6. Proportion of the total bird index for each species observed as singles, paired birds, birds in flocks of 3-5, in flocks of 6-30, and in large flocks of 31+ birds. The tabled proportions are 10-year averages from 2003-2012.

<b>Sppn</b>	<b>nsg</b>	<b>2*npr</b>	<b>bsf</b>	<b>bmf</b>	<b>bif</b>
YBLO	38.8%	59.9%	1.3%	0.0%	0.0%
PALO	22.3%	75.1%	2.3%	0.2%	0.0%
RTLO	24.8%	71.7%	2.6%	0.9%	0.0%
RNGR	65.4%	18.5%	16.1%	0.0%	0.0%
JAEG	75.3%	22.7%	1.5%	0.4%	0.0%
GLGU	46.5%	30.0%	7.4%	11.9%	4.2%
SAGU	35.9%	35.6%	6.6%	19.7%	2.1%
ARTE	42.4%	44.8%	6.8%	4.8%	1.4%
RBME	25.6%	68.5%	4.3%	1.6%	0.0%
MALL	55.0%	39.2%	5.8%	0.0%	0.0%
AMWI	13.7%	59.1%	0.0%	27.2%	0.0%
AGWT	46.3%	53.7%	0.0%	0.0%	0.0%
NOPI	49.5%	20.6%	4.7%	22.9%	2.2%
NSHO	47.4%	52.6%	0.0%	0.0%	0.0%
SCAU	17.8%	63.4%	1.6%	13.9%	3.3%
LTDU	28.9%	60.7%	1.4%	7.2%	1.9%
SPEI	35.4%	60.0%	0.4%	4.2%	0.0%
COEI	30.9%	54.3%	0.4%	1.5%	13.0%
KIEI	23.1%	72.9%	0.5%	3.6%	0.0%
STEI	46.3%	53.7%	0.0%	0.0%	0.0%
BLSC	45.8%	47.2%	0.0%	7.0%	0.0%
WWSC	11.1%	63.8%	3.2%	21.9%	0.0%
SUSC	66.7%	8.3%	0.0%	25.0%	0.0%
SNGO	2.8%	22.3%	7.3%	14.1%	53.5%
WFGO	6.9%	45.2%	16.8%	26.8%	4.2%
CAGO	10.7%	28.1%	12.6%	41.8%	6.9%
BLBR	11.3%	27.5%	11.0%	40.2%	10.0%
SWAN	40.9%	51.1%	4.2%	2.1%	1.7%
SACR	36.9%	36.1%	14.6%	12.5%	0.0%
CORA	81.0%	5.1%	6.7%	7.2%	0.0%
SEOW	99.3%	0.7%	0.0%	0.0%	0.0%
SNOW	96.1%	2.3%	1.6%	0.0%	0.0%
GOEA	98.4%	1.6%	0.0%	0.0%	0.0%
UNSB	28.2%	35.7%	16.9%	14.1%	5.1%



Table 7. Proportion of the total bird index for each species observed in each of the 4 strata. The tabled proportions are 10-year averages from 2003-2012. The percentage of the total area within each stratum is listed in the column header.

Sppn	TESH (10%)	High (35%)	Med (23%)	Low (32%)
YBLO	11.6%	45.6%	34.8%	8.0%
PALO	10.2%	50.8%	21.3%	17.7%
RTLO	16.4%	53.7%	16.5%	13.4%
RNGR	5.0%	60.0%	29.1%	5.9%
JAEG	8.8%	31.0%	21.6%	38.6%
GLGU	12.1%	54.6%	18.3%	15.0%
SAGU	20.1%	59.1%	16.5%	4.3%
ARTE	10.4%	42.6%	32.0%	14.9%
RBME	7.8%	44.2%	31.5%	16.5%
MALL	1.6%	32.8%	29.5%	36.1%
AMWI	28.7%	27.4%	25.5%	18.4%
AGWT	1.5%	26.0%	39.8%	32.6%
NOPI	20.5%	47.2%	11.4%	20.9%
NSHO	7.6%	48.9%	20.7%	22.8%
SCAU	5.3%	24.9%	29.6%	40.2%
LTDU	9.4%	46.8%	19.3%	24.6%
SPEI	19.7%	71.1%	8.3%	0.9%
COEI	10.0%	76.2%	0.0%	13.8%
KIEI	24.6%	38.6%	29.7%	7.1%
STEI	13.6%	86.4%	0.0%	0.0%
BLSC	0.1%	52.8%	31.7%	15.4%
WWSC	0.1%	0.8%	26.0%	73.0%
SUSC	0.0%	25.0%	36.4%	38.6%
SNGO	21.1%	71.0%	5.3%	2.5%
WFGO	17.6%	50.8%	13.8%	17.8%
CAGO	46.5%	16.6%	18.9%	18.1%
BLBR	39.5%	58.7%	1.3%	0.6%
SWAN	13.9%	52.5%	17.6%	16.0%
SACR	11.0%	45.4%	21.3%	22.4%
CORA	2.3%	8.8%	30.2%	58.8%
SEOW	4.6%	17.4%	45.9%	32.1%
SNOW	16.5%	64.3%	9.0%	10.2%
GOEA	3.8%	29.0%	26.1%	41.1%
UNSB	12.8%	57.3%	13.8%	16.1%

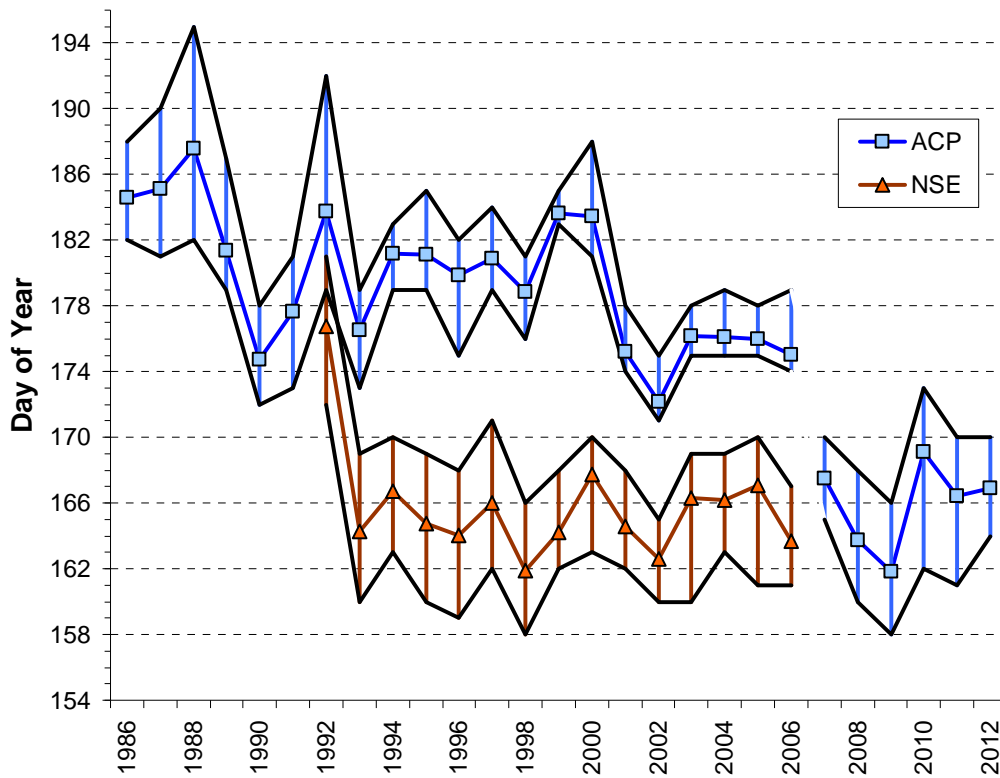


Figure 1. Survey timing for the Arctic Coastal Plain (ACP), North Slope Eider (NSE), and redesigned ACP surveys. The central line indicates the average day-of-year (DOY or Julian date) of all bird observations, while the bounding lines connect the earliest and latest survey day in each year. The early survey was usually flown between DOY 158 (7 June) and 170 (19 June) before the departure of most male eiders.



Figure 2. Shaded areas represent the four strata of the current ACP survey with Teshekpuk (yellow), High (pink), Medium (green), and Low (blue) strata. The thin grey lines indicate the boundaries of 12 physiographic strata used in previous stratified analyses of NSE and ACP aerial survey data. The intersection of the two designs resulted in the 20 strata used to subdivide and then pool the original transects and observation densities into the current 4-stratum design.

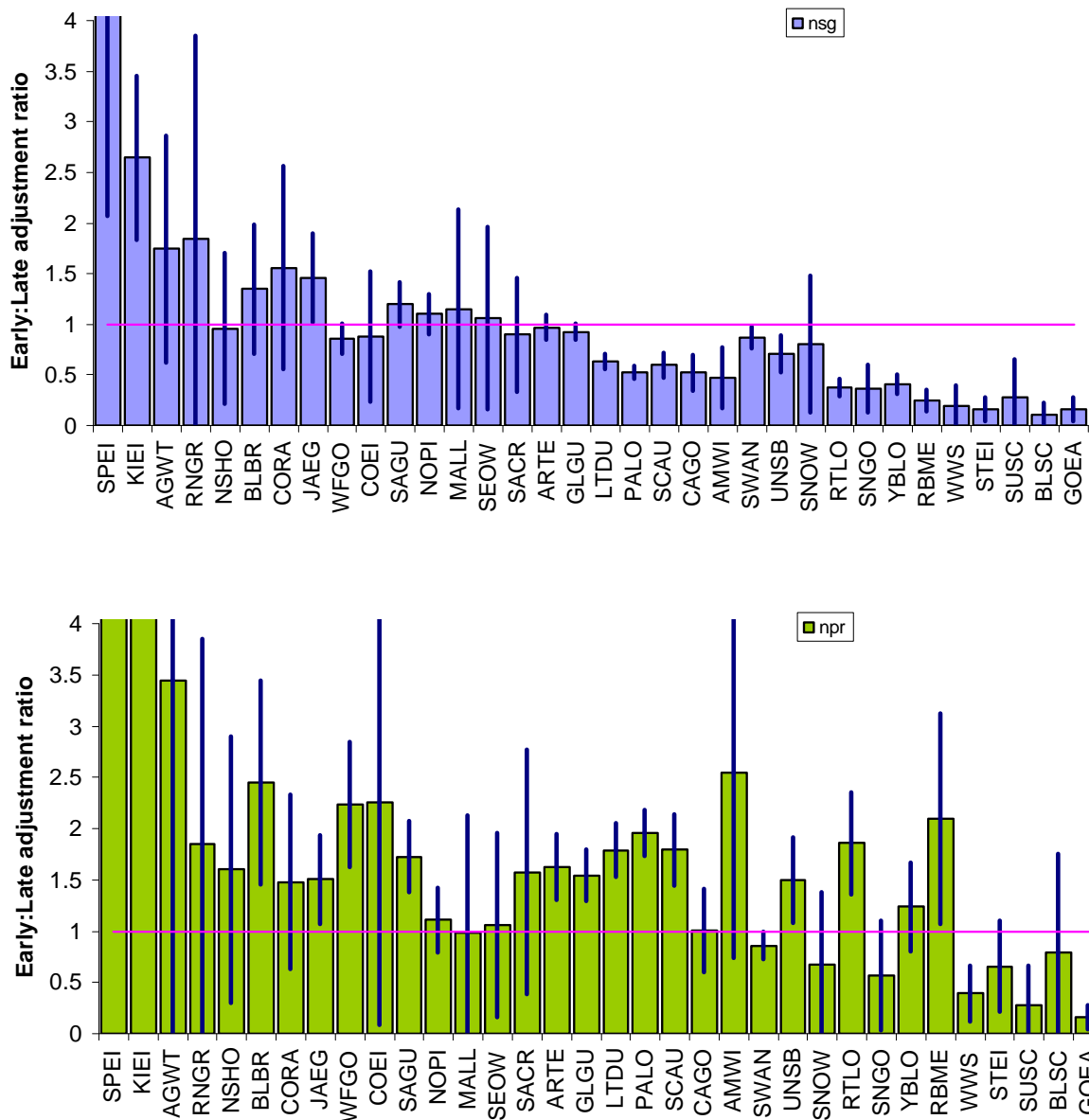


Figure 3. Adjustment ratios with 90% confidence intervals calculated from average density of the number of singles (nsg) and number of pairs (npr) observed comparing the early-flown versus late-flown aerial surveys pooling 1993-2006 data. Species are arranged in decreasing order of the early:late ratio for the number of sightings aerial index.

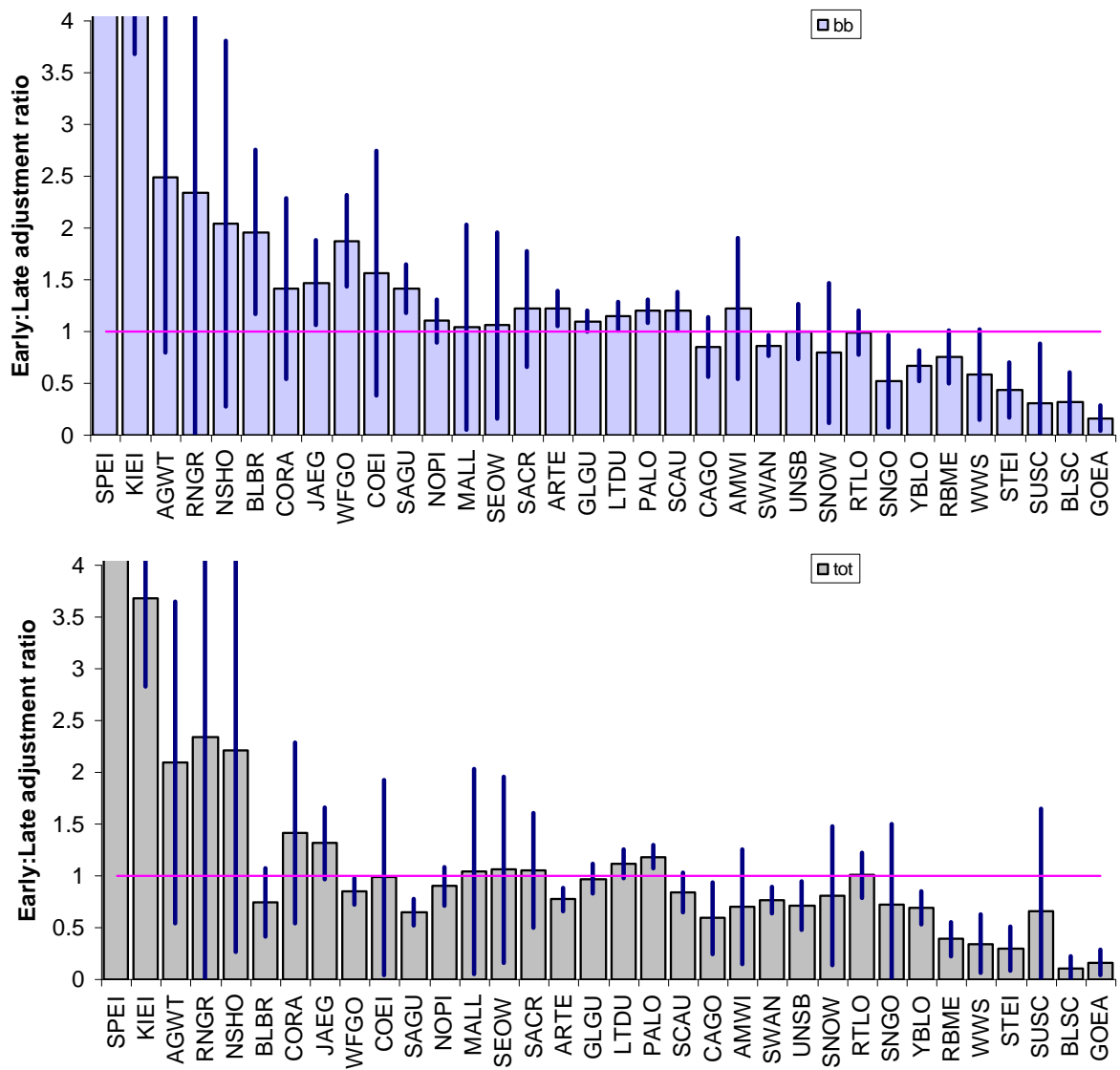
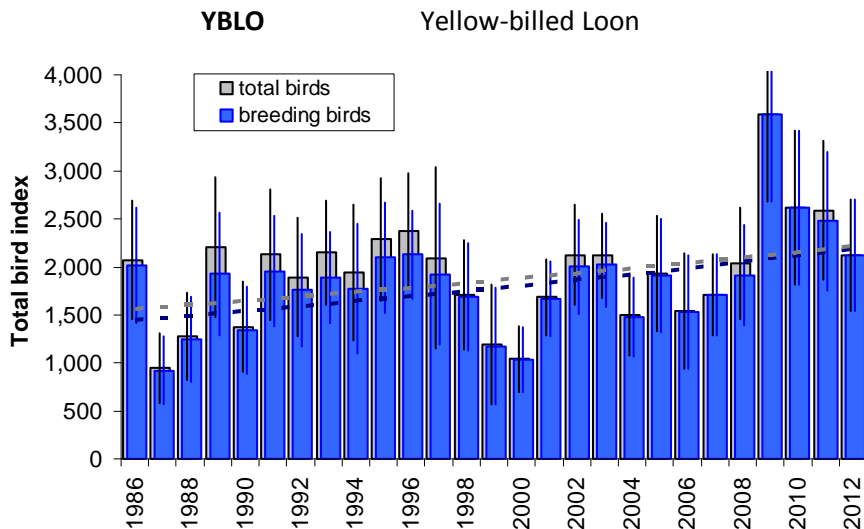


Figure 4. Adjustment ratios with 90% confidence intervals calculated from average density of breeding birds (bb) and total birds (tot) observed in comparing the early-flown versus late-flown aerial surveys pooling 1993-2006 data. Species are arranged in decreasing order of the early:late ratio for the number of sightings aerial index.

Appendix 1. Graphs and tables of aerial population indices for each of the 34 species monitored on the Arctic Coastal Plain. Vertical lines indicate 90% confidence intervals. Long-term trends calculated by log-linear regression for breeding bird indices and total bird indices are shown by dashed lines.

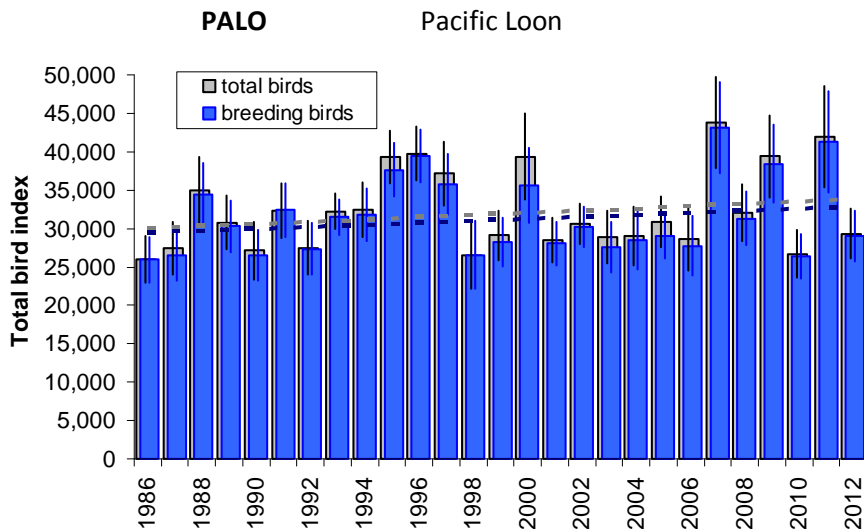
<b>Sppn code</b>	<b>Species name</b>	<b>Page</b>
<b>AGWT</b>	<b>Green-winged Teal</b>	<b>34</b>
<b>AMWI</b>	<b>American Wigeon</b>	<b>33</b>
<b>ARTE</b>	<b>Arctic Tern</b>	<b>30</b>
<b>BLBR</b>	<b>Black Brant</b>	<b>49</b>
<b>BLSC</b>	<b>Black Scoter</b>	<b>43</b>
<b>CAGO</b>	<b>Canada Goose</b>	<b>48</b>
<b>COEI</b>	<b>Common Eider</b>	<b>40</b>
<b>CORA</b>	<b>Common Raven</b>	<b>52</b>
<b>GLGU</b>	<b>Glaucous Gull</b>	<b>28</b>
<b>GOEA</b>	<b>Golden Eagle</b>	<b>55</b>
<b>JAEG</b>	<b>Jaeger spp</b>	<b>27</b>
<b>KIEI</b>	<b>King Eider</b>	<b>41</b>
<b>LTDU</b>	<b>Long-tailed Duck</b>	<b>38</b>
<b>MALL</b>	<b>Mallard</b>	<b>32</b>
<b>NOPI</b>	<b>Northern Pintail</b>	<b>35</b>
<b>NSHO</b>	<b>Northern Shoveler</b>	<b>36</b>
<b>PALO</b>	<b>Pacific Loon</b>	<b>24</b>
<b>RBME</b>	<b>Red-breasted Merganser</b>	<b>31</b>
<b>RNGR</b>	<b>Red-necked Grebe</b>	<b>26</b>
<b>RTLO</b>	<b>Red-throated Loon</b>	<b>25</b>
<b>SACR</b>	<b>Sandhill Crane</b>	<b>51</b>
<b>SAGU</b>	<b>Sabine's Gull</b>	<b>29</b>
<b>SCAU</b>	<b>Scaup spp</b>	<b>37</b>
<b>SEOW</b>	<b>Short-eared Owl</b>	<b>53</b>
<b>SNGO</b>	<b>Snow Goose</b>	<b>46</b>
<b>SNOW</b>	<b>Snowy Owl</b>	<b>54</b>
<b>SPEI</b>	<b>Spectacled Eider</b>	<b>39</b>
<b>STEI</b>	<b>Steller's Eider</b>	<b>42</b>
<b>SUSC</b>	<b>Surf Scoter</b>	<b>45</b>
<b>SWAN</b>	<b>Tundra Swan</b>	<b>50</b>
<b>UNSB</b>	<b>Shorebird spp</b>	<b>56</b>
<b>WFGO</b>	<b>White-fronted Goose</b>	<b>47</b>
<b>WWSC</b>	<b>White-winged Scoter</b>	<b>44</b>
<b>YBLO</b>	<b>Yellow-billed Loon</b>	<b>23</b>



ACP aerial index, 57336 km<sup>2</sup>, combined NSE and ACP data

Year	n singles	2*n pairs	birds in flocks	Breeding bird index	SE breeding	Total bird index	SE total index
1986	696	1602	0	<b>2015</b>	364	<b>2070</b>	375
1987	854	402	0	<b>921</b>	214	<b>946</b>	221
1988	503	767	0	<b>1243</b>	269	<b>1277</b>	277
1989	784	1179	344	<b>1929</b>	387	<b>2204</b>	444
1990	564	756	0	<b>1338</b>	276	<b>1375</b>	285
1991	741	1359	181	<b>1957</b>	348	<b>2127</b>	411
1992	741	994	134	<b>1759</b>	355	<b>1894</b>	374
1993	727	1151	239	<b>1886</b>	290	<b>2151</b>	332
1994	833	979	143	<b>1772</b>	408	<b>1944</b>	430
1995	827	1440	216	<b>2096</b>	352	<b>2285</b>	387
1996	1216	924	335	<b>2127</b>	279	<b>2378</b>	365
1997	613	1271	147	<b>1925</b>	444	<b>2093</b>	573
1998	808	877	0	<b>1687</b>	341	<b>1709</b>	348
1999	454	871	0	<b>1176</b>	370	<b>1192</b>	378
2000	457	502	0	<b>1030</b>	206	<b>1040</b>	208
2001	491	1181	0	<b>1667</b>	237	<b>1684</b>	239
2002	1009	951	99	<b>2002</b>	300	<b>2126</b>	315
2003	749	1468	73	<b>2023</b>	267	<b>2120</b>	266
2004	505	1104	0	<b>1476</b>	250	<b>1496</b>	254
2005	632	1309	0	<b>1907</b>	359	<b>1929</b>	365
2006	473	1136	0	<b>1526</b>	359	<b>1541</b>	363
2007	1155	553	0	<b>1709</b>	255	<b>1709</b>	255
2008	844	1072	121	<b>1915</b>	320	<b>2037</b>	353
2009	1357	2227	0	<b>3584</b>	548	<b>3584</b>	548
2010	616	2002	0	<b>2618</b>	487	<b>2618</b>	487
2011	936	1542	109	<b>2478</b>	440	<b>2588</b>	439
2012	1173	949	0	<b>2122</b>	353	<b>2122</b>	353

Year	nyrs	Avg index	SE index	(90%ci)	GrowthRate	(90%ci)
<b>1986-2012</b>						
breeding birds	27	1,848	102	(1680-2015)	<b>1.016</b>	(1.005-1.027)
total birds	27	1,935	106	(1761-2109)	<b>1.014</b>	(1.002-1.025)
<b>2003-2012</b>						
breeding birds	10	2,136	199	(1809-2463)	<b>1.052</b>	(1.008-1.097)
total birds	10	2,174	198	(1849-2500)	<b>1.050</b>	(1.006-1.096)



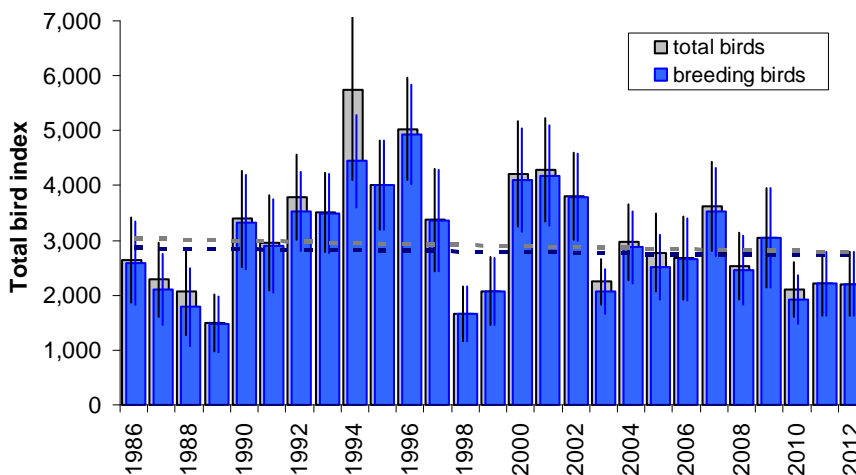
ACP aerial index, 57336 km<sup>2</sup>, combined NSE and ACP data

Year	n singles	2*n pairs	birds in flocks	Breeding bird index	SE breeding	Total bird index	SE total index
1986	5936	20334	221	<b>25924</b>	1837	<b>25948</b>	1835
1987	13307	18613	830	<b>26502</b>	1982	<b>27409</b>	2077
1988	8223	25749	932	<b>34433</b>	2498	<b>35013</b>	2584
1989	5957	27440	549	<b>30316</b>	2045	<b>30770</b>	2123
1990	6784	18167	859	<b>26526</b>	2009	<b>27145</b>	2280
1991	8089	22918	202	<b>32396</b>	2137	<b>32320</b>	2137
1992	7171	18056	329	<b>27339</b>	2035	<b>27506</b>	2100
1993	7613	24536	718	<b>31483</b>	1395	<b>32242</b>	1435
1994	7237	25043	734	<b>31780</b>	2097	<b>32417</b>	2163
1995	7789	32326	1614	<b>37610</b>	2124	<b>39302</b>	2088
1996	9898	28082	341	<b>39452</b>	2054	<b>39751</b>	2114
1997	8127	27847	1829	<b>35731</b>	2380	<b>37167</b>	2517
1998	6223	20581	156	<b>26549</b>	2668	<b>26541</b>	2652
1999	6572	20549	881	<b>28220</b>	1920	<b>29134</b>	1971
2000	9111	25373	3391	<b>35642</b>	2980	<b>39378</b>	3403
2001	5740	22666	597	<b>28052</b>	1753	<b>28529</b>	1766
2002	6619	25065	415	<b>30251</b>	1616	<b>30591</b>	1605
2003	7094	18587	1358	<b>27539</b>	1999	<b>28901</b>	2074
2004	6813	22710	591	<b>28527</b>	2344	<b>29036</b>	2332
2005	6776	21862	1769	<b>29025</b>	1759	<b>30845</b>	2014
2006	5478	24167	814	<b>27769</b>	2364	<b>28638</b>	2496
2007	9856	33262	655	<b>43118</b>	3597	<b>43773</b>	3599
2008	8185	23146	740	<b>31330</b>	2098	<b>32070</b>	2225
2009	7637	30778	991	<b>38415</b>	3100	<b>39405</b>	3252
2010	6621	19744	340	<b>26365</b>	1769	<b>26704</b>	1875
2011	8602	32732	624	<b>41335</b>	4002	<b>41958</b>	4000
2012	6272	22714	330	<b>28985</b>	1994	<b>29316</b>	1971

Year	nyrs	Avg index	SE index	(90%ci)	GrowthRate	(90%ci)
1986-2012						
breeding birds	27	31,504	962	29921-33081	<b>1.004</b>	(0.998-1.010)
total birds	27	32,289	1,010	30628-33951	<b>1.005</b>	(0.998-1.011)
2003-2012						
breeding birds	10	32,241	1,976	28991-35491	<b>1.020</b>	(0.986-1.054)
total birds	10	33,065	1,965	29832-36291	<b>1.016</b>	(0.983-1.050)



RTLO Red-throated Loon

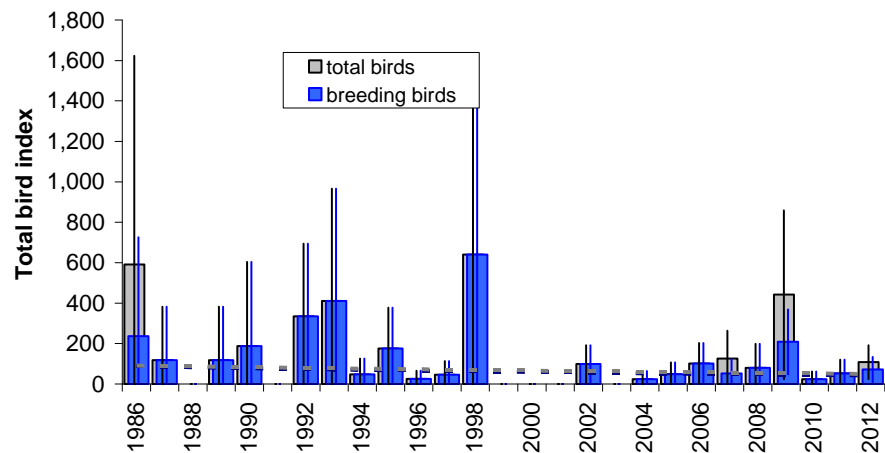


ACP aerial index, 57336 km<sup>2</sup>, combined NSE and ACP data

Year	n singles	2*n pairs	birds in flocks	Breeding bird index	SE breeding	Total bird index	SE total index
1986	683	1491	0	2592	461	2636	471
1987	1082	1295	68	2113	392	2282	415
1988	477	989	129	1783	432	2067	485
1989	325	1159	0	1472	305	1497	311
1990	844	2086	0	3333	521	3389	532
1991	716	1915	0	2903	519	2952	530
1992	659	3372	101	3531	436	3789	473
1993	575	2641	0	3495	437	3503	438
1994	1067	3541	1212	4448	509	5752	1001
1995	1025	2656	0	4002	492	4014	494
1996	945	3898	73	4935	552	5032	567
1997	841	2426	0	3362	562	3374	567
1998	421	1421	0	1655	302	1665	305
1999	426	1444	0	2063	369	2075	373
2000	941	3225	78	4103	572	4213	582
2001	918	3886	73	4181	553	4288	569
2002	884	2944	0	3787	481	3808	486
2003	507	1218	179	2060	247	2248	250
2004	603	2064	65	2876	401	2965	418
2005	539	2066	246	2509	360	2774	431
2006	641	2208	0	2655	455	2680	462
2007	1166	2356	97	3522	486	3619	490
2008	646	1813	71	2459	380	2530	374
2009	686	2360	0	3046	546	3046	546
2010	519	1394	194	1913	269	2107	299
2011	567	1643	0	2209	354	2209	354
2012	593	1607	0	2200	353	2200	353

Period	nyrs	Avg index	SE index	(90%ci)	GrowthRate	(90%ci)
1986-2012						
breeding birds	27	2,934	179	(2639-3228)	<b>0.998</b>	(0.985-1.012)
total birds	27	3,063	197	(2739-3388)	<b>0.997</b>	(0.983-1.010)
2003-2012						
breeding birds	10	2,545	156	(2288-2802)	<b>0.985</b>	(0.951-1.020)
total birds	10	2,638	152	(2388-2888)	<b>0.978</b>	(0.948-1.009)

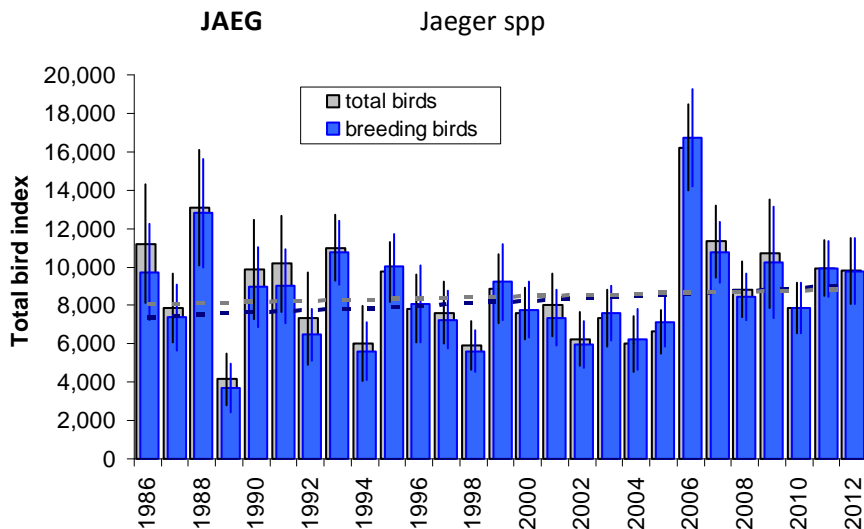
RNGR Red-necked Grebe



ACP aerial index, 57336 km<sup>2</sup>, combined NSE and ACP data

Year	n singles	2*n pairs	birds in flocks	Breeding bird index	SE breeding index	Total bird index	SE total index
1986	0	187	355	<b>237</b>	297	<b>592</b>	626
1987	187	0	0	<b>118</b>	161	<b>118</b>	161
1988	0	0	0	<b>0</b>	0	<b>0</b>	0
1989	93	0	0	<b>118</b>	161	<b>118</b>	161
1990	0	148	0	<b>188</b>	253	<b>188</b>	253
1991	0	0	0	<b>0</b>	0	<b>0</b>	0
1992	264	0	0	<b>334</b>	219	<b>334</b>	219
1993	324	0	0	<b>411</b>	338	<b>411</b>	338
1994	0	48	0	<b>48</b>	48	<b>48</b>	48
1995	107	47	0	<b>176</b>	122	<b>176</b>	122
1996	25	0	0	<b>25</b>	25	<b>25</b>	25
1997	0	47	0	<b>47</b>	41	<b>47</b>	41
1998	185	320	0	<b>640</b>	502	<b>640</b>	502
1999	0	0	0	<b>0</b>	0	<b>0</b>	0
2000	0	0	0	<b>0</b>	0	<b>0</b>	0
2001	0	0	0	<b>0</b>	0	<b>0</b>	0
2002	99	0	0	<b>99</b>	57	<b>99</b>	57
2003	0	0	0	<b>0</b>	0	<b>0</b>	0
2004	25	0	0	<b>25</b>	24	<b>25</b>	24
2005	49	0	0	<b>49</b>	35	<b>49</b>	35
2006	51	51	0	<b>102</b>	61	<b>102</b>	61
2007	53	0	73	<b>53</b>	43	<b>126</b>	84
2008	0	81	0	<b>81</b>	72	<b>81</b>	72
2009	136	73	233	<b>209</b>	98	<b>442</b>	254
2010	24	0	0	<b>24</b>	24	<b>24</b>	24
2011	53	0	0	<b>53</b>	41	<b>53</b>	41
2012	72	0	37	<b>72</b>	38	<b>108</b>	51

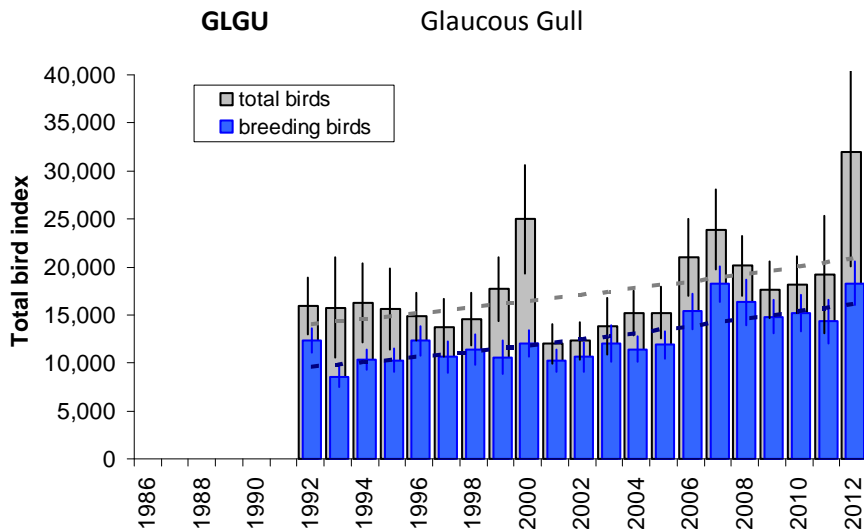
	nyrs	Avg index	SE index	(90%ci)	GrowthRate	(90%ci)
<u>1986-2012</u>						
breeding birds	27	115	28	(69-161)	<b>0.973</b>	(0.926-1.022)
total birds	27	141	35	(84-198)	<b>0.977</b>	(0.927-1.031)
<u>2003-2012</u>						
breeding birds	10	67	18	(36-97)	<b>1.131</b>	(0.984-1.301)
total birds	10	101	40	(35-167)	<b>1.167</b>	(0.979-1.391)



ACP aerial index, 57336 km<sup>2</sup>, combined NSE and ACP data

Year	n singles	2*n pairs	birds in flocks	Breeding bird index	SE breeding	Total bird index	SE total index
1986	6199	3553	1871	<b>9716</b>	1521	<b>11211</b>	1864
1987	10415	2168	654	<b>7362</b>	1036	<b>7877</b>	1095
1988	9464	3347	1090	<b>12800</b>	1708	<b>13082</b>	1819
1989	2100	1604	441	<b>3683</b>	760	<b>4166</b>	819
1990	6222	2743	1500	<b>8946</b>	1274	<b>9862</b>	1579
1991	7325	1671	1373	<b>9007</b>	1170	<b>10169</b>	1522
1992	5586	868	1304	<b>6470</b>	808	<b>7328</b>	1457
1993	8147	2621	611	<b>10752</b>	1014	<b>11001</b>	1052
1994	4414	1180	441	<b>5602</b>	913	<b>6013</b>	1197
1995	8481	1538	136	<b>10032</b>	1018	<b>9745</b>	944
1996	6381	1687	249	<b>8074</b>	1211	<b>7825</b>	1078
1997	4678	2597	471	<b>7247</b>	924	<b>7617</b>	985
1998	3887	1727	407	<b>5611</b>	658	<b>5903</b>	776
1999	6580	2650	195	<b>9222</b>	1210	<b>8869</b>	1088
2000	5452	2335	151	<b>7774</b>	884	<b>7579</b>	815
2001	5816	1539	855	<b>7358</b>	883	<b>8015</b>	1005
2002	4252	1725	565	<b>5969</b>	743	<b>6238</b>	843
2003	5690	1898	159	<b>7587</b>	871	<b>7354</b>	901
2004	4340	1895	97	<b>6226</b>	965	<b>6002</b>	883
2005	5659	1481	0	<b>7139</b>	781	<b>6630</b>	689
2006	14280	2423	248	<b>16735</b>	1534	<b>16209</b>	1369
2007	8635	2128	560	<b>10763</b>	971	<b>11324</b>	1151
2008	6927	1512	390	<b>8439</b>	746	<b>8829</b>	888
2009	8119	2105	466	<b>10224</b>	1769	<b>10689</b>	1727
2010	4611	3272	0	<b>7883</b>	803	<b>7883</b>	803
2011	8349	1554	36	<b>9903</b>	882	<b>9938</b>	883
2012	7331	2439	37	<b>9771</b>	1044	<b>9807</b>	1043

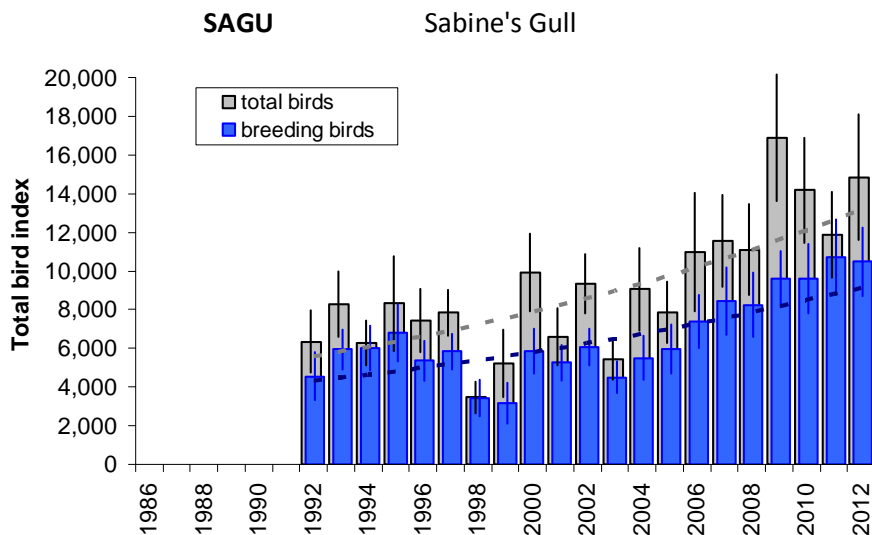
Year	nyrs	Avg index	SE index	(90%ci)	GrowthRate	(90%ci)
1986-2012						
breeding birds	27	8,529	494	(7717-9342)	<b>1.008</b>	(0.996-1.020)
total birds	27	8,784	488	(7981-9587)	<b>1.004</b>	(0.992-1.015)
2003-2012						
breeding birds	10	9,467	933	(7932-11002)	<b>1.026</b>	(0.975-1.080)
total birds	10	9,467	932	(7933-11000)	<b>1.034</b>	(0.981-1.089)



ACP aerial index, 57336 km<sup>2</sup>, combined NSE and ACP data

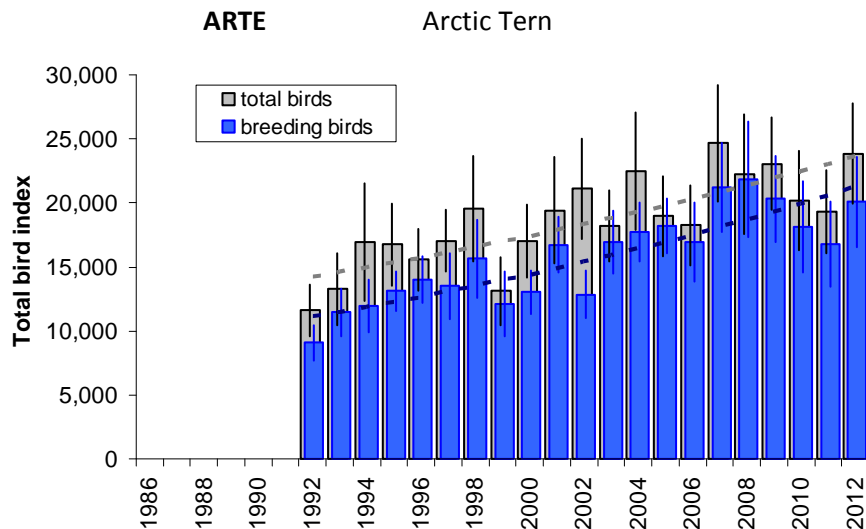
Year	n singles	2*n pairs	birds in flocks	Breeding bird index	SE breeding	Total bird index	SE total index
1986							
1987							
1988							
1989							
1990							
1991							
1992	7710	4565	4110	<b>12388</b>	773	<b>15933</b>	1787
1993	5348	3121	7422	<b>8577</b>	640	<b>15770</b>	3163
1994	6495	4096	5918	<b>10328</b>	653	<b>16256</b>	2523
1995	6983	3029	5229	<b>10264</b>	745	<b>15614</b>	2588
1996	7980	4310	2868	<b>12318</b>	919	<b>14855</b>	1493
1997	6227	4530	3344	<b>10642</b>	1003	<b>13670</b>	1798
1998	6532	4697	3584	<b>11367</b>	963	<b>14531</b>	1670
1999	6290	4209	7452	<b>10588</b>	1064	<b>17699</b>	2014
2000	7368	4542	13131	<b>12018</b>	854	<b>24973</b>	3409
2001	6617	3549	2193	<b>10261</b>	704	<b>12028</b>	1253
2002	6832	3766	1969	<b>10642</b>	931	<b>12309</b>	1181
2003	7362	4802	2339	<b>12020</b>	1159	<b>13865</b>	1795
2004	7082	4320	4045	<b>11428</b>	797	<b>15173</b>	1406
2005	7308	4471	3565	<b>11881</b>	886	<b>15211</b>	1633
2006	7512	8260	5634	<b>15361</b>	1110	<b>21004</b>	2427
2007	11801	6411	5685	<b>18212</b>	1140	<b>23897</b>	2534
2008	10017	6292	3808	<b>16309</b>	1471	<b>20117</b>	1876
2009	10458	4361	2810	<b>14819</b>	1066	<b>17629</b>	1782
2010	7751	7437	2978	<b>15188</b>	1177	<b>18166</b>	1781
2011	9353	4960	4919	<b>14313</b>	1367	<b>19232</b>	3706
2012	11334	6952	13716	<b>18286</b>	1396	<b>32002</b>	7240

Period	nyrs	Avg index	SE index	(90%ci)	GrowthRate	(90%ci)
1986-2012						
breeding birds	21	12,724	593	11749-13700	<b>1.026</b>	(1.019-1.034)
total birds	21	17,616	1,037	15911-19320	<b>1.020</b>	(1.007-1.033)
2003-2012						
breeding birds	10	14,782	777	13503-16060	<b>1.039</b>	(1.015-1.064)
total birds	10	19,630	1,674	16875-22380	<b>1.058</b>	(1.023-1.095)



ACP aerial index, 57336 km<sup>2</sup>, combined NSE and ACP data

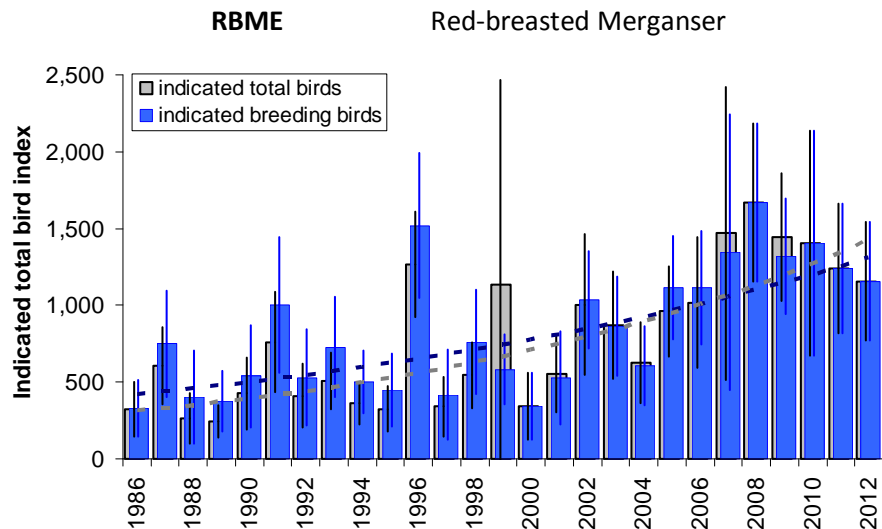
Year	n singles	2*n pairs	birds in flocks	Breeding bird index	SE breeding	Total bird index	SE total index
1986							
1987							
1988							
1989							
1990							
1991							
1992	2749	1592	2019	<b>4554</b>	749	<b>6335</b>	979
1993	3229	2680	2291	<b>5938</b>	640	<b>8287</b>	1040
1994	3924	1907	760	<b>6004</b>	699	<b>6257</b>	705
1995	3559	3251	1984	<b>6815</b>	905	<b>8312</b>	1506
1996	2810	2490	1954	<b>5357</b>	639	<b>7441</b>	982
1997	2700	3132	2025	<b>5848</b>	558	<b>7848</b>	720
1998	2031	1363	461	<b>3417</b>	573	<b>3460</b>	507
1999	1364	1772	2473	<b>3172</b>	644	<b>5237</b>	1057
2000	3454	2247	3913	<b>5862</b>	718	<b>9920</b>	1219
2001	2408	2945	1810	<b>5274</b>	561	<b>6592</b>	890
2002	2820	3230	3442	<b>6084</b>	576	<b>9354</b>	931
2003	2747	1724	944	<b>4511</b>	505	<b>5424</b>	625
2004	2312	3197	3476	<b>5505</b>	697	<b>9053</b>	1302
2005	2928	3039	2485	<b>5975</b>	775	<b>7872</b>	963
2006	3183	4225	3469	<b>7406</b>	835	<b>10980</b>	1859
2007	3991	4458	3093	<b>8449</b>	1053	<b>11542</b>	1442
2008	4023	4232	2845	<b>8255</b>	1000	<b>11100</b>	1436
2009	4558	5024	7318	<b>9582</b>	884	<b>16900</b>	1983
2010	4732	4848	4597	<b>9580</b>	1090	<b>14177</b>	1661
2011	6623	4087	1168	<b>10710</b>	1194	<b>11878</b>	1343
2012	4777	5714	4347	<b>10492</b>	1070	<b>14839</b>	1977
<b>1986-2012</b>	nyrs	Avg index	SE index	(90%ci)	GrowthRate	(90%ci)	
breeding birds	21	6,609	473	(5830-7388)	<b>1.038</b>	(1.023-1.054)	
total birds	21	9,181	741	(7962-10401)	<b>1.044</b>	(1.026-1.062)	
<b>2003-2012</b>							
breeding birds	10	8,047	680	(6928-9165)	<b>1.098</b>	(1.080-1.115)	
total birds	10	11,377	1,075	(9608-13145)	<b>1.096</b>	(1.058-1.135)	



ACP aerial index, 57336 km<sup>2</sup>, combined NSE and ACP data

Year	n singles	2*n pairs	birds in flocks	Breeding bird index	SE breeding	Total bird index	SE total index
1986							
1987							
1988							
1989							
1990							
1991							
1992	5855	2199	2386	<b>9068</b>	838	<b>11598</b>	1208
1993	5140	6330	1775	<b>11461</b>	1140	<b>13279</b>	1706
1994	6550	4962	3727	<b>11922</b>	1256	<b>16952</b>	2783
1995	7469	5120	3728	<b>13107</b>	958	<b>16753</b>	1942
1996	7563	6134	2335	<b>14026</b>	1095	<b>15568</b>	1453
1997	5791	7832	3164	<b>13502</b>	1571	<b>17037</b>	1466
1998	7297	8453	2564	<b>15654</b>	1843	<b>19527</b>	2510
1999	5025	7376	1558	<b>12115</b>	1539	<b>13114</b>	1620
2000	5940	7297	3856	<b>13033</b>	1035	<b>17036</b>	1722
2001	7562	9191	3463	<b>16733</b>	1309	<b>19426</b>	2522
2002	6964	5706	6262	<b>12845</b>	1124	<b>21108</b>	2374
2003	9328	7246	2524	<b>16942</b>	1487	<b>18211</b>	1685
2004	9104	8504	4806	<b>17731</b>	1395	<b>22492</b>	2805
2005	8827	9282	3210	<b>18228</b>	1289	<b>18991</b>	1897
2006	7679	9057	2291	<b>16911</b>	1879	<b>18246</b>	1878
2007	12244	8959	3486	<b>21203</b>	2110	<b>24689</b>	2769
2008	9080	12742	421	<b>21822</b>	2740	<b>22243</b>	2841
2009	9403	10921	2725	<b>20324</b>	2049	<b>23049</b>	2198
2010	7229	10894	2091	<b>18124</b>	2174	<b>20215</b>	2359
2011	8098	8699	2518	<b>16796</b>	2014	<b>19315</b>	1974
2012	10366	9710	3782	<b>20076</b>	2145	<b>23858</b>	2370

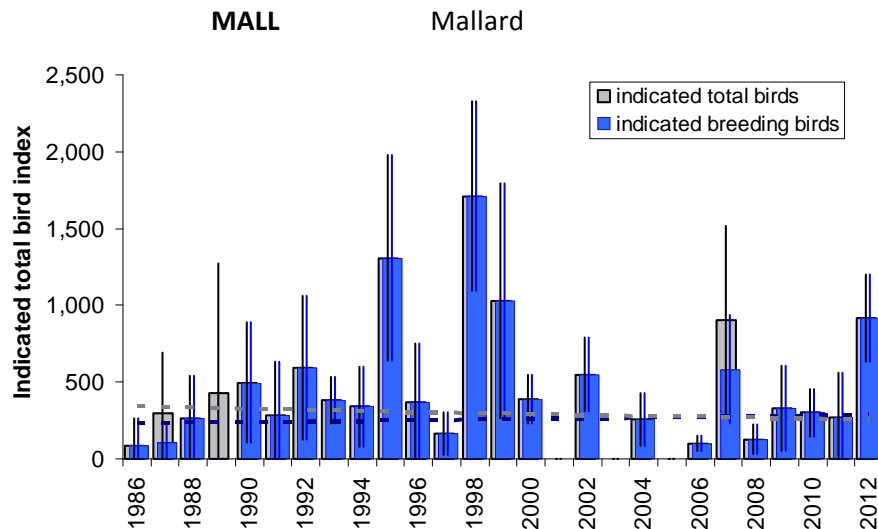
Year	nyrs	Avg index	SE index	(90%ci)	GrowthRate	(90%ci)
1986-2012						
breeding birds	21	15,792	769	14526-17057	<b>1.033</b>	(1.025-1.040)
total birds	21	18,700	774	17427-19974	<b>1.026</b>	(1.018-1.034)
2003-2012						
breeding birds	10	18,816	595	17837-19794	<b>1.010</b>	(0.992-1.029)
total birds	10	21,131	763	19875-22381	<b>1.014</b>	(0.993-1.035)



ACP aerial index, 57336 km<sup>2</sup>, combined NSE and ACP data

Year	birds in			Ind. breed. bird index	SE <i>ibb index</i>	Indicated total index	SE <i>ind.total</i>
	2*singles	2*n pairs	flocks				
1986	130	179	162	<b>329</b>	131	<b>321</b>	120
1987	278	561	178	<b>749</b>	265	<b>606</b>	200
1988	119	552	0	<b>402</b>	185	<b>264</b>	123
1989	152	168	0	<b>374</b>	155	<b>245</b>	103
1990	111	1155	111	<b>540</b>	180	<b>426</b>	145
1991	251	1771	113	<b>1003</b>	275	<b>760</b>	220
1992	104	1172	70	<b>530</b>	153	<b>411</b>	121
1993	271	972	0	<b>727</b>	197	<b>510</b>	142
1994	210	242	0	<b>502</b>	144	<b>364</b>	110
1995	140	638	0	<b>449</b>	136	<b>326</b>	103
1996	602	1487	0	<b>1519</b>	302	<b>1266</b>	258
1997	47	1011	0	<b>417</b>	145	<b>340</b>	118
1998	232	830	0	<b>760</b>	279	<b>545</b>	193
1999	315	202	659	<b>584</b>	190	<b>1137</b>	733
2000	49	293	0	<b>342</b>	138	<b>342</b>	138
2001	70	698	73	<b>528</b>	173	<b>554</b>	159
2002	304	984	155	<b>1034</b>	202	<b>1006</b>	266
2003	376	342	98	<b>865</b>	224	<b>869</b>	233
2004	154	563	49	<b>608</b>	182	<b>624</b>	184
2005	508	523	0	<b>1114</b>	277	<b>961</b>	246
2006	457	490	138	<b>1113</b>	282	<b>1019</b>	295
2007	348	999	121	<b>1347</b>	568	<b>1468</b>	599
2008	582	1087	0	<b>1669</b>	399	<b>1669</b>	399
2009	656	664	123	<b>1320</b>	339	<b>1443</b>	360
2010	660	743	0	<b>1404</b>	590	<b>1404</b>	590
2011	628	613	0	<b>1240</b>	349	<b>1240</b>	349
2012	488	667	0	<b>1156</b>	301	<b>1156</b>	301

	nyrs	Avg index	SE index	(90%ci)	GrowthRate	(90%ci)
<b>1986-2012</b>						
Ind. breeding birds	27	838	78	(710-966)	<b>1.044</b>	(1.029-1.060)
Indicated total birds	27	788	84	(649-926)	<b>1.060</b>	(1.043-1.077)
<b>2003-2012</b>						
Ind. breeding birds	10	1,184	93	(1031-1336)	<b>1.059</b>	(1.015-1.105)
Indicated total birds	10	1,185	101	(1019-1352)	<b>1.065</b>	(1.020-1.113)

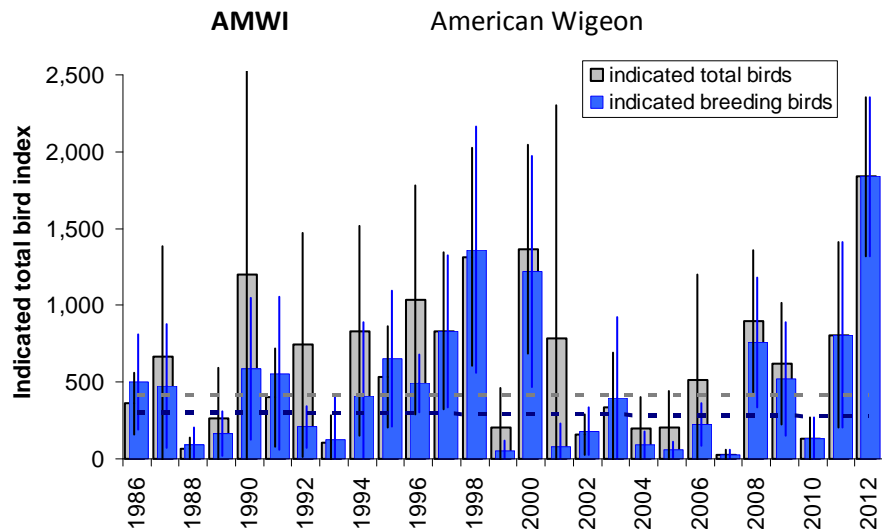


ACP aerial index, 57336 km<sup>2</sup>, combined NSE and ACP data

Year	birds in			Ind. breed. bird index	SE ibb index	Indicated total index	SE ind.total
	2*singles	2*n pairs	flocks				
1986	0	79	0	<b>85</b>	106	<b>85</b>	106
1987	116	0	183	<b>108</b>	129	<b>296</b>	264
1988	92	163	0	<b>262</b>	195	<b>262</b>	195
1989	0	0	416	<b>0</b>	0	<b>427</b>	511
1990	325	179	0	<b>496</b>	351	<b>496</b>	351
1991	103	172	0	<b>281</b>	264	<b>281</b>	264
1992	431	177	0	<b>592</b>	485	<b>592</b>	485
1993	355	48	0	<b>380</b>	158	<b>380</b>	158
1994	157	184	0	<b>341</b>	202	<b>341</b>	202
1995	1288	91	0	<b>1309</b>	800	<b>1309</b>	800
1996	268	104	0	<b>371</b>	314	<b>371</b>	314
1997	124	49	0	<b>164</b>	145	<b>164</b>	145
1998	1109	642	0	<b>1710</b>	609	<b>1710</b>	609
1999	877	202	0	<b>1029</b>	826	<b>1029</b>	826
2000	299	98	0	<b>389</b>	148	<b>389</b>	148
2001	0	0	0	<b>0</b>	0	<b>0</b>	0
2002	359	199	0	<b>550</b>	216	<b>550</b>	216
2003	0	0	0	<b>0</b>	0	<b>0</b>	0
2004	223	50	0	<b>257</b>	189	<b>257</b>	189
2005	0	0	0	<b>0</b>	0	<b>0</b>	0
2006	102	0	0	<b>102</b>	58	<b>102</b>	58
2007	423	160	321	<b>584</b>	358	<b>904</b>	470
2008	81	47	0	<b>128</b>	85	<b>128</b>	85
2009	155	175	0	<b>330</b>	194	<b>330</b>	194
2010	301	0	0	<b>301</b>	191	<b>301</b>	191
2011	0	269	0	<b>269</b>	179	<b>269</b>	179
2012	714	204	0	<b>918</b>	287	<b>918</b>	287

	nyrs	Avg index	SE index	(90%ci)	GrowthRate	(90%ci)
<b>1986-2012</b>						
Ind. breeding birds	27	406	78	(277-535)	<b>1.009</b>	(0.965-1.054)
Indicated total birds	27	445	78	(317-574)	<b>0.989</b>	(0.949-1.031)
<b>2003-2012</b>						
Ind. breeding birds	10	289	89	(142-435)	<b>1.272</b>	(1.107-1.461)
Indicated total birds	10	321	105	(148-494)	<b>1.269</b>	(1.086-1.482)

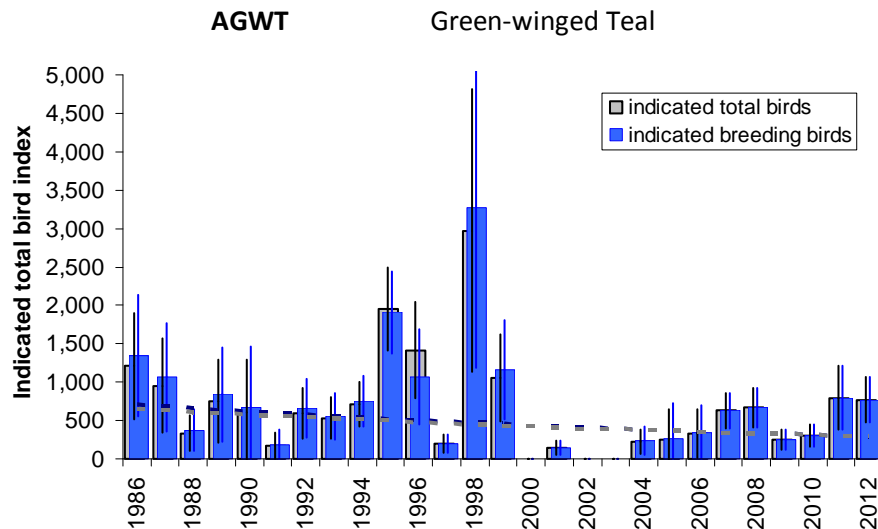




ACP aerial index, 57336 km<sup>2</sup>, combined NSE and ACP data

Year	birds in			Ind. breed. bird index	SE ibb index	Indicated total index	SE ind.total
	2*singles	2*n pairs	flocks				
1986	211	224	0	<b>501</b>	235	<b>360</b>	181
1987	115	672	621	<b>473</b>	259	<b>663</b>	428
1988	47	0	0	<b>94</b>	103	<b>68</b>	78
1989	83	0	98	<b>164</b>	135	<b>265</b>	206
1990	171	678	1281	<b>588</b>	324	<b>1200</b>	960
1991	155	682	0	<b>557</b>	280	<b>400</b>	216
1992	75	161	757	<b>208</b>	110	<b>743</b>	405
1993	48	214	0	<b>126</b>	143	<b>104</b>	111
1994	185	290	500	<b>409</b>	343	<b>834</b>	456
1995	180	1019	0	<b>653</b>	262	<b>534</b>	224
1996	246	246	708	<b>492</b>	148	<b>1035</b>	436
1997	281	497	195	<b>832</b>	363	<b>834</b>	368
1998	483	1170	444	<b>1360</b>	532	<b>1316</b>	495
1999	0	52	155	<b>52</b>	43	<b>207</b>	156
2000	373	1017	410	<b>1219</b>	546	<b>1368</b>	509
2001	0	217	731	<b>79</b>	70	<b>788</b>	921
2002	41	99	0	<b>181</b>	118	<b>158</b>	101
2003	148	370	0	<b>395</b>	340	<b>339</b>	269
2004	46	0	131	<b>90</b>	81	<b>196</b>	138
2005	0	57	148	<b>57</b>	33	<b>205</b>	145
2006	87	137	552	<b>224</b>	104	<b>512</b>	394
2007	0	24	0	<b>24</b>	22	<b>24</b>	22
2008	382	377	141	<b>759</b>	297	<b>900</b>	317
2009	210	312	99	<b>521</b>	217	<b>620</b>	231
2010	0	131	0	<b>131</b>	85	<b>131</b>	85
2011	212	594	0	<b>806</b>	411	<b>806</b>	411
2012	1002	836	0	<b>1837</b>	411	<b>1837</b>	411

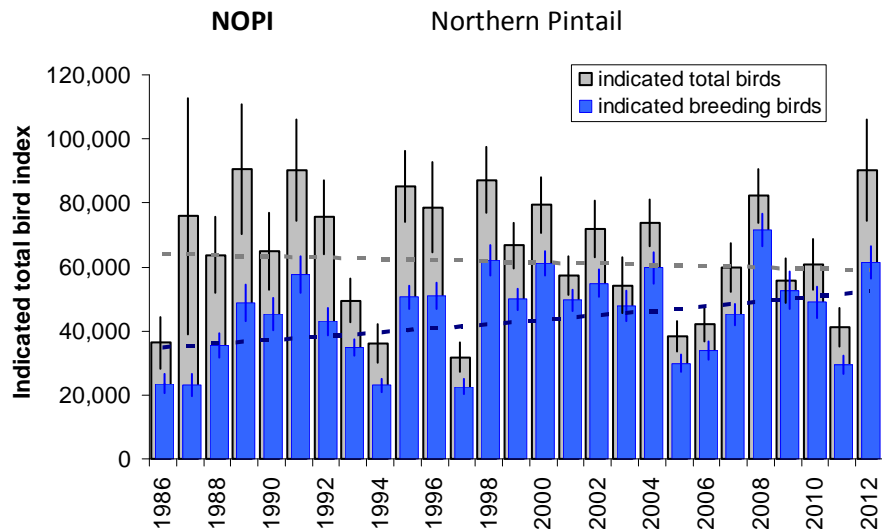
	nyrs	Avg index	SE index	(90%ci)	GrowthRate	(90%ci)
<b>1986-2012</b>						
Ind. breeding birds	27	475	86	(335-616)	<b>0.996</b>	(0.951-1.043)
Indicated total birds	27	609	89	(463-755)	<b>1.0</b>	(0.959-1.044)
<b>2003-2012</b>						
Ind. breeding birds	10	485	175	(196-773)	<b>1.269</b>	(1.018-1.581)
Indicated total birds	10	557	170	(278-836)	<b>1.178</b>	(0.949-1.463)



ACP aerial index, 57336 km<sup>2</sup>, combined NSE and ACP data

Year	birds in			Ind. breed. bird index	SE ibb index	Indicated total index	SE ind.total
	2*singles	2*n pairs	flocks				
1986	772	570	0	<b>1348</b>	616	<b>1211</b>	568
1987	660	349	0	<b>1064</b>	578	<b>956</b>	532
1988	293	0	0	<b>372</b>	286	<b>335</b>	261
1989	484	349	0	<b>840</b>	476	<b>755</b>	437
1990	177	699	0	<b>674</b>	485	<b>606</b>	447
1991	148	0	0	<b>188</b>	212	<b>169</b>	194
1992	461	109	0	<b>657</b>	347	<b>591</b>	317
1993	411	96	0	<b>553</b>	305	<b>531</b>	285
1994	614	48	0	<b>750</b>	346	<b>708</b>	321
1995	1181	593	110	<b>1908</b>	513	<b>1954</b>	505
1996	442	754	370	<b>1067</b>	368	<b>1414</b>	391
1997	98	98	0	<b>195</b>	84	<b>195</b>	84
1998	1559	1938	0	<b>3274</b>	1436	<b>2975</b>	1328
1999	892	52	0	<b>1160</b>	665	<b>1057</b>	615
2000	0	0	0	<b>0</b>	0	<b>0</b>	0
2001	97	49	0	<b>146</b>	77	<b>146</b>	77
2002	0	0	0	<b>0</b>	0	<b>0</b>	0
2003	0	0	0	<b>0</b>	0	<b>0</b>	0
2004	201	0	0	<b>242</b>	198	<b>222</b>	182
2005	78	294	0	<b>267</b>	246	<b>248</b>	226
2006	0	455	0	<b>347</b>	190	<b>327</b>	177
2007	466	160	0	<b>627</b>	215	<b>627</b>	215
2008	585	81	0	<b>666</b>	291	<b>666</b>	291
2009	203	48	0	<b>251</b>	129	<b>251</b>	129
2010	106	202	0	<b>308</b>	88	<b>308</b>	88
2011	586	212	0	<b>798</b>	367	<b>798</b>	367
2012	265	505	0	<b>771</b>	210	<b>771</b>	210

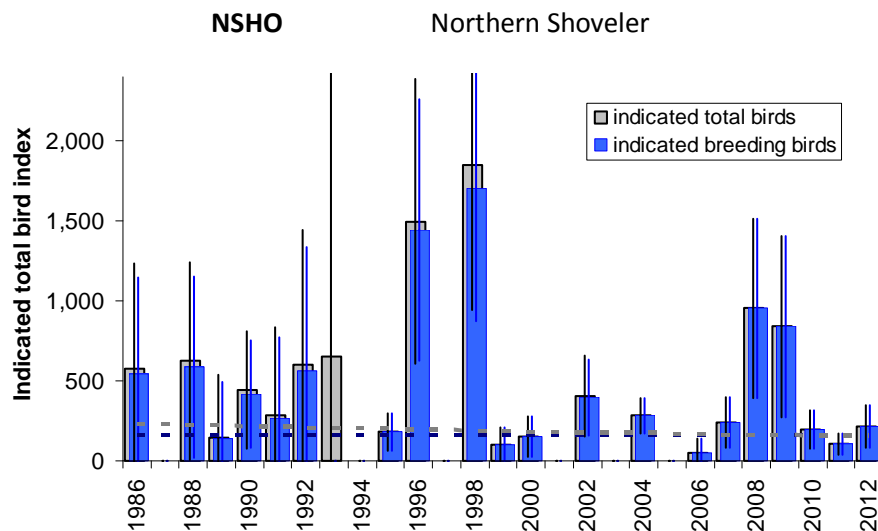
	nyrs	Avg index	SE index	(90%ci)	GrowthRate	(90%ci)
<b>1986-2012</b>						
Ind. breeding birds	27	684	131	(469-900)	<b>0.967</b>	(0.929-1.006)
Indicated total birds	27	668	124	(464-873)	<b>0.970</b>	(0.933-1.009)
<b>2003-2012</b>						
Ind. breeding birds	10	428	85	(288-567)	<b>1.195</b>	(1.086-1.315)
Indicated total birds	10	422	86	(281-563)	<b>1.203</b>	(1.095-1.321)



ACP aerial index, 57336 km<sup>2</sup>, combined NSE and ACP data

Year	birds in			Ind. breed. bird index	SE ibb index	Indicated total index	SE ind.total
	2*singles	2*n pairs	flocks				
1986	15077	8482	15122	<b>23533</b>	2565	<b>36279</b>	5413
1987	13961	9090	44078	<b>23020</b>	3131	<b>75983</b>	23725
1988	25525	10040	25861	<b>35544</b>	3386	<b>63794</b>	8004
1989	40299	8465	38985	<b>48769</b>	6078	<b>90413</b>	14121
1990	38339	6846	21976	<b>45195</b>	5465	<b>64894</b>	9222
1991	47002	10577	33644	<b>57581</b>	5749	<b>90253</b>	11069
1992	33472	9483	29354	<b>42946</b>	4158	<b>75558</b>	8111
1993	28678	6233	13497	<b>34913</b>	2524	<b>49411</b>	4899
1994	20530	2442	11866	<b>22975</b>	2175	<b>36060</b>	4364
1995	41476	9040	33788	<b>50509</b>	3909	<b>85039</b>	7930
1996	44351	6696	28657	<b>51047</b>	4234	<b>78644</b>	9927
1997	19645	2960	9301	<b>22605</b>	2428	<b>31737</b>	3637
1998	47477	14503	26229	<b>61970</b>	4733	<b>87104</b>	7457
1999	35361	14602	16767	<b>49959</b>	3260	<b>66674</b>	5259
2000	41024	20101	19027	<b>61117</b>	3561	<b>79357</b>	6366
2001	35560	14090	10194	<b>49639</b>	3600	<b>57333</b>	4911
2002	46620	8233	18830	<b>54846</b>	4544	<b>71946</b>	7036
2003	39414	8532	8233	<b>47941</b>	4819	<b>54275</b>	6931
2004	47509	12252	14434	<b>59749</b>	4924	<b>73690</b>	6074
2005	26499	3409	9611	<b>29911</b>	2868	<b>38364</b>	3706
2006	30471	3322	9465	<b>33801</b>	3143	<b>42102</b>	4273
2007	40114	5019	14664	<b>45132</b>	3839	<b>59796</b>	6120
2008	60957	10695	10572	<b>71652</b>	5391	<b>82224</b>	7207
2009	44576	8011	3128	<b>52587</b>	6480	<b>55715</b>	7094
2010	34163	14855	11782	<b>49018</b>	4257	<b>60800</b>	5868
2011	22550	6834	11837	<b>29384</b>	2546	<b>41221</b>	4463
2012	48402	13083	28784	<b>61485</b>	5401	<b>90269</b>	10914

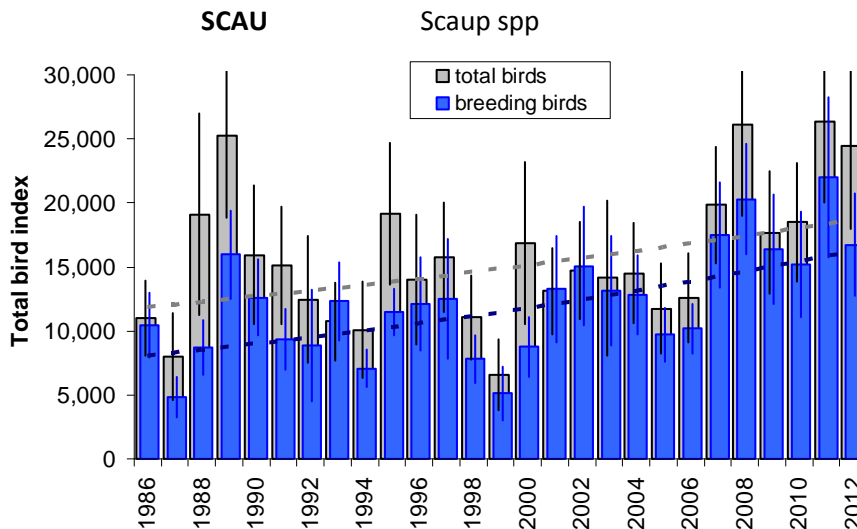
Year Range	nyrs	Avg index	SE index	(90%ci)	GrowthRate	(90%ci)
<b>1986-2012</b>						
Ind. breeding birds	27	45,068	2,651	40706-49421	<b>1.016</b>	(1.002-1.029)
Indicated total birds	27	64,405	3,574	58525-70284	<b>0.997</b>	(0.984-1.010)
<b>2003-2012</b>						
Ind. breeding birds	10	48,066	4,453	40740-55391	<b>1.009</b>	(0.952-1.071)
Indicated total birds	10	59,846	5,568	50686-69001	<b>1.024</b>	(0.970-1.082)



ACP aerial index, 57336 km<sup>2</sup>, combined NSE and ACP data

Year	birds in			Ind. breed. bird index	SE ibb index	Indicated total index	SE ind.total
	2*singles	2*n pairs	flocks				
1986	169	278	0	543	356	577	381
1987	0	0	0	0	0	0	0
1988	265	162	0	587	377	624	404
1989	0	141	0	137	162	146	173
1990	258	0	0	418	305	445	326
1991	0	275	0	267	229	284	245
1992	226	204	0	563	525	599	561
1993	0	0	874	0	0	650	862
1994	0	0	0	0	0	0	0
1995	88	93	0	181	89	181	89
1996	888	313	0	1445	591	1497	628
1997	0	0	0	0	0	0	0
1998	664	995	124	1701	497	1852	537
1999	52	52	0	103	79	103	79
2000	0	153	0	153	76	153	76
2001	0	0	0	0	0	0	0
2002	241	99	0	398	208	407	219
2003	0	0	0	0	0	0	0
2004	232	50	0	282	109	282	109
2005	0	0	0	0	0	0	0
2006	0	51	0	51	53	51	53
2007	49	193	0	242	112	242	112
2008	433	521	0	953	433	953	433
2009	486	355	0	841	475	841	475
2010	195	0	0	195	145	195	145
2011	106	0	0	106	82	106	82
2012	95	120	0	215	100	215	100

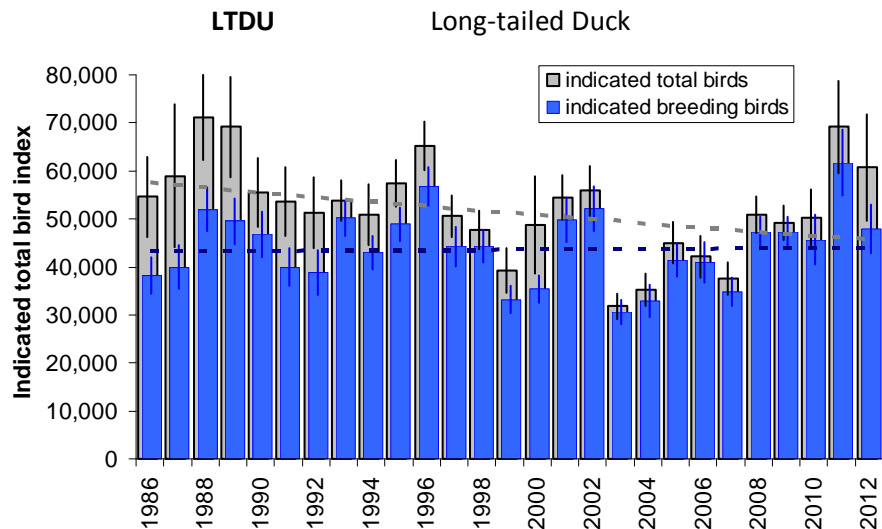
1986-2012	nyrs	Avg index	SE index	(90%ci)	GrowthRate	(90%ci)
Ind. breeding birds	27	347	84	(210-485)	<b>0.999</b>	(0.944-1.058)
Indicated total birds	27	391	88	(246-536)	<b>0.985</b>	(0.931-1.042)
2003-2012						
Ind. breeding birds	10	288	106	(113-464)	<b>1.217</b>	(0.978-1.514)
Indicated total birds	10	288	106	(113-464)	<b>1.217</b>	(0.978-1.514)



ACP aerial index, 57336 km<sup>2</sup>, combined NSE and ACP data

Year	n singles	2*n pairs	birds in flocks	Breeding bird index	SE breeding	Total bird index	SE total index
1986	1467	11186	2406	10422	1534	11025	1772
1987	1411	5145	2801	4855	967	8014	2080
1988	2021	6947	7558	8695	1298	19104	4790
1989	2069	17665	8297	15962	2081	25230	3874
1990	2869	10276	4175	12620	1823	15948	3296
1991	1754	8728	4997	9352	1442	15149	2790
1992	1738	8096	3718	8897	2646	12464	2986
1993	3001	9360	1182	12313	1851	10739	1846
1994	1331	6943	2565	7081	878	10078	2289
1995	2210	10204	6358	11474	1115	19168	3361
1996	3431	8870	2411	12108	2205	13982	3083
1997	2559	11042	3501	12482	2832	15767	2611
1998	2336	4884	2457	7835	1130	11057	2002
1999	1269	3946	1509	5132	1274	6544	1684
2000	2271	6003	4637	8768	1426	16839	3856
2001	2757	10928	1596	13262	2505	13102	2028
2002	3915	10788	2688	15065	2823	14752	2315
2003	2440	12266	2529	13174	2596	14147	3669
2004	2792	11321	2901	12845	1875	14496	2379
2005	2263	7077	2791	9722	1275	11745	2131
2006	2817	6813	3440	10176	1198	12578	2114
2007	4797	12711	2334	17508	2502	19842	2778
2008	5051	15240	5802	20291	2638	26094	4291
2009	4823	11532	1310	16355	2601	17665	2913
2010	1878	13349	3272	15227	2504	18499	2812
2011	3420	18559	4388	21979	3801	26367	3841
2012	3229	13481	7781	16709	2433	24490	3951

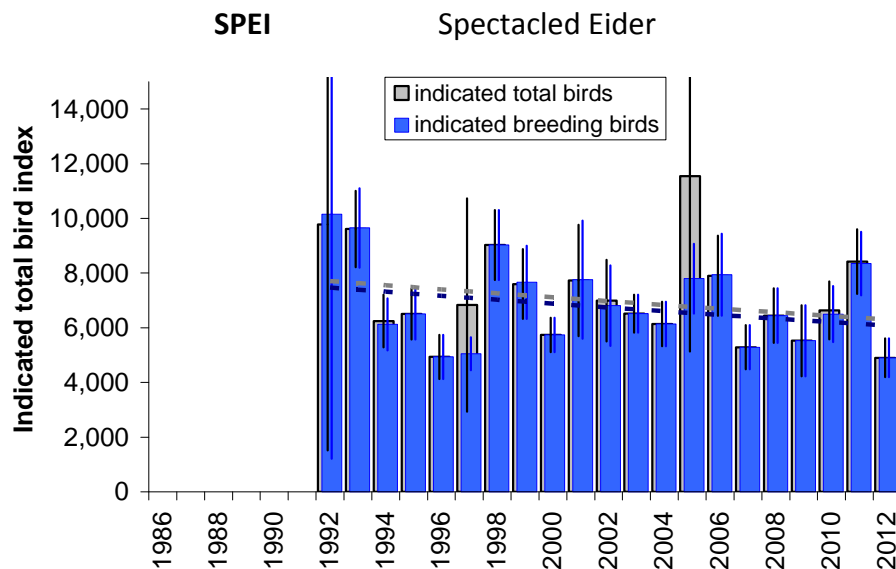
Year	nyrs	Avg index	SE index	(90%ci)	GrowthRate	(90%ci)
1986-2012						
breeding birds	27	12,234	816	10892-13571	1.027	(1.014-1.040)
total birds	27	15,736	1,025	14051-17421	1.018	(1.004-1.031)
2003-2012						
breeding birds	10	15,399	1,271	13308-17481	1.061	(1.020-1.103)
total birds	10	18,592	1,743	15725-21461	1.080	(1.042-1.120)



ACP aerial index, 57336 km<sup>2</sup>, combined NSE and ACP data

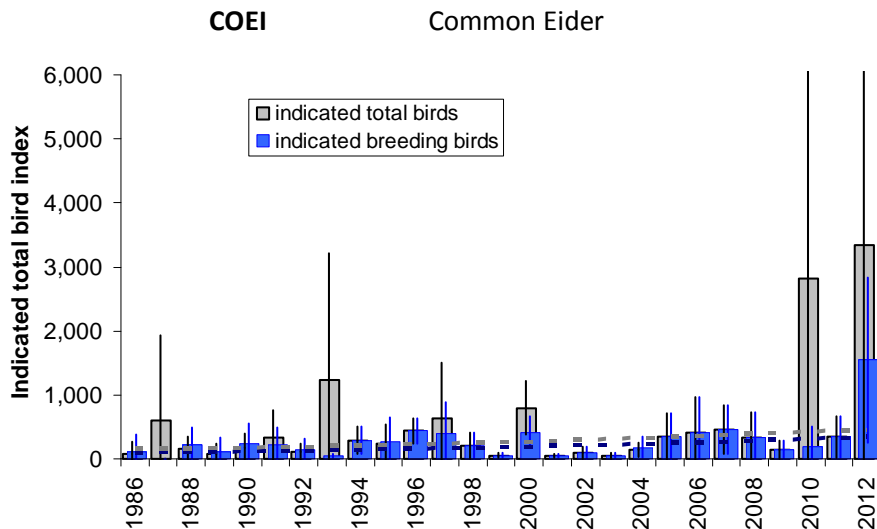
Year	birds in		Ind. breed.	Indicated	SE
	2*singles	2*n pairs			
			bird index	total index	ind.total
1986	16445	24447	18750	38186	4916
1987	17868	23761	21129	39982	8429
1988	25202	25338	20244	51990	5601
1989	18276	40354	22824	49538	6198
1990	20949	27640	10681	46758	4753
1991	17942	23471	15473	39938	4466
1992	15343	28751	11170	38827	4440
1993	24097	24458	4109	50180	3204
1994	21358	21007	8205	42965	4154
1995	22077	26176	9119	48956	3459
1996	28983	25829	8965	56733	3802
1997	19186	27094	6991	44243	2897
1998	22559	20552	3456	44329	2957
1999	16283	15894	6331	33205	3260
2000	16536	18691	12407	35406	5844
2001	20887	29149	5018	49851	3529
2002	24271	29535	3874	52135	3706
2003	14965	15226	1184	30613	2141
2004	16494	16430	2548	32935	2811
2005	18996	21977	3822	41459	3128
2006	19475	20927	1215	40950	3255
2007	18165	16687	2743	34852	2639
2008	23850	23406	3663	47256	2981
2009	24166	23030	1946	47195	2567
2010	18963	26710	4659	45673	4103
2011	28298	33442	7406	61740	6875
2012	24669	23246	12833	47915	7135

1986-2012	nyrs	Avg index	SE index	(90%ci)	GrowthRate	(90%ci)
Ind. breeding birds	27	44,215	1,445	41838-46599	1.001	(0.994-1.008)
Indicated total birds	27	52,243	1,917	49090-55399	0.991	(0.984-0.999)
2003-2012						
Ind. breeding birds	10	43,059	2,879	38323-47794	1.060	(1.038-1.083)
Indicated total birds	10	47,211	3,643	41218-53204	1.075	(1.053-1.096)



ACP aerial index, 57336 km<sup>2</sup>, combined NSE and ACP data

Year	2*singles	2*n pairs	birds in flocks	Ind. breed.	SE ibb index	Indicated total index	SE ind.total
1986							
1987							
1988							
1989							
1990							
1991							
1992	3373	10075	0	<b>10149</b>	5722	<b>9774</b>	5412
1993	4460	6201	0	<b>9650</b>	1015	<b>9615</b>	999
1994	2603	3522	119	<b>6125</b>	705	<b>6244</b>	710
1995	2534	3971	0	<b>6505</b>	667	<b>6505</b>	667
1996	2792	2143	0	<b>4935</b>	633	<b>4935</b>	633
1997	2521	2529	57	<b>5050</b>	508	<b>6835</b>	2089
1998	5153	3877	0	<b>9030</b>	1082	<b>9030</b>	1082
1999	2726	4318	0	<b>7664</b>	1237	<b>7600</b>	1185
2000	3259	2481	0	<b>5740</b>	501	<b>5740</b>	501
2001	2660	6125	0	<b>7763</b>	1221	<b>7727</b>	1182
2002	3773	2679	224	<b>6808</b>	1416	<b>6994</b>	1420
2003	3653	2863	0	<b>6515</b>	601	<b>6515</b>	601
2004	3245	2895	0	<b>6140</b>	601	<b>6140</b>	601
2005	3345	4451	4449	<b>7796</b>	1010	<b>11551</b>	3478
2006	4005	3579	0	<b>7941</b>	1330	<b>7904</b>	1302
2007	3297	1990	0	<b>5287</b>	765	<b>5287</b>	765
2008	3149	3296	0	<b>6445</b>	758	<b>6445</b>	758
2009	3056	2469	0	<b>5525</b>	1075	<b>5525</b>	1075
2010	3608	2893	136	<b>6500</b>	839	<b>6637</b>	856
2011	4698	3650	71	<b>8348</b>	971	<b>8419</b>	980
2012	2557	2345	0	<b>4902</b>	550	<b>4902</b>	550
1992-2012	nyrs	Avg index	SE index	(90%ci)	GrowthRate	(90%ci)	
Ind. breeding birds	21	6,896	334	6346-7446)	<b>0.990</b>	(0.977-1.002)	
Indicated total birds	21	7,158	379	6536-7781)	<b>0.990</b>	(0.977-1.003)	
2003-2012							
Ind. breeding birds	10	6,540	369	5933-7147)	<b>0.987</b>	(0.954-1.020)	
Indicated total birds	10	6,933	618	5915-7950)	<b>0.976</b>	(0.932-1.023)	

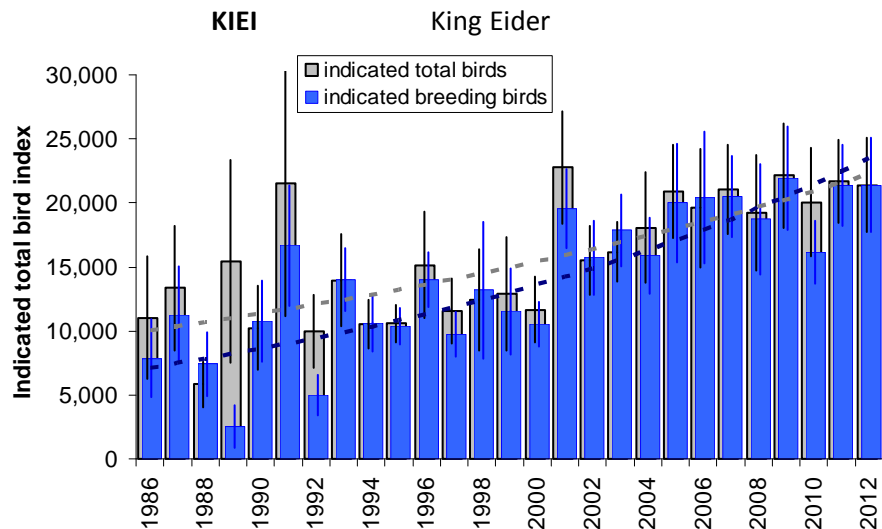


ACP aerial index, 57336 km<sup>2</sup>, combined NSE and ACP data

Year	birds in			Ind. breed. bird index	SE ibb index	Indicated total index	SE ind.total
	2*singles	2*n pairs	flocks				
1986	0	198	0	<b>118</b>	137	<b>85</b>	105
1987	0	0	365	<b>0</b>	0	<b>598</b>	761
1988	77	180	0	<b>225</b>	180	<b>163</b>	138
1989	0	180	0	<b>107</b>	118	<b>78</b>	91
1990	77	198	0	<b>235</b>	209	<b>171</b>	162
1991	149	0	167	<b>227</b>	264	<b>329</b>	307
1992	32	161	0	<b>144</b>	102	<b>104</b>	81
1993	48	0	1194	<b>48</b>	48	<b>1242</b>	1197
1994	143	143	0	<b>286</b>	160	<b>286</b>	160
1995	0	356	0	<b>268</b>	210	<b>233</b>	183
1996	387	48	0	<b>435</b>	222	<b>435</b>	222
1997	49	342	244	<b>391</b>	324	<b>635</b>	556
1998	104	104	0	<b>208</b>	174	<b>208</b>	174
1999	52	0	0	<b>52</b>	50	<b>52</b>	50
2000	212	147	428	<b>417</b>	217	<b>798</b>	275
2001	49	0	0	<b>49</b>	43	<b>49</b>	43
2002	50	50	0	<b>99</b>	72	<b>99</b>	72
2003	53	0	0	<b>53</b>	59	<b>53</b>	59
2004	135	0	0	<b>180</b>	171	<b>144</b>	134
2005	98	246	0	<b>344</b>	256	<b>344</b>	256
2006	51	355	0	<b>406</b>	368	<b>406</b>	368
2007	146	306	0	<b>452</b>	258	<b>452</b>	258
2008	94	235	0	<b>330</b>	286	<b>330</b>	286
2009	48	96	0	<b>144</b>	111	<b>144</b>	111
2010	0	191	2627	<b>191</b>	195	<b>2818</b>	2877
2011	147	196	0	<b>344</b>	263	<b>344</b>	263
2012	143	1402	1789	<b>1545</b>	804	<b>3334</b>	2109

	nyrs	Avg index	SE index	(90%ci)	GrowthRate	(90%ci)
<b>1986-2012</b>						
Ind. breeding birds	27	270	55	(179-361)	<b>1.049</b>	(1.013-1.085)
Indicated total birds	27	516	152	(267-765)	<b>1.044</b>	(1.000-1.091)
<b>2003-2012</b>						
Ind. breeding birds	10	399	133	(179-618)	<b>1.189</b>	(1.038-1.362)
Indicated total birds	10	837	377	(216-1458)	<b>1.358</b>	(1.149-1.606)

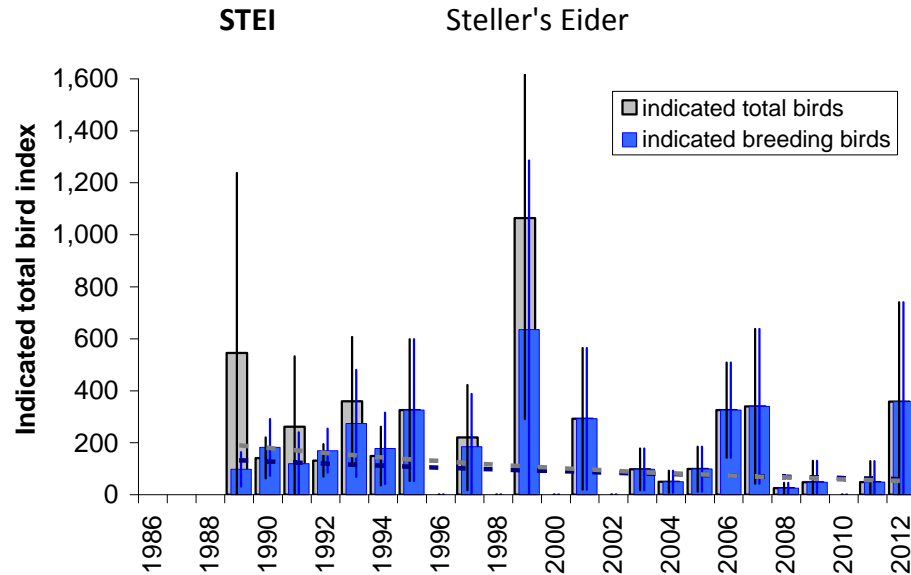




ACP aerial index, 57336 km<sup>2</sup>, combined NSE and ACP data

Year	birds in			Ind. breed. bird index	SE ibb index	Indicated total index	SE ind.total
	2*singles	2*n pairs	flocks				
1986	2469	5642	432	<b>7867</b>	1911	<b>11029</b>	2855
1987	3281	8708	401	<b>11260</b>	2621	<b>13365</b>	3074
1988	3540	2298	0	<b>7415</b>	2214	<b>5841</b>	1710
1989	1086	1143	1268	<b>2568</b>	1131	<b>15453</b>	4590
1990	4531	4890	183	<b>10791</b>	2572	<b>10248</b>	2472
1991	5113	12252	5861	<b>16669</b>	3274	<b>21498</b>	6258
1992	1653	3409	590	<b>5020</b>	1066	<b>9980</b>	1771
1993	3816	9890	122	<b>14024</b>	1941	<b>13959</b>	2463
1994	3309	7196	357	<b>10600</b>	1496	<b>10527</b>	1328
1995	3486	6939	373	<b>10384</b>	1057	<b>10587</b>	1055
1996	7790	6154	297	<b>14033</b>	1707	<b>15144</b>	2650
1997	2553	7494	1226	<b>9763</b>	1201	<b>11550</b>	1568
1998	5005	9144	192	<b>13205</b>	3460	<b>12415</b>	2765
1999	3055	8600	150	<b>11519</b>	1898	<b>12920</b>	2600
2000	3548	6831	126	<b>10531</b>	1206	<b>11656</b>	1628
2001	4692	13912	445	<b>19535</b>	2170	<b>22758</b>	2728
2002	4731	12023	546	<b>15715</b>	1795	<b>15525</b>	1758
2003	6549	10649	0	<b>17855</b>	2373	<b>16180</b>	1963
2004	6865	8406	427	<b>15893</b>	2232	<b>18074</b>	2952
2005	6738	12658	695	<b>19989</b>	3349	<b>20883</b>	2718
2006	5821	16163	143	<b>20402</b>	3186	<b>19611</b>	2975
2007	10753	9756	554	<b>20510</b>	2589	<b>21063</b>	2725
2008	6574	12156	506	<b>18731</b>	3215	<b>19236</b>	3327
2009	7071	14856	222	<b>21927</b>	2611	<b>22149</b>	2630
2010	5597	10574	3881	<b>16172</b>	1687	<b>20053</b>	2668
2011	9809	11557	339	<b>21366</b>	2509	<b>21704</b>	2559
2012	8399	13007	0	<b>21406</b>	2657	<b>21406</b>	2657

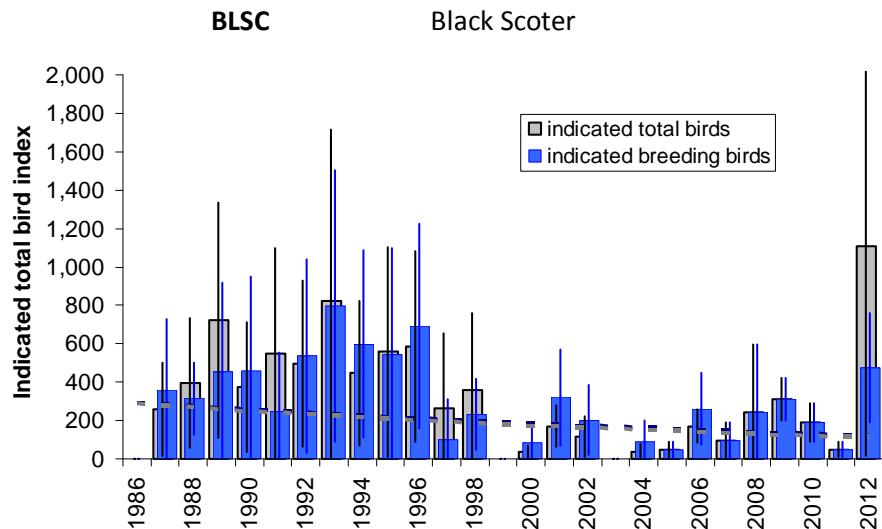
1986-2012	nyrs	Avg index	SE index	(90%ci)	GrowthRate	(90%ci)
Ind. breeding birds	27	14,265	1,032	12568-1596:	<b>1.047</b>	(1.032-1.061)
Indicated total birds	27	15,734	922	14217-1725:	<b>1.031</b>	(1.021-1.041)
2003-2012						
Ind. breeding birds	10	19,425	686	18296-2055:	<b>1.017</b>	(0.997-1.038)
Indicated total birds	10	20,036	582	19079-2099:	<b>1.024</b>	(1.011-1.037)



ACP aerial index, 57336 km<sup>2</sup>, combined NSE and ACP data

Year	2*singles	2*n pairs	birds in flocks	Ind. breed.	SE ibb index	Indicated total index	SE ind.total
1986							
1987							
1988							
1989	46	0	110	<b>98</b>	65	<b>546</b>	388
1990	72	53	0	<b>182</b>	89	<b>141</b>	71
1991	28	111	40	<b>119</b>	75	<b>262</b>	151
1992	62	71	0	<b>170</b>	62	<b>132</b>	50
1993	78	222	116	<b>274</b>	132	<b>359</b>	159
1994	45	110	0	<b>178</b>	98	<b>149</b>	83
1995	0	326	0	<b>326</b>	166	<b>326</b>	166
1996	0	0	0	<b>0</b>	0	<b>0</b>	0
1997	0	218	49	<b>185</b>	120	<b>220</b>	121
1998	0	0	0	<b>0</b>	0	<b>0</b>	0
1999	103	532	239	<b>635</b>	405	<b>1065</b>	495
2000	0	0	0	<b>0</b>	0	<b>0</b>	0
2001	97	195	0	<b>292</b>	212	<b>292</b>	212
2002	0	0	0	<b>0</b>	0	<b>0</b>	0
2003	98	0	0	<b>98</b>	98	<b>98</b>	98
2004	50	0	0	<b>50</b>	52	<b>50</b>	52
2005	49	49	0	<b>98</b>	68	<b>98</b>	68
2006	173	152	0	<b>326</b>	146	<b>326</b>	146
2007	194	146	0	<b>340</b>	256	<b>340</b>	256
2008	25	0	0	<b>25</b>	25	<b>25</b>	25
2009	0	48	0	<b>48</b>	50	<b>48</b>	50
2010	0	0	0	<b>0</b>	0	<b>0</b>	0
2011	0	49	0	<b>49</b>	49	<b>49</b>	49
2012	48	311	0	<b>358</b>	256	<b>358</b>	256

	nyrs	Avg index	SE index	(90%ci)	GrowthRate	(90%ci)
1989-2012						
Ind. breeding birds	24	160	32	(108-213)	<b>0.966</b>	(0.908-1.029)
Indicated total birds	24	204	48	(124-283)	<b>0.946</b>	(0.885-1.010)
2003-2012						
Ind. breeding birds	10	139	45	(65-213)	<b>0.958</b>	(0.769-1.193)
Indicated total birds	10	139	45	(65-213)	<b>0.958</b>	(0.769-1.193)

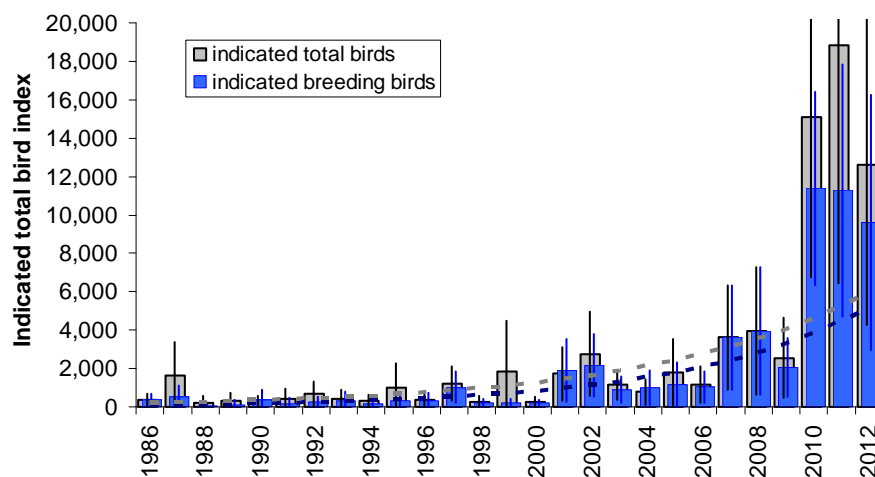


ACP aerial index, 57336 km<sup>2</sup>, combined NSE and ACP data

Year	birds in			Ind. breed. bird index	SE ibb index	Indicated total index	SE ind.total
	2*singles	2*n pairs	flocks				
1986	0	0	0	0	0	0	0
1987	23	1026	100	357	170	258	141
1988	117	218	254	314	134	396	203
1989	44	1193	516	451	226	722	353
1990	85	931	171	459	258	376	213
1991	19	695	431	250	137	548	312
1992	84	1190	257	537	249	497	257
1993	183	1256	437	799	399	821	540
1994	179	725	182	598	314	448	249
1995	97	759	161	546	305	557	347
1996	199	786	251	691	317	586	318
1997	15	217	218	98	111	265	218
1998	84	295	236	232	102	360	232
1999	0	0	0	0	0	0	0
2000	39	0	0	82	72	36	35
2001	151	0	30	321	216	171	109
2002	41	264	0	201	100	116	67
2003	0	0	0	0	0	0	0
2004	21	153	0	90	65	39	32
2005	49	0	0	49	51	49	51
2006	155	151	0	260	138	171	92
2007	49	49	0	97	70	97	70
2008	0	242	0	242	216	242	216
2009	136	175	0	311	95	311	95
2010	191	0	0	191	120	191	120
2011	49	0	0	49	47	49	47
2012	211	264	632	475	216	1107	675

1986-2012	nyrs	Avg index	SE index	(90%ci)	GrowthRate	(90%ci)
Ind. breeding birds	27	285	42	(216-355)	<b>0.968</b>	(0.927-1.010)
Indicated total birds	27	314	54	(226-402)	<b>0.965</b>	(0.917-1.014)
2003-2012						
Ind. breeding birds	10	176	47	(100-253)	<b>1.204</b>	(1.037-1.399)
Indicated total birds	10	226	103	(56-395)	<b>1.338</b>	(1.142-1.569)

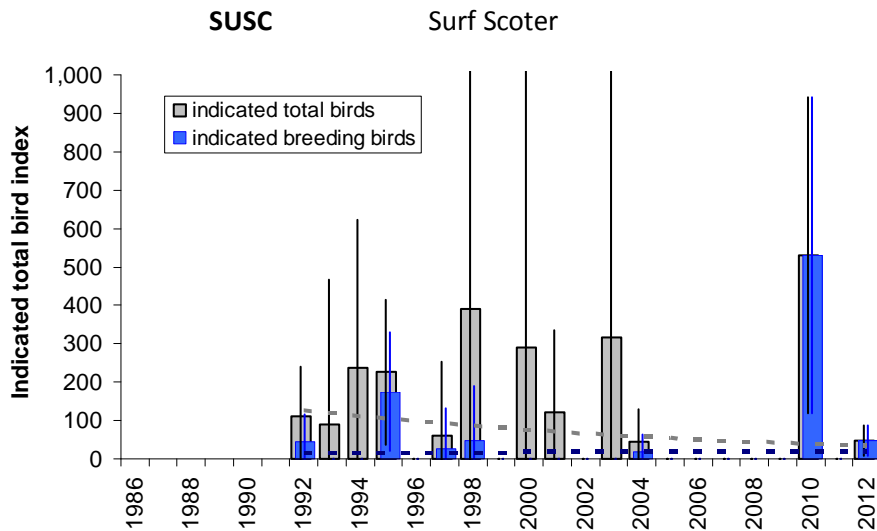
### WWSC White-winged Scoter



ACP aerial index, 57336 km<sup>2</sup>, combined NSE and ACP data

Year	birds in			Ind. breed. bird index	SE ibb index	Indicated total index	SE ind.total
	2*singles	2*n pairs	flocks				
1986	36	254	55	<b>363</b>	164	<b>357</b>	166
1987	50	384	748	<b>538</b>	279	<b>1615</b>	933
1988	17	32	83	<b>73</b>	60	<b>200</b>	198
1989	0	111	165	<b>123</b>	112	<b>306</b>	220
1990	19	318	0	<b>395</b>	226	<b>281</b>	160
1991	16	134	162	<b>183</b>	143	<b>420</b>	294
1992	41	134	276	<b>241</b>	134	<b>665</b>	338
1993	67	150	119	<b>318</b>	314	<b>439</b>	286
1994	18	90	104	<b>135</b>	88	<b>298</b>	180
1995	110	187	454	<b>339</b>	190	<b>979</b>	690
1996	99	82	72	<b>317</b>	293	<b>354</b>	266
1997	47	827	306	<b>1009</b>	394	<b>1211</b>	473
1998	16	162	108	<b>208</b>	106	<b>280</b>	167
1999	29	141	1833	<b>217</b>	107	<b>1822</b>	1387
2000	74	52	60	<b>222</b>	123	<b>280</b>	160
2001	217	1279	191	<b>1893</b>	878	<b>1730</b>	811
2002	476	1040	835	<b>2176</b>	979	<b>2750</b>	1305
2003	328	187	278	<b>897</b>	457	<b>1150</b>	493
2004	166	566	83	<b>1003</b>	530	<b>788</b>	418
2005	287	529	570	<b>1179</b>	659	<b>1800</b>	987
2006	257	402	288	<b>1034</b>	481	<b>1163</b>	548
2007	235	3384	0	<b>3619</b>	1644	<b>3619</b>	1644
2008	540	3409	0	<b>3949</b>	2132	<b>3949</b>	2132
2009	884	1194	466	<b>2078</b>	1170	<b>2544</b>	1498
2010	1311	10062	3742	<b>11373</b>	3115	<b>15115</b>	5125
2011	919	10350	7595	<b>11269</b>	4232	<b>18864</b>	7787
2012	1731	7882	2997	<b>9613</b>	4461	<b>12609</b>	5490

Period	nyrs	Avg index	SE index	(90%ci)	GrowthRate	(90%ci)
1986-2012						
Ind. breeding birds	27	2,028	638	(979-3077)	<b>1.162</b>	(1.126-1.200)
Indicated total birds	27	2,800	920	(1287-4313)	<b>1.137</b>	(1.101-1.174)
2003-2012						
Ind. breeding birds	10	4,601	1,392	(2312-6891)	<b>1.369</b>	(1.261-1.486)
Indicated total birds	10	6,160	2,123	(2668-9652)	<b>1.411</b>	(1.288-1.547)

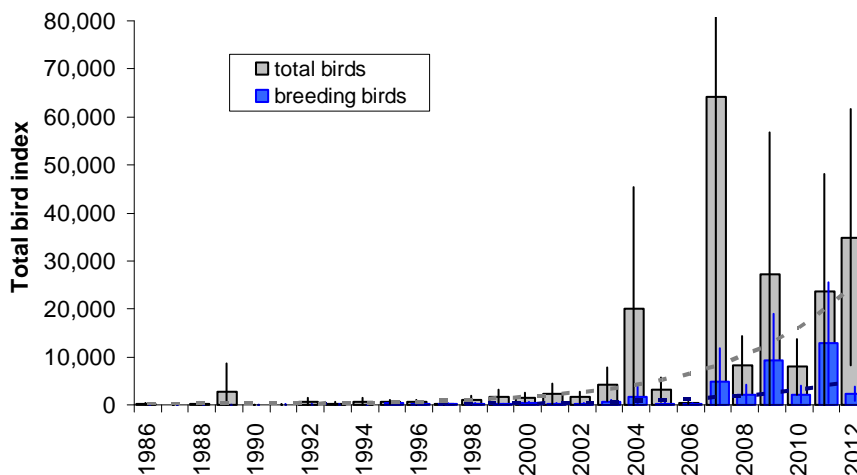


ACP aerial index, 57336 km<sup>2</sup>, combined NSE and ACP data

Year	2*singles	2*n pairs	birds in flocks	Ind. breed. bird index	SE ibb index	Indicated total index	SE ind.total
1986							
1987							
1988							
1989							
1990							
1991							
1992	67	0	0	45	52	111	102
1993	0	0	129	0	0	89	152
1994	0	0	238	0	0	238	233
1995	99	93	0	175	116	226	147
1996	0	0	0	0	0	0	0
1997	0	38	0	25	38	62	76
1998	47	24	427	48	78	390	454
1999	0	0	0	0	0	0	0
2000	0	0	455	0	0	291	444
2001	0	0	122	0	0	122	130
2002	0	0	0	0	0	0	0
2003	0	0	494	0	0	316	319
2004	27	0	0	18	34	44	69
2005	0	0	0	0	0	0	0
2006	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0
2010	425	106	0	531	417	531	417
2011	0	0	0	0	0	0	0
2012	48	0	0	48	49	48	49

Period	nyrs	Avg index	SE index	(90%ci)	GrowthRate	(90%ci)
1989-2012						
Ind. breeding birds	21	42	25	(1-84)	<b>1.002</b>	(0.935-1.075)
Indicated total birds	21	127	32	(74-180)	<b>0.936</b>	(0.876-1.001)
2003-2012						
Ind. breeding birds	10	60	53	-(27-146)	<b>1.204</b>	(0.956-1.516)
Indicated total birds	10	94	58	-(1-188)	<b>0.965</b>	(0.766-1.215)

**SNGO**      Snow Goose

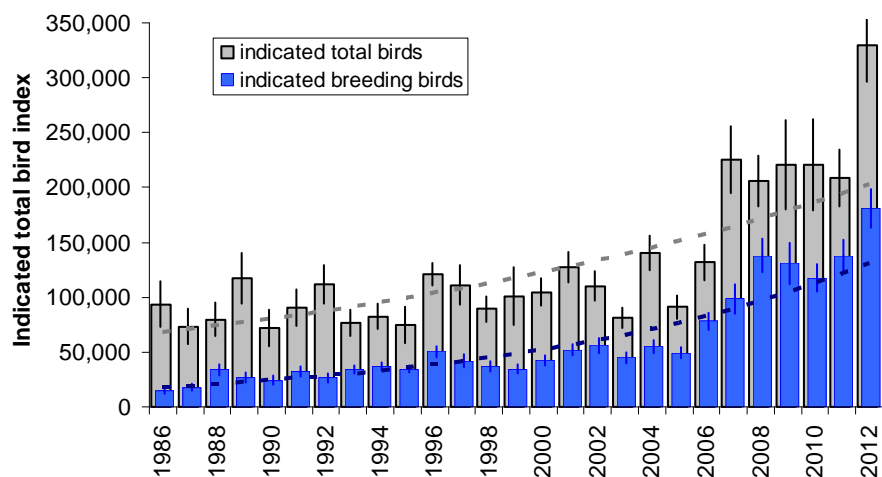


ACP aerial index, 57336 km<sup>2</sup>, combined NSE and ACP data

Year	n singles	2*n pairs	birds in flocks	Breeding bird index	SE breeding	Total bird index	SE total index
1986	16	0	167	22	27	127	138
1987	0	0	0	0	0	0	0
1988	16	0	347	23	29	224	273
1989	0	0	3761	0	0	2665	3664
1990	0	0	0	0	0	0	0
1991	0	48	0	44	54	62	83
1992	63	0	905	90	62	625	525
1993	0	94	215	94	65	309	172
1994	24	0	933	24	24	663	465
1995	114	324	132	437	193	569	233
1996	99	101	378	200	109	578	290
1997	69	144	73	221	107	306	135
1998	83	145	728	235	100	971	613
1999	49	103	2040	153	68	1788	894
2000	26	352	1275	378	114	1583	535
2001	0	232	2071	232	81	2303	1266
2002	25	148	1411	173	115	1585	734
2003	0	640	3486	630	255	4317	2111
2004	147	1564	18986	1665	1323	20139	15319
2005	14	299	2849	314	197	3163	1513
2006	69	177	144	241	104	405	170
2007	48	4735	59337	4783	4239	64120	58163
2008	306	1705	6271	2011	1309	8282	3707
2009	453	8794	17907	9247	5909	27154	17952
2010	110	2051	5769	2160	1093	7929	3573
2011	441	12533	10689	12974	7582	23662	14869
2012	290	1953	32683	2243	892	34926	16228

Year Range	nyrs	Avg index	SE index	(90%ci)	GrowthRate	(90%ci)
1986-2012						
breeding birds	27	1,429	584	(469-2389)	<b>1.264</b>	(1.221-1.308)
total birds	27	7,721	2,826	(3071-12370)	<b>1.249</b>	(1.192-1.310)
2003-2012						
breeding birds	10	3,627	1,343	(1418-5835)	<b>1.318</b>	(1.081-1.606)
total birds	10	19,410	6,171	(9259-29560)	<b>1.237</b>	(0.958-1.597)

### WFGO White-fronted Goose

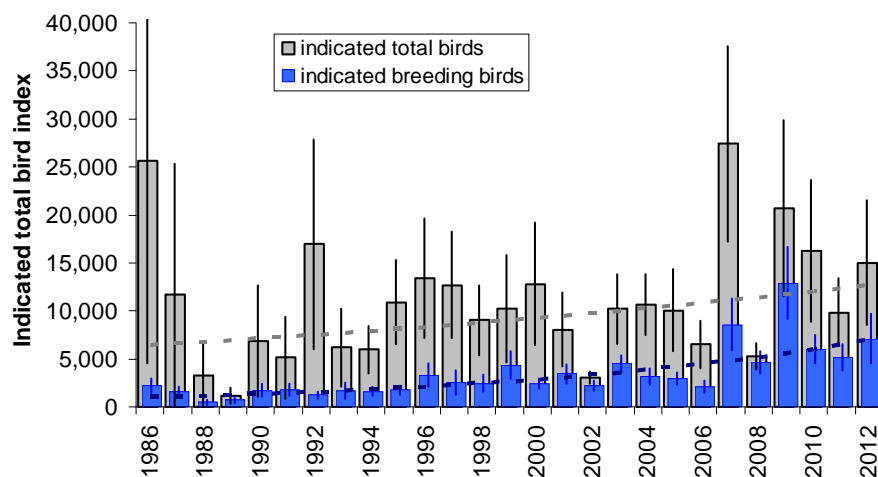


ACP aerial index, 57336 km<sup>2</sup>, combined NSE and ACP data

Year	2*singles	2*n pairs	birds in flocks	Ind. breed. bird index	SE ibb index	Indicated total index	SE ind.total
1986	2990	12209	66639	<b>14920</b>	2045	<b>93644</b>	12467
1987	4684	11827	52570	<b>17918</b>	2318	<b>73312</b>	9981
1988	10413	18100	55186	<b>33715</b>	3670	<b>79870</b>	9585
1989	5998	19943	72462	<b>26530</b>	2898	<b>117604</b>	14150
1990	6935	14559	50006	<b>24325</b>	2752	<b>72028</b>	10383
1991	9465	18861	45302	<b>32444</b>	3389	<b>90392</b>	10007
1992	5380	21449	58496	<b>26457</b>	2580	<b>111589</b>	10739
1993	7327	26424	36611	<b>34241</b>	2717	<b>76649</b>	7684
1994	6215	30294	41438	<b>36571</b>	2413	<b>82239</b>	7030
1995	10674	21686	35846	<b>34487</b>	2375	<b>74674</b>	10054
1996	14777	34377	70313	<b>50373</b>	3644	<b>121048</b>	6400
1997	7283	35099	59393	<b>41986</b>	3690	<b>111241</b>	11253
1998	9804	26287	45020	<b>36864</b>	3025	<b>89417</b>	7293
1999	8030	26607	58693	<b>34516</b>	2726	<b>101021</b>	16021
2000	8652	33655	54656	<b>42552</b>	3085	<b>104580</b>	7711
2001	7821	45152	66694	<b>52045</b>	3124	<b>127154</b>	8512
2002	11338	46111	55083	<b>56194</b>	4332	<b>109947</b>	8415
2003	12029	32875	39459	<b>45097</b>	3301	<b>81525</b>	5841
2004	10235	46099	76982	<b>55150</b>	3736	<b>140612</b>	9824
2005	9800	38996	42996	<b>49404</b>	3328	<b>91039</b>	6446
2006	15478	61471	55280	<b>78113</b>	5219	<b>131683</b>	10123
2007	17896	80722	126609	<b>98618</b>	8732	<b>225227</b>	19004
2008	30760	107138	67935	<b>137897</b>	10394	<b>205832</b>	14865
2009	32213	98462	89975	<b>130675</b>	12785	<b>220650</b>	26481
2010	22442	95246	103228	<b>117688</b>	8179	<b>220917</b>	25675
2011	48071	89143	71430	<b>137215</b>	11233	<b>208644</b>	17228
2012	44648	136291	148628	<b>180939</b>	11819	<b>329567</b>	20932

Period	nyrs	Avg index	SE index	(90%ci)	GrowthRate	(90%ci)
1986-2012						
Ind. breeding birds	27	60,257	8,420	46405-74101	<b>1.079</b>	(1.069-1.090)
Indicated total birds	27	129,337	12,283	09131-14954	<b>1.043</b>	(1.032-1.054)
2003-2012						
Ind. breeding birds	10	103,080	14,375	9432-12672	<b>1.164</b>	(1.128-1.202)
Indicated total birds	10	185,570	23,668	46635-22451	<b>1.137</b>	(1.092-1.184)

### CAGO Canada Goose

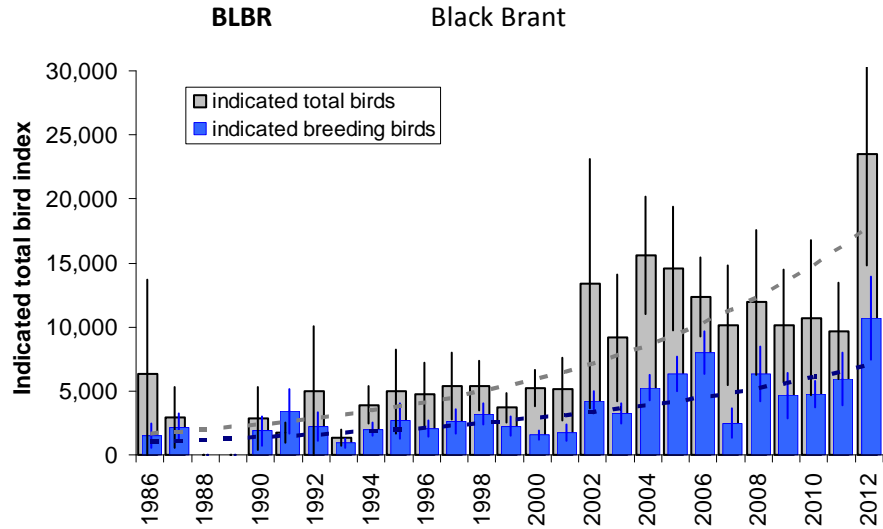


ACP aerial index, 57336 km<sup>2</sup>, combined NSE and ACP data

Year	2*singles	2*n pairs	birds in flocks	Ind. breed. bird index	SE ibb index	Indicated total index	SE ind.total
1986	665	1630	29497	<b>2242</b>	474	<b>25689</b>	12728
1987	675	729	15428	<b>1562</b>	383	<b>11734</b>	8176
1988	224	203	3815	<b>489</b>	209	<b>3220</b>	2060
1989	218	493	1152	<b>703</b>	230	<b>1134</b>	525
1990	371	1512	7010	<b>1716</b>	404	<b>6893</b>	3501
1991	529	1295	5970	<b>1782</b>	435	<b>5135</b>	2579
1992	408	851	14448	<b>1261</b>	284	<b>16941</b>	6548
1993	272	1624	4921	<b>1685</b>	489	<b>6178</b>	2495
1994	389	1296	5295	<b>1606</b>	309	<b>5979</b>	1530
1995	969	779	10238	<b>1756</b>	369	<b>10913</b>	2690
1996	869	2534	11759	<b>3320</b>	816	<b>13397</b>	3842
1997	766	1772	12683	<b>2536</b>	822	<b>12701</b>	3410
1998	653	1981	8002	<b>2464</b>	537	<b>9043</b>	2246
1999	827	3806	8162	<b>4347</b>	881	<b>10218</b>	3443
2000	1130	1225	14275	<b>2455</b>	397	<b>12795</b>	3888
2001	1080	2319	6523	<b>3460</b>	774	<b>8058</b>	2394
2002	740	1467	990	<b>2264</b>	385	<b>3044</b>	444
2003	1844	2537	6930	<b>4504</b>	681	<b>10188</b>	2210
2004	778	2493	8868	<b>3154</b>	494	<b>10653</b>	1917
2005	1028	1807	9254	<b>2946</b>	508	<b>10048</b>	2635
2006	639	1504	5560	<b>2087</b>	410	<b>6505</b>	1524
2007	3671	4901	18830	<b>8572</b>	2117	<b>27402</b>	6551
2008	2363	2310	587	<b>4672</b>	983	<b>5259</b>	1062
2009	2121	10804	7793	<b>12925</b>	2381	<b>20718</b>	5657
2010	3167	2862	10235	<b>6030</b>	1114	<b>16264</b>	4565
2011	3276	1879	4704	<b>5155</b>	1202	<b>9859</b>	2335
2012	3646	3441	7941	<b>7087</b>	1888	<b>15028</b>	4114

Period	nyrs	Avg index	SE index	(90%ci)	GrowthRate	(90%ci)
<b>1986-2012</b>						
Ind. breeding birds	27	3,436	520	(2581-4292)	<b>1.077</b>	(1.058-1.096)
Indicated total birds	27	10,926	1,229	(8904-12948)	<b>1.026</b>	(0.999-1.055)
<b>2003-2012</b>						
Ind. breeding birds	10	5,713	1,013	(4047-7380)	<b>1.102</b>	(1.010-1.202)
Indicated total birds	10	13,192	2,149	(9658-16727)	<b>1.045</b>	(0.951-1.147)

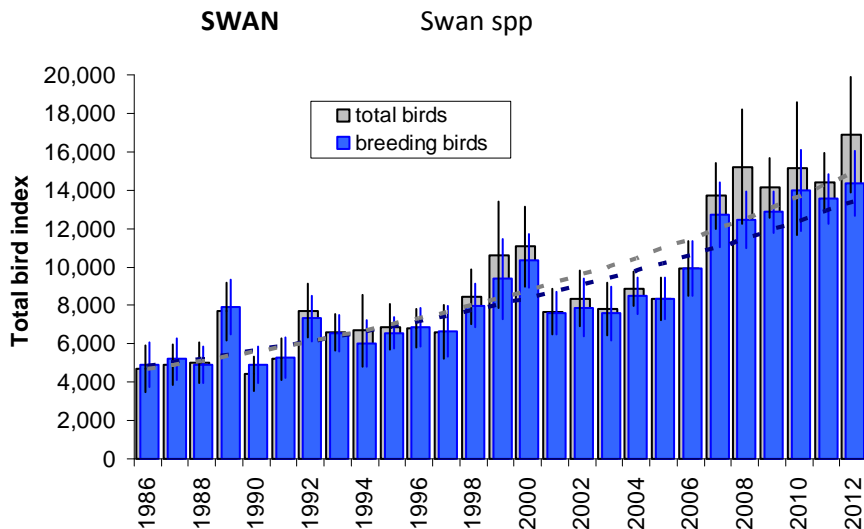




ACP aerial index, 57336 km<sup>2</sup>, combined NSE and ACP data

Year	birds in			Ind. breed. bird index	SE ibb index	Indicated total index	SE ind.total
	2*singles	2*n pairs	flocks				
1986	461	1275	6371	1529	594	6297	4712
1987	954	1274	2587	2176	747	2938	1556
1988	0	0	0	0	0	0	0
1989	0	0	0	0	0	0	0
1990	823	1077	2457	1861	830	2875	1574
1991	1803	1435	500	3408	1498	1737	708
1992	932	1355	1484	2206	795	4977	3239
1993	419	581	464	943	281	1324	455
1994	1081	893	2015	2012	437	3914	921
1995	1649	1004	2322	2653	1183	4975	2337
1996	1180	833	2798	2057	562	4751	1555
1997	1231	1445	2857	2603	762	5352	1770
1998	1555	1635	2214	3190	664	5405	1316
1999	640	1599	1458	2239	512	3697	746
2000	908	651	3801	1559	294	5210	897
2001	444	1306	3589	1729	425	5149	1491
2002	2497	1684	3795	4218	699	13368	6210
2003	1913	1249	6161	3247	688	9159	3104
2004	2563	2741	10597	5246	789	15569	2813
2005	2534	3751	8321	6321	929	14558	3013
2006	2945	5084	4600	8010	1230	12380	2037
2007	1470	1011	7650	2481	962	10131	3028
2008	2750	3597	5582	6347	1652	11930	3720
2009	1884	2751	5460	4635	1233	10095	2808
2010	3004	1732	5984	4737	982	10720	3892
2011	2406	3513	3765	5919	1485	9684	2483
2012	3557	7106	12886	10663	2284	23548	5550

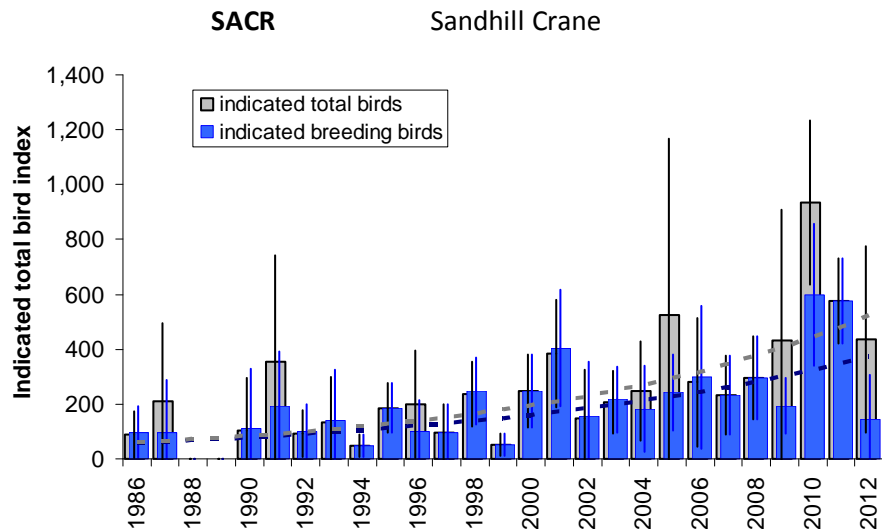
Period	nyrs	Avg index	SE index	(90%ci)	GrowthRate	(90%ci)
1986-2012						
Ind. breeding birds	27	3,407	463	(2646-4168)	1.076	(1.055-1.098)
Indicated total birds	27	7,447	1,039	(5738-9156)	1.095	(1.071-1.121)
2003-2012						
Ind. breeding birds	10	5,761	741	(4541-6980)	1.059	(0.984-1.139)
Indicated total birds	10	12,777	1,370	10524-1503:	1.020	(0.966-1.076)



ACP aerial index, 57336 km<sup>2</sup>, combined NSE and ACP data

Year	n singles	2*n pairs	birds in flocks	Breeding bird index	SE breeding	Total bird index	SE total index
1986	1277	3617	268	4910	693	4690	727
1987	3751	3316	238	5199	654	4905	627
1988	1794	3111	500	4913	584	5003	642
1989	2502	5396	521	7915	857	7682	923
1990	2774	2149	75	4916	577	4439	554
1991	2736	2549	409	5280	637	5205	666
1992	3196	4111	596	7310	716	7726	856
1993	2795	3758	240	6554	572	6574	579
1994	2390	3626	396	6018	742	6692	1143
1995	2850	3714	433	6567	506	6880	723
1996	3946	2906	209	6852	615	6812	611
1997	3271	3379	298	6647	803	6607	848
1998	3237	4749	847	7995	705	8450	867
1999	3625	5743	1721	9381	1264	10625	1675
2000	2991	7321	1196	10331	853	11070	1272
2001	3182	4393	306	7580	672	7666	729
2002	4011	3874	451	7882	907	8356	882
2003	3619	3981	448	7598	850	7808	839
2004	4022	4460	483	8483	579	8869	550
2005	3581	4779	277	8361	656	8346	670
2006	4152	5751	347	9905	871	9924	877
2007	6140	6573	990	12713	1024	13704	1042
2008	5404	7061	2736	12466	889	15201	1812
2009	6220	6647	1252	12867	662	14120	936
2010	5153	8850	1133	14002	1281	15135	2097
2011	5810	7741	872	13551	790	14423	914
2012	6512	7862	2521	14373	1025	16894	1825

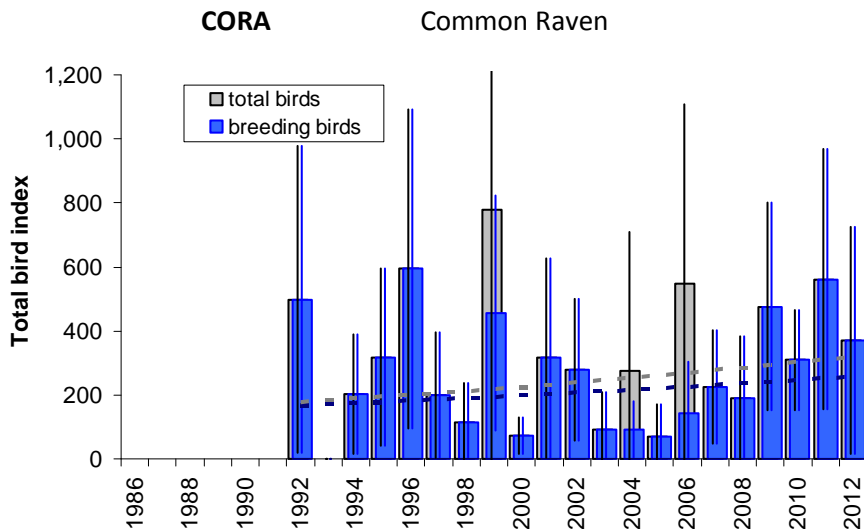
Period	nyrs	Avg index	SE index	(90%ci)	GrowthRate	(90%ci)
1986-2012						
breeding birds	27	8,540	576	(7593-9487)	1.040	(1.034-1.046)
total birds	27	9,030	700	(7878-10182)	1.046	(1.038-1.053)
2003-2012						
breeding birds	10	11,432	814	10093-12777	1.078	(1.061-1.095)
total birds	10	12,442	1,056	10705-14180	1.092	(1.069-1.115)



ACP aerial index, 57336 km<sup>2</sup>, combined NSE and ACP data

Year	2*singles	2*n pairs	birds in flocks	Ind. breed. bird index	SE ibb index	Indicated total index	SE ind.total
1986	79	0	0	98	104	89	96
1987	0	139	69	98	104	212	163
1988	0	0	0	0	0	0	0
1989	0	0	0	0	0	0	0
1990	0	160	0	112	120	102	110
1991	80	131	101	191	145	355	241
1992	82	0	0	101	108	92	99
1993	0	181	0	141	103	133	97
1994	48	0	0	48	48	48	48
1995	140	47	0	186	78	186	78
1996	0	99	101	99	70	200	118
1997	0	96	0	96	63	96	63
1998	142	83	0	246	111	236	106
1999	52	0	0	52	48	52	48
2000	150	98	0	247	106	247	106
2001	181	247	0	403	156	384	147
2002	50	152	0	156	118	147	110
2003	145	49	0	217	115	206	109
2004	83	100	65	182	119	248	130
2005	135	152	306	242	94	526	372
2006	122	202	0	299	196	280	181
2007	233	0	0	233	175	233	175
2008	166	128	0	294	117	294	117
2009	145	48	240	193	91	434	297
2010	297	301	337	598	209	935	198
2011	470	106	0	576	154	576	154
2012	48	95	293	143	108	436	211

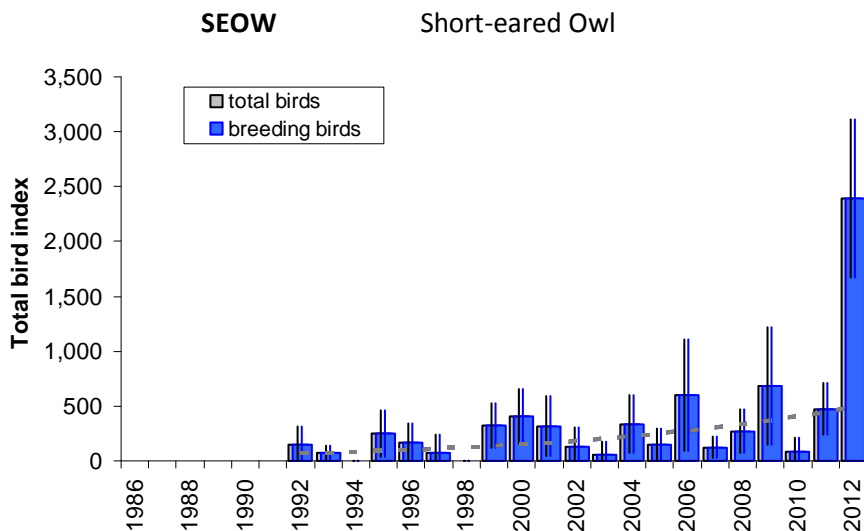
Period	nyrs	Avg index	SE index	(90%ci)	GrowthRate	(90%ci)
1986-2012						
Ind. breeding birds	27	194	28	(149-240)	<b>1.073</b>	(1.047-1.099)
Indicated total birds	27	252	39	(188-316)	<b>1.086</b>	(1.057-1.115)
2003-2012						
Ind. breeding birds	10	298	51	(215-381)	<b>1.048</b>	(0.962-1.142)
Indicated total birds	10	417	70	(301-533)	<b>1.109</b>	(1.034-1.190)



ACP aerial index, 57336 km<sup>2</sup>, combined NSE and ACP data

Year	n singles	2*n pairs	birds in flocks	Breeding bird index	SE breeding	Total bird index	SE total index
1986							
1987							
1988							
1989							
1990							
1991							
1992	182	348	0	<b>499</b>	291	<b>499</b>	291
1993	0	0	0	<b>0</b>	0	<b>0</b>	0
1994	215	0	0	<b>202</b>	114	<b>202</b>	114
1995	196	142	0	<b>318</b>	169	<b>318</b>	169
1996	163	466	0	<b>594</b>	303	<b>594</b>	303
1997	216	0	0	<b>198</b>	120	<b>198</b>	120
1998	120	0	0	<b>113</b>	77	<b>113</b>	77
1999	255	225	324	<b>455</b>	223	<b>779</b>	523
2000	24	49	0	<b>73</b>	35	<b>73</b>	35
2001	191	144	0	<b>316</b>	190	<b>316</b>	190
2002	168	130	0	<b>279</b>	135	<b>279</b>	135
2003	99	0	0	<b>92</b>	70	<b>92</b>	70
2004	41	50	184	<b>91</b>	54	<b>275</b>	264
2005	75	0	0	<b>68</b>	61	<b>68</b>	61
2006	155	0	407	<b>142</b>	99	<b>549</b>	341
2007	225	0	0	<b>225</b>	107	<b>225</b>	107
2008	189	0	0	<b>189</b>	118	<b>189</b>	118
2009	320	155	0	<b>476</b>	197	<b>476</b>	197
2010	309	0	0	<b>309</b>	95	<b>309</b>	95
2011	562	0	0	<b>562</b>	248	<b>562</b>	248
2012	371	0	0	<b>371</b>	216	<b>371</b>	216

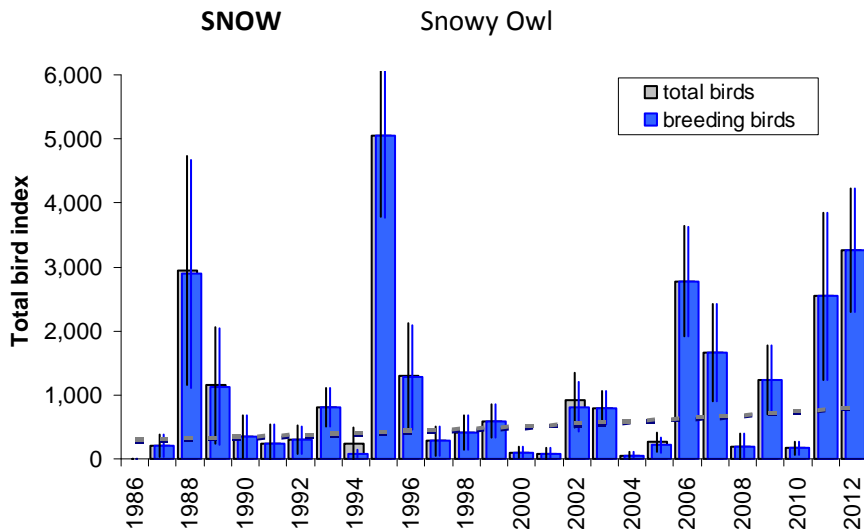
	nyrs	Avg index	SE index	(90%ci)	GrowthRate	(90%ci)
<b>1986-2012</b>						
breeding birds	21	265	38	(204-327)	<b>1.022</b>	(0.974-1.072)
total birds	21	309	44	(237-381)	<b>1.030</b>	(0.981-1.081)
<b>2003-2012</b>						
breeding birds	10	253	54	(163-342)	<b>1.246</b>	(1.172-1.324)
total birds	10	312	56	(220-403)	<b>1.160</b>	(1.041-1.292)



ACP aerial index, 57336 km<sup>2</sup>, combined NSE and ACP data

Year	n singles	2*n pairs	birds in flocks	Breeding bird index	SE breeding	Total bird index	SE total index
1986							
1987							
1988							
1989							
1990							
1991							
1992	145	0	0	<b>145</b>	104	<b>145</b>	104
1993	71	0	0	<b>71</b>	40	<b>71</b>	40
1994	0	0	0	<b>0</b>	0	<b>0</b>	0
1995	246	0	0	<b>246</b>	128	<b>246</b>	128
1996	166	0	0	<b>166</b>	104	<b>166</b>	104
1997	73	0	0	<b>73</b>	101	<b>73</b>	101
1998	0	0	0	<b>0</b>	0	<b>0</b>	0
1999	325	0	0	<b>325</b>	124	<b>325</b>	124
2000	407	0	0	<b>407</b>	154	<b>407</b>	154
2001	319	0	0	<b>319</b>	164	<b>319</b>	164
2002	127	0	0	<b>127</b>	108	<b>127</b>	108
2003	57	0	0	<b>57</b>	72	<b>57</b>	72
2004	337	0	0	<b>337</b>	160	<b>337</b>	160
2005	150	0	0	<b>150</b>	89	<b>150</b>	89
2006	601	0	0	<b>601</b>	308	<b>601</b>	308
2007	121	0	0	<b>121</b>	60	<b>121</b>	60
2008	269	0	0	<b>269</b>	120	<b>269</b>	120
2009	683	0	0	<b>683</b>	328	<b>683</b>	328
2010	86	0	0	<b>86</b>	75	<b>86</b>	75
2011	475	0	0	<b>475</b>	143	<b>475</b>	143
2012	2237	156	0	<b>2393</b>	436	<b>2393</b>	436

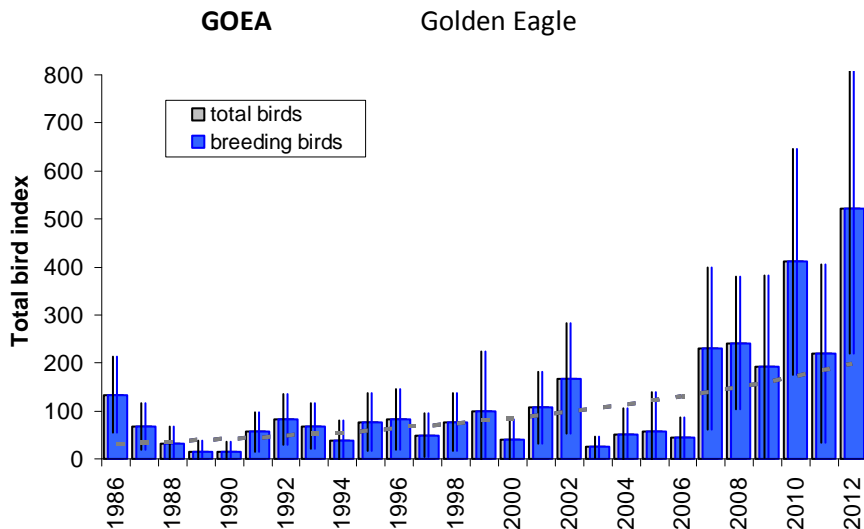
Year Range	nyrs	Avg index	SE index	(90%ci)	GrowthRate	(90%ci)
1986-2012						
breeding birds	21	336	110	(154-517)	<b>1.101</b>	(1.042-1.164)
total birds	21	336	110	(154-517)	<b>1.101</b>	(1.042-1.164)
2003-2012						
breeding birds	10	517	220	(156-878)	<b>1.232</b>	(1.032-1.472)
total birds	10	517	220	(156-878)	<b>1.232</b>	(1.032-1.472)



ACP aerial index, 57336 km<sup>2</sup>, combined NSE and ACP data

Year	n singles	2*n pairs	birds in flocks	Breeding bird index	SE breeding	Total bird index	SE total index
1986	0	0	0	0	0	0	0
1987	423	0	0	209	104	212	105
1988	2868	54	0	2895	1082	2946	1084
1989	1073	59	0	1129	551	1149	555
1990	353	0	0	348	202	354	203
1991	239	0	0	236	179	240	180
1992	299	0	0	295	131	300	132
1993	805	0	0	805	181	805	181
1994	76	0	156	76	43	232	155
1995	4822	233	0	5050	775	5057	775
1996	888	359	0	1279	497	1293	501
1997	193	73	0	279	140	281	141
1998	262	126	0	410	161	414	163
1999	538	52	0	590	161	590	161
2000	98	0	0	98	52	98	52
2001	84	0	0	84	56	84	56
2002	768	50	99	814	232	918	257
2003	794	0	0	793	158	795	158
2004	50	0	0	50	37	50	37
2005	219	0	43	218	71	262	94
2006	2537	239	0	2769	524	2778	524
2007	1519	146	0	1665	464	1665	464
2008	190	0	0	190	124	190	124
2009	1241	0	0	1241	328	1241	328
2010	167	0	0	167	64	167	64
2011	2544	0	0	2544	792	2544	792
2012	3090	170	0	3261	590	3261	590

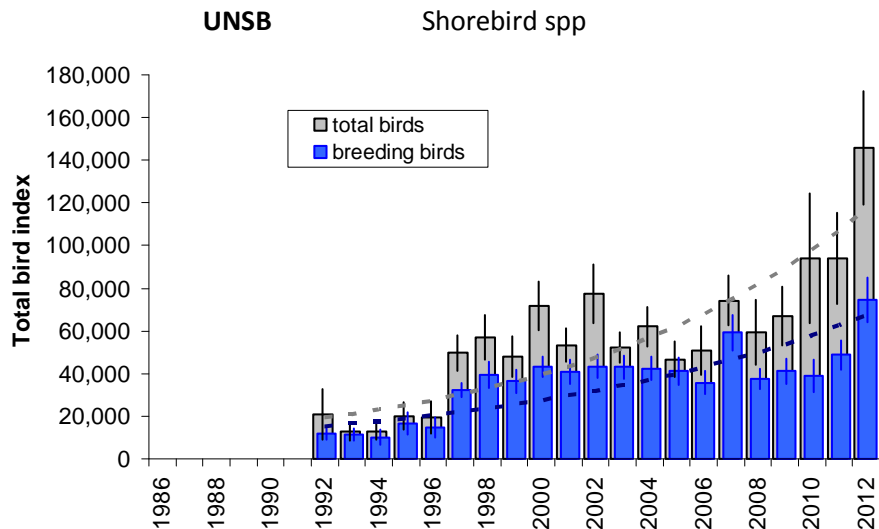
Year Range	nyrs	Avg index	SE index	(90%ci)	GrowthRate	(90%ci)
1986-2012						
breeding birds	27	1,018	241	(622-1415)	1.041	(0.984-1.102)
total birds	27	1,034	241	(638-1430)	1.038	(0.983-1.096)
2003-2012						
breeding birds	10	1,290	383	(660-1919)	1.231	(0.957-1.584)
total birds	10	1,295	382	(667-1923)	1.224	(0.953-1.573)



ACP aerial index, 57336 km<sup>2</sup>, combined NSE and ACP data

Year	n singles	2*n pairs	birds in flocks	Breeding bird index	SE breeding	Total bird index	SE total index
1986	134	0	0	<b>134</b>	48	<b>134</b>	48
1987	135	0	0	<b>68</b>	29	<b>68</b>	29
1988	32	0	0	<b>32</b>	21	<b>32</b>	21
1989	16	0	0	<b>16</b>	13	<b>16</b>	13
1990	15	0	0	<b>15</b>	12	<b>15</b>	12
1991	56	0	0	<b>56</b>	26	<b>56</b>	26
1992	82	0	0	<b>82</b>	32	<b>82</b>	32
1993	68	0	0	<b>68</b>	29	<b>68</b>	29
1994	38	0	0	<b>38</b>	26	<b>38</b>	26
1995	77	0	0	<b>77</b>	37	<b>77</b>	37
1996	83	0	0	<b>83</b>	39	<b>83</b>	39
1997	49	0	0	<b>49</b>	28	<b>49</b>	28
1998	77	0	0	<b>77</b>	36	<b>77</b>	36
1999	100	0	0	<b>100</b>	75	<b>100</b>	75
2000	39	0	0	<b>39</b>	26	<b>39</b>	26
2001	91	16	0	<b>107</b>	46	<b>107</b>	46
2002	168	0	0	<b>168</b>	70	<b>168</b>	70
2003	24	0	0	<b>24</b>	13	<b>24</b>	13
2004	50	0	0	<b>50</b>	34	<b>50</b>	34
2005	56	0	0	<b>56</b>	51	<b>56</b>	51
2006	44	0	0	<b>44</b>	26	<b>44</b>	26
2007	230	0	0	<b>230</b>	103	<b>230</b>	103
2008	241	0	0	<b>241</b>	84	<b>241</b>	84
2009	192	0	0	<b>192</b>	115	<b>192</b>	115
2010	411	0	0	<b>411</b>	143	<b>411</b>	143
2011	220	0	0	<b>220</b>	113	<b>220</b>	113
2012	437	84	0	<b>522</b>	183	<b>522</b>	183

1986-2012	nyrs	Avg index	SE index	(90%ci)	GrowthRate	(90%ci)
breeding birds	27	118	23	(80-157)	<b>1.073</b>	(1.042-1.105)
total birds	27	118	23	(80-157)	<b>1.073</b>	(1.042-1.105)
2003-2012						
breeding birds	10	199	53	(112-286)	<b>1.374</b>	(1.264-1.492)
total birds	10	199	53	(112-286)	<b>1.374</b>	(1.264-1.492)



ACP aerial index, 57336 km<sup>2</sup>, combined NSE and ACP data

Year	n singles	2*n pairs	birds in flocks	Breeding bird index	SE breeding index	Total bird index	SE total index
1986							
1987							
1988							
1989							
1990							
1991							
1992	7171	1008	7503	<b>11720</b>	1532	<b>20950</b>	7203
1993	4918	6511	4086	<b>11497</b>	1742	<b>12989</b>	2558
1994	4911	4158	5354	<b>10086</b>	2184	<b>12697</b>	2368
1995	6794	10307	7311	<b>16662</b>	3294	<b>20146</b>	3943
1996	6605	7714	8072	<b>14867</b>	2858	<b>19606</b>	4577
1997	12504	19188	18544	<b>32135</b>	2004	<b>49645</b>	5065
1998	17341	21554	19932	<b>39472</b>	3795	<b>57146</b>	6318
1999	15456	21015	14718	<b>36368</b>	3408	<b>48110</b>	5716
2000	16760	25989	29539	<b>43192</b>	2779	<b>71911</b>	6923
2001	19883	20744	16333	<b>40918</b>	3387	<b>53299</b>	4759
2002	16457	26394	37072	<b>43386</b>	3392	<b>77405</b>	8247
2003	22665	18946	12640	<b>43084</b>	3308	<b>52257</b>	4281
2004	20002	21607	21940	<b>42424</b>	3412	<b>62044</b>	5678
2005	16787	23835	9424	<b>41183</b>	3896	<b>46777</b>	5087
2006	13514	22575	17941	<b>35773</b>	3232	<b>50733</b>	6841
2007	28315	30980	14985	<b>59294</b>	5077	<b>74280</b>	7148
2008	15935	21414	22077	<b>37349</b>	2863	<b>59426</b>	9169
2009	17405	23691	25813	<b>41095</b>	3697	<b>66908</b>	8388
2010	18068	20926	54994	<b>38994</b>	4719	<b>93988</b>	18577
2011	19875	28916	45155	<b>48791</b>	4200	<b>93946</b>	13046
2012	27747	46811	71097	<b>74559</b>	6478	<b>145656</b>	16131

	1986-2012	nyrs	Avg index	SE index	(90%ci)	GrowthRate	(90%ci)
breeding birds	21	36,326	3,514	(30546-42106)	<b>1.077</b>	(1.056-1.099)	
total birds	21	56,663	6,888	(45332-67993)	<b>1.094</b>	(1.071-1.118)	
<b>2003-2012</b>							
breeding birds	10	46,255	3,796	(40011-52498)	<b>1.034</b>	(0.995-1.076)	
total birds	10	74,601	9,481	(59006-90197)	<b>1.103</b>	(1.065-1.143)	