

Nest Populations and Potential Production of Geese and Spectacled Eiders on the Yukon-Kuskokwim Delta, Alaska, 2004



Julian B. Fischer¹, Robert A. Stehn¹, Timothy D. Bowman¹, and George Walters²

¹ U.S. Fish and Wildlife Service, Migratory Bird Management, Waterfowl Management Branch, 1011 E. Tudor Rd., Anchorage, AK 99503

² U.S. Fish and Wildlife Service, Yukon Delta National Wildlife Refuge, P.O. Box 346, Bethel, AK 99559

SUMMARY: Potential production of geese and eiders was good in 2004. Numbers of nests and eggs were up from 2003 and depredation rates were low relative to 2003, a year when substantial nest destruction and egg loss occurred. The Yukon-Kuskokwim Delta experienced early spring breakup and early nest initiation ensued. Estimated average hatch date for most species was earliest ever recorded.

INTRODUCTION:

Annual assessment of nest populations and egg production of geese and eiders on the Yukon-Kuskokwim Delta (YKD) provides information for biologists, participants in cooperative goose management plans, Pacific Flyway technical committees, and the spectacled eider recovery team. A ground-based sampling procedure has been used since 1985 to estimate the number of nests, active nests, and eggs for cackling Canada geese (*Branta canadensis minima*), emperor geese (*Chen canagica*), greater white-fronted geese (*Anser albifrons frontalis*), and spectacled eiders (*Somateria fischeri*). The ground-based nest survey is conducted coincident with annual aerial breeding pair surveys (Eldridge and Hodges 2004, Platte and Stehn 2004). While aerial surveys provide an index to total population size of birds, the nest surveys directly estimate the population size of nests and eggs, an indication of potential production in a given year, and

provide an indirect measure of numbers of birds in the nesting population. Together, these surveys contribute long-term data needed to understand goose and eider population ecology and better manage these species.

METHODS:

We used a ground-based nest plot survey to monitor goose and eider nest populations and potential production on the YKD coastal zone from 1985 to 2004. Boundaries of the survey area included all lands on the Yukon Delta NWR containing medium and high nest densities of breeding spectacled eiders based on aerial and ground observations between 1985 to 1993 (USFWS unpubl. data). We excluded high density nesting habitat near Kokechik Bay, two patches on south Nelson Island, and several tracts near Hazen Bay because the land was owned by native corporations and in those areas permission to sample plots every year was not assured. From 1994-1997, and 2000-2004, the ground sampled area included 716 km², or 5.6% of the total coastal zone (Fig. 1). In other years, the size of the ground sampled area varied as study objective evolved (Table 1).

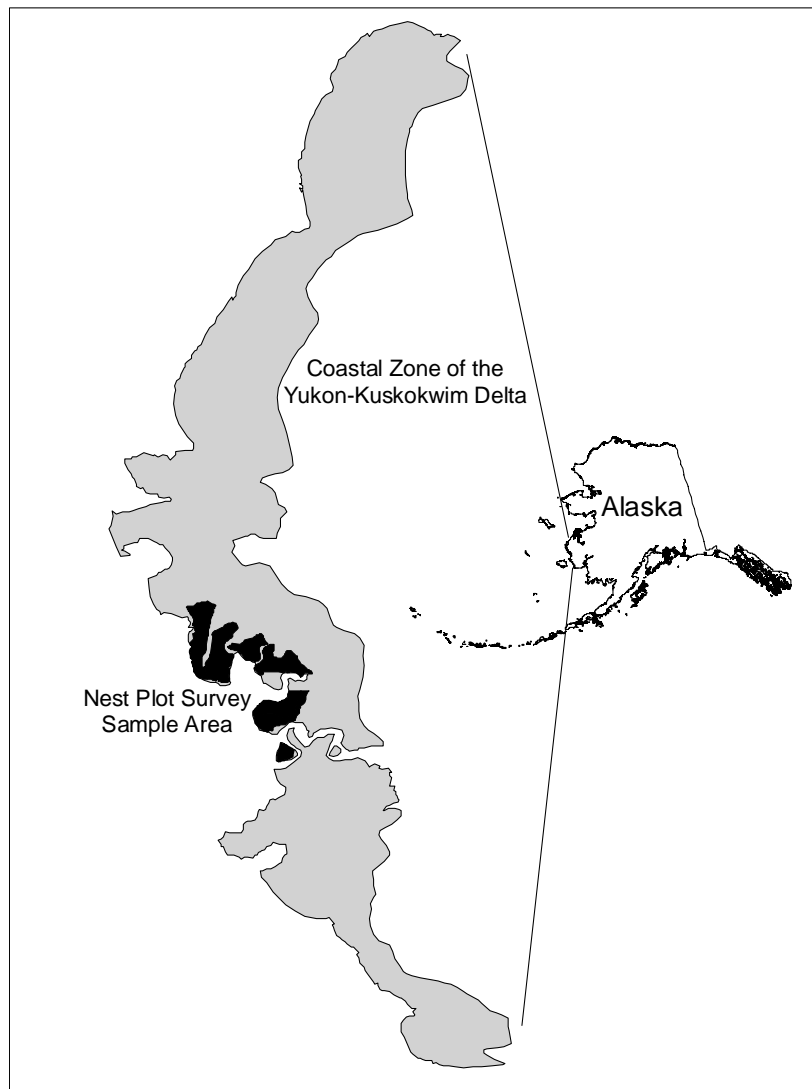


Figure 1. Location of the nest plot survey sample area relative to the coastal zone of the Yukon-Kuskokwim Delta, Alaska, 2004.

We used GIS and custom-written TrueBASIC computer programs to randomly select 85 plots within the nest plot survey area in 2004 (Fig. 2). We then transferred plot boundaries to scanned images of color infrared aerial photographs (1:15,000 or 1:10,000) for field use. We included plots regardless of juxtaposition to lakes and rivers. Plot size in 2004 was 402 by 805 m (0.32 km^2), identical to plots searched from 1986-94 and 1997-2003. Plots were variable sizes in 1985 ($0.2\text{-}2.0 \text{ km}^2$), 0.45 km^2 in 1995 and 0.36 km^2 in 1996.

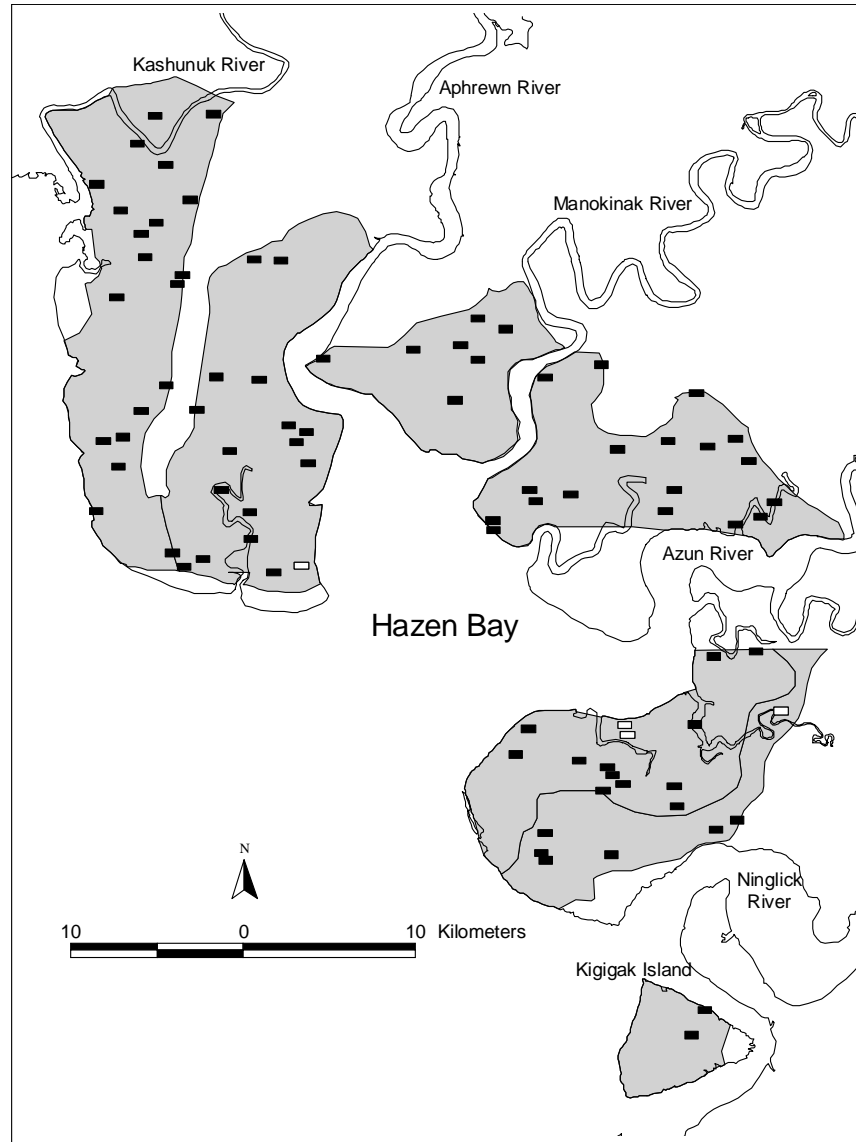


Figure 2. Locations of 81 sampled plots (solid rectangles) on the coastal zone of the Yukon-Kuskokwim Delta, Alaska, 2004. Four additional plots were selected but not sampled (open rectangles).

Most plots were searched by field crews of two biologists who were transported either by Cessna 185 float-equipped aircraft or by motorboat. One boat crew originated from the Kanaryarmiut field station and worked areas near the Aphrewn and Opagyarak rivers. A second boat crew worked plots on the Naskonat Peninsula, north of Kigigak Island. Plots on Kigigak

Island, and near the mouths of the Tutakoke and Manokinak rivers were searched by crews from nearby biological research study camps. Plots were generally within 2 km walking distance of a river or lake suitable for landing a float-equipped aircraft. All sites dry enough for a nest were examined for active and destroyed goose, brant, eider, swan, crane, loon, and gull nests. Nests of other species were recorded as encountered but most shorebird, passerine, and duck nests were likely missed. While data was collected for a number of waterbirds, seabirds, shorebirds and landbirds, the survey was designed specifically to sample cackling Canada geese, emperor geese, greater white-fronted geese, and spectacled eiders.



Tundra Swan Nest. Photo J. Fischer

We recorded species, habitat, clutch size, evidence of predation, and other pertinent data on a card at each nest. Three eggs in many nests were floated to determine the approximate stage of incubation (Westerskov 1950). Nests were identified to species based on down or contour feathers in the nest bowl. Field crews used a photographic field guide (Bowman 2004) to aid species identification and improve overall data quality. Nest cards were tabulated, edited, and sorted using Excel, and data were

summarized using TrueBASIC programs.

We linked the nest plot survey to a stratified analysis of the annual aerial transect survey of the entire coastal zone of the YKD (12,832 km²; Butler et al. 1988, Eldridge and Hodges 2004, Platte and Stehn 2004). A pilot and an observer recorded singles, pairs, and flocks of geese, swans and cranes along approximately 100 systematic transects. Beginning in 1988, a rear-seat observer recorded eiders, other ducks, loons, and in 1992, gulls. We used aerial survey data to expand our ground-based estimates of the number of nests, active nests, and eggs to the entire YKD coastal zone. To expand ground-based estimates to the entire coastal zone, we calculated the ratio of the aerial survey breeding population index outside the ground-sampled area to the aerial index within the ground-sampled area (Table 1). Variance estimates of nest populations expanded to the entire coastal zone incorporate the variance of the out/in ratio. The aerial breeding population index for most species was based on twice the number of singles plus the number of birds in pairs observed because single geese, cranes, and male eiders observed are assumed to be the mates of unobserved females on nests. For brant, loons, and gulls, the total number of birds observed was used, and for swans, the number of singles plus the number of birds in pairs observed was used as the aerial index to breeding population size to calculate the expansion factor.

The estimated total number of nests measured the effective breeding population size (i.e., the number of pairs with nests). The estimated total number of viable eggs found at mid- to late-incubation directly measured the number of young that could potentially augment the fall population if they survived. The mean and variance of the number of nests or eggs per plot was based on a simple random sample of plots. The proportion of nests remaining active when the plots were searched was an index to nesting success; the actual proportion of nests that produced young is lower because of nest loss that may occur after the plot search. Nest detection rate is lower for nests that fail during laying or early incubation; thus the nest success index is an overestimate of the proportion surviving to mid-incubation. Clutch size and average predicted hatch date were based on all active nests found on random plots. Clutch size and hatch date data prior to 1985 were derived from plots established by Butler (1983). All nests are likely not detected, even with a slow careful search of each plot; therefore, the estimated numbers of nests and eggs are underestimates. The rate of detection of



Pintail Nest. Photo E. Lance

active nests is above 80% for geese, eiders, and swans, and further analysis of a subset of doubly-searched plots will allow for bias correction (Bowman and Stehn, in prep).

Red-throated loon (*Gavia stellata*) and Pacific loon (*Gavia pacifica*) nests are essentially indistinguishable from each other (Bowman 2004) and adult birds were usually not seen at the nest site. Thus, we estimated the combined number of loon nests, and then estimated species-specific nest population size partitioning by the ratio of aerially observed populations of each loon species in the ground sampled area during the aerial survey (Platte and Stehn 2004).

RESULTS:

We searched 81 plots from 28 May to 9 June, 2004 (Fig. 2). Crews based at the Kanaryarmiut field station searched 44 plots, boat-based crews searched 26 plots, a YDNWR crew at Kigigak Island searched 2 plots, personnel from the University of Nevada-Reno searched 4 plots at the Tutakoke River field camp, and a USGS-BRD crew searched 5 plots near the mouth of the Manokinak River. Four of the 85 randomly selected plots were not sampled due to difficult access (plot 66) or late timing as signaled by the presence of goslings (plots 28, 34, and 22). If possible, disturbance by field crews is avoided because it may increase avian predation on goslings due to the potential separation of family groups.

Crews located 3,115 nests in 2004, comprised of 1,340 cackling Canada goose, 355 emperor goose, 624 greater white-fronted goose, 77 spectacled eider, and 719 nests of other species. Estimates of total nests, active nests, and active eggs are presented in Table 1. Proportion of nests that were active at the time of visit, average clutch size, and estimated hatch dates are presented in Table 2.

Cackling Canada Geese (*Branta canadensis minima*)

Potential production of cackling Canada geese was good in 2004. Numbers of nests were up from 2003 (Table 1, Fig. 3). Moreover, the proportion of nests that were active increased from 2003 (Table 2) and was above the long-term average (1982-2003) indicating a relatively low rate of predation and nest abandonment. Further, clutch size in 2004 was high (Table 2) and contributed to the fourth largest production of eggs in the 20 years of data collection. While the long-term (1985-2004) trend in the nest population is positive, the rate of change slowed in the late 1990s and nest populations have declined by an average of 6% per year over the last five years (Table 3). Average hatch date for cacklers in 2004 was 12 days earlier than the long-term average (1982-2003; Table 2).

Emperor Geese (*Chen canagica*)

Potential production of emperor geese was good in 2004. Numbers of nests were up from 2003 (Table 1, Fig. 3) and were above the long-term average. Unlike cacklers, however, emperor goose clutch size was a bit lower than the long-term average (Table 2). The proportion of nests that were active was high in 2004 (Table 2) and resulted in a higher than average egg production (Table 1). The long-term (1985-2004) trend in the nest population was slightly positive and the rate of change has increased in the last five years (Table 3). Similar to other waterfowl species, estimated hatch date in 2004 was the earliest in 20 years and nine days earlier than the long-term average (Table 2).



Greater White-fronted Geese (*Anser albifrons frontalis*)

Potential production of greater white-fronted geese was excellent in 2004. Numbers of nests were highest on record for this species and the proportion of nests active was higher than the long-term average (Tables 1 and 2). When combined with a higher than average clutch size, 2004

resulted in a record production of greater-white fronted goose eggs (40% more than 2003, and 59% more than the 1985-2003 mean). The long-term (1985-2004) trend in the nest population was positive with an annual rate of 13.4%, but the rate of change slowed in the late 1990s and has been flat over the last five years (Table 3). Estimated mean hatch of white-fronts was nine days earlier than the long-term average.

Black Brant (*Branta bernicla nigricans*)

The nest plot survey was not designed to adequately monitor colonial nesting birds such as black brant, and purposely excludes primary colonies from the sample area. The survey does provide an estimate, albeit imprecise, of brant nests in satellite colonies on the YKD. In contrast to all other waterfowl, total brant nests were down from 2003 and were less than half the long-term average. While both the proportion of nests that were active, and clutch size were up from 2003, they did not offset the low number of nests constructed and resulted in the lowest egg production since 1988. 2004 was an early year of nesting for brant, with estimated mean hatch occurring 11 days earlier than the long-term average.

Tundra Swans (*Cynus columbianus*)

Potential production of tundra swans was excellent in 2004. The number of tundra swan nests increased from 2003 (Table 1) and remains above the long-term average. The average clutch size of 5.5 eggs in 2004 is the highest of any year, and when combined with total active nests resulted in a record production of swan eggs (27% more than 2003, and 59% more than the 1985-2003 average). Estimated mean hatch date for swans was earlier than the long-term average by approximately eight days.



Sandhill Cranes (*Grus canadensis*)

Potential production of sandhill cranes was good in 2004. The population of crane nests increased from 2003 (Table 1) and was slightly above the long-term average. Sandhill crane nest construction and egg production has been highly variable among years and no obvious trend in nest population is apparent (Fig. 3). The proportion of crane nests active, and clutch size were both higher in 2004 than the long term average (Table 2). The estimated hatch date of sandhill cranes was six days earlier than the long-term average.

Spectacled Eiders (*Somateria fischeri*)

Potential production of spectacled eiders was good in 2004. All reproductive parameters were up from 2003, and above the long-term mean, including total nests, active nests, eggs produced, and clutch size (Tables 1 and 2, Fig. 3). While the long-term (1985-2004) trend in nests is nearly flat, the trend in the population of nests began to increase starting in the mid-1990s (Table 3). Spectacled eiders initiated nests early in 2004 resulting in an estimated mean hatch date 12 days earlier than the long-term average.

Common Eiders (*Somateria mollissima*)

Potential production of common eiders was fair in 2004. In contrast to spectacled eiders, all reproductive parameters for common eiders were up from 2003 but below the long-term average, including total nests, active nests, eggs produced, and clutch size (Tables 1 and 2, Fig. 3). Common eiders initiated nests early in 2004 resulting in an estimated mean hatch date eight days earlier than the long-term average.

Loons

Potential production of Pacific loons (*Gavia pacifica*) and red-throated loons (*Gavia stellata*) was average in 2004. Estimates of nests and eggs were up from 2003 and remain near the long-term average. The proportion of nests active and average clutch size were down from 2003 and remain below the long-term average.

Gulls and Terns

Gulls and terns are not precisely monitored by the nest plot survey. Nest detection rate is lower than for geese, and with some occurrence of colonial nesting, population estimates for gulls and terns have higher variability. Nonetheless, in 2004 nest and egg production were below the long-term average for glaucous gulls (*Larus hyperboreus*) and Sabine's gulls (*Xema sabini*), but slightly higher for mew gulls (*Larus canus*) and arctic terns (*Sterna paradisaea*; Table 1). Estimated hatch date was the earliest on record for the three gull species (Table 2).

DISCUSSION:

The nest plot survey was designed to provide estimates of potential production for four principal species: cackling Canada geese, emperor geese, greater white-fronted geese, and spectacled eiders. In general, potential production of these waterfowl species was good in 2004. With low incidence of nest desertion and depredation, the proportion of nests active at the time of nest searches was high in 2004. Fox predation was down significantly from 2003 when high numbers of waterfowl nests were destroyed.



Cackling Canada Goose. Photo J. Fischer

The population sizes of goose and eider nests show some additional variability when compared to trends in total number birds as indexed by aerial surveys. Dips in nest numbers may occur (e.g. emperor geese, spectacled eiders, and sandhill cranes in 2001 associated with a relatively late spring breakup, or cacklers and white-fronted geese in 2003 associated with high predation rates) that do not reflect loss of adults from the breeding population. Nevertheless, the lower number of nests and production of young in these years contributes to a potential reduction in total numbers in future years.

In general, over periods of 5 or more years, the nest population size and trend matches change in the aerial survey indexed breeding population of birds. Estimates of cackling Canada goose nests were at record lows in the mid 1980s prior to passage of the cooperative Yukon-Kuskokwim Delta Goose Management Plan that provided much needed protection for nesting and wintering populations of geese (Pamplin 1986). By the late 1980s, the population of nests began to increase rapidly reaching a peak in 1998-2000. Since 2000 the trend in numbers of cackling Canada goose nests has been negative showing an average loss of 5,250 nests (6% of the population) each year (Table 3). Aerial surveys on the breeding grounds reveal a similar trend (Eldridge and Hodges 2004), whereby indicated breeding pairs increased rapidly between the mid-1980s and mid-1990s, after which time the population leveled off or declined slightly. Emperor goose nest populations have shown slightly more variability among years. Unlike the other goose species, populations of emperor geese did not show a marked change associated with the Yukon Delta Goose Management Plan. Nonetheless, a slow annual increase in the long-term trend is apparent. Patterns in nest populations of emperor geese also correspond well with indicated breeding pairs as estimated by aerial surveys (Eldridge and Hodges 2004), with slow and variable long-term increases. The population of greater white-fronted goose nests has increased dramatically on the coastal zone of the YKD since the mid-1980s. Similar to cacklers, increases in the nest population began to slow in the late 1990s and appears to be leveling off in recent years. A similar pattern is apparent in aerial estimates of breeding populations (Eldridge

and Hodges 2004). The long-term annual growth rate of spectacled eider nests is -0.5%, but the last 10 years indicates gains from the apparent minimum nest populations of 1992-93. Aerial surveys in the coastal zone of the YKD show a similar trend, with population estimates increasing at 5-9% annually since the early 1990s (Platte and Stehn 2004).

Rapid spring snow melt on the YKD enabled nesting birds to establish nest sites and lay clutches early. Average hatch date of geese and eiders, as estimated by float angles, was 9-12 days earlier than the long-term average. Early hatch on the coast coincided with an early spring throughout the Y-K Delta region as indicated by breakup of the frozen Kuskokwim River on 30 April, 2004, 12 days earlier than the 1982-2003 average (NOAA 2004).

This nest plot survey does not have enough plots to overcome the greater sampling error associated with species having clumped or colonial distributions, such as brant, common eiders, and gulls. Consequently, fluctuations and poor precision in annual estimates of population size for these species are likely, although long-term averages should be accurate. Similarly, estimates of loon populations are highly variable because few nests are found and possibly because unequal attention has been given to finding loon nests among years.

A primary advantage of the random sampling procedure over intensive local studies is that it assures applicability of estimates to the entire population within the sampled area, not just the immediate areas around intensive biological study camps. Moreover, the single brief visit to scattered plots ensures that the monitoring of populations occurs with a minimum amount of disturbance. The expansion of estimated nests and eggs from the ground sampled area to the entire coastal zone is based the assumption that breeding indices obtained from aerial surveys provide an accurate ratio of nesting within versus outside of the ground sampled area. These resulting expansion factors do not require that the ratios are the same among years, only that they are constant among strata within a given year.

Annual changes in nest population size are less informative than long-term trends because of sampling error, changes in observers, distribution of plots, and small sample size for less common species. Only several years of consistent declines or increases are likely to indicate a true change in the number of nests and eggs produced on the Yukon-Kuskokwim coastal zone. We believe that a graphical presentation (Fig. 3) enables better interpretation of data than analysis of year-to-year changes in population size. Large annual changes in nest population size probably reflect sampling error or result from extremes in nesting effort and success, rather than a dramatic, or real, population change.

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Photo J. Fischer

Ellen Lance, Meg Laws, Patrick Lemons, Dennis Marks, Timothy Matchian, James McCallum, Brant Meixell, Chris Norment, Russ Oates, Thomas Olson, Dan Rizzolo, Ben Sedinger, Jim Sedinger, Conner Stava, Joel Schmutz, Marnie Shepard, Patrick Snow, Bradley Strobel, Patrick Tuluk, Steve Vanderwall, Michael Wege, and Valerie Yff. Photos for this report were contributed by Phil Doerr, Julian Fischer, Judy Jacobs, and Ellen Lance.

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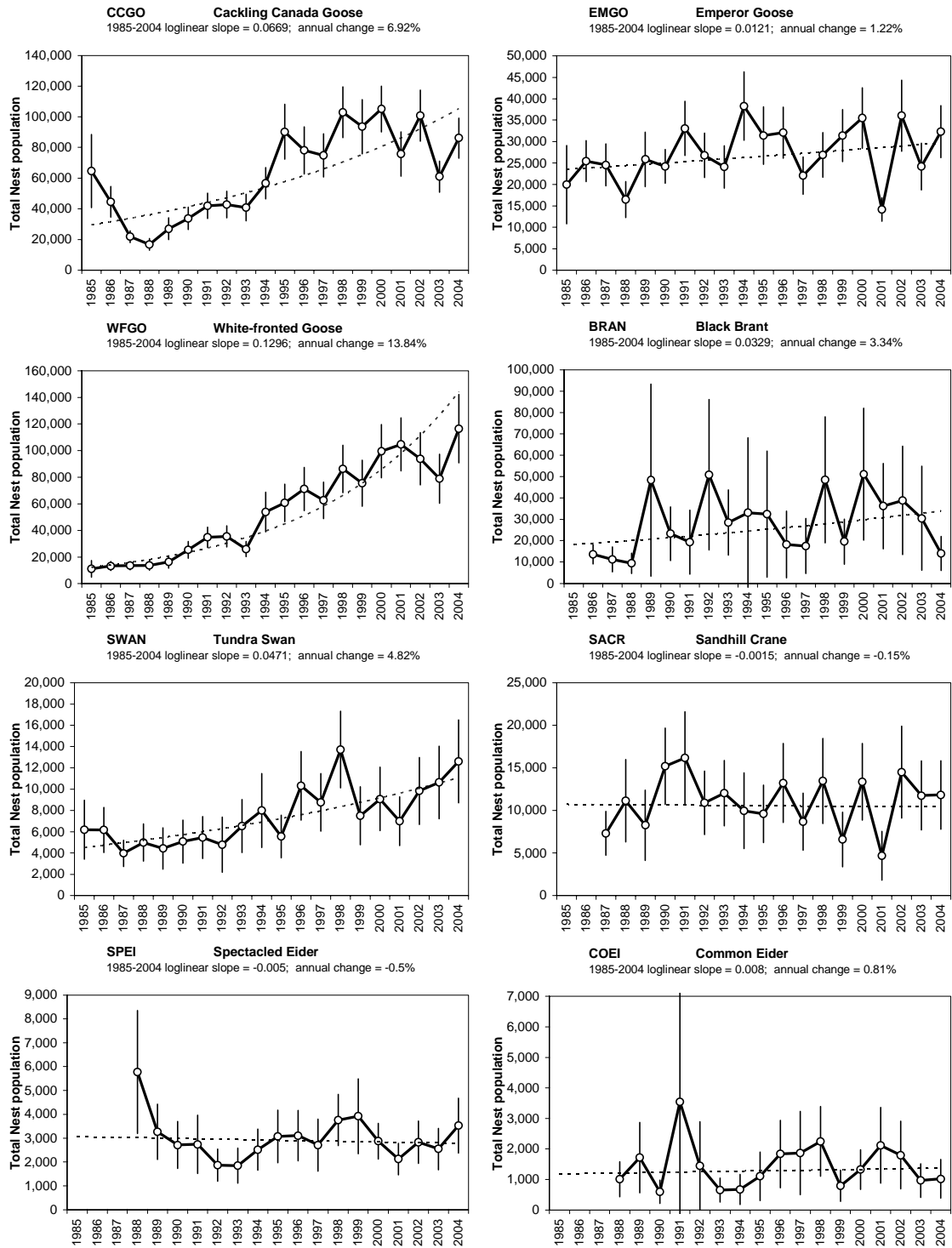


Figure 3. Estimated total nest population sizes on the Yukon-Kuskokwim Delta, Alaska, 1985-2004. Vertical lines indicate 95% confidence intervals of annual nest population size. Log-linear regression estimated average annual growth rates.

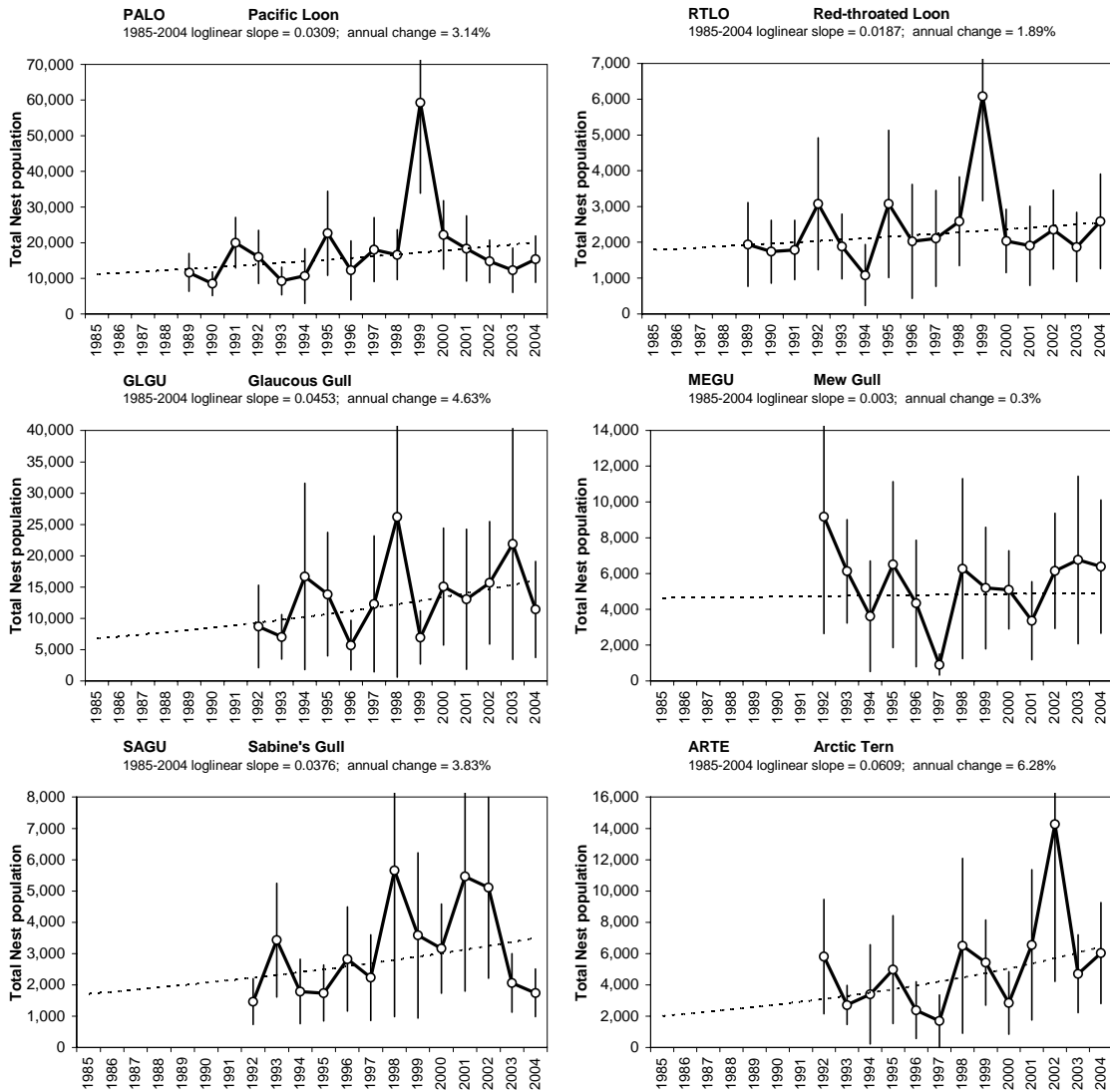


Figure 3 (continued). Estimated total nest population sizes on the Yukon-Kuskokwim Delta, Alaska, 1985-2004. Vertical lines indicate 95% confidence intervals of annual nest population size. Log-linear regression estimated average annual growth rates.

Table 1. Population size of nests and eggs sampled by random plots on the Yukon-Kuskokwim Delta (YKD), Alaska 1985-2004. Expanded estimates were determined by the proportion of aerial observations within the ground sampled area to the entire coastal YKD survey area. Aerial population indices were based on twice the number of singles plus the number of birds in pairs observed, except for brant, loons, and gulls where the total number of birds observed was used, and for swans, where the number of singles plus the number of birds in pairs observed was used.

Year	Ground plot sampled area				Aerial obs out/in sampled area	Estimated nests out of sampled area	Expanded to entire coast					
	No. plots	Area (km ²)	Total nests ¹	SE			Total nests	SE	Active nests	SE	Active eggs	SE
Cackling Canada Goose												
1985	48	1421.6	14794	2768	3.371	49872	64666	12144	22411	6051	92689	28038
1986	101	3961.3	35844	4771	0.243	8715	44559	5128	28496	3121	136847	15606
1987	125	4536.1	19840	1906	0.101	2011	21851	1967	20352	1910	104416	10122
1988	95	3961.3	13640	1855	0.231	3152	16792	1948	12375	1421	57442	7193
1989	89	4137.4	22351	3497	0.205	4577	26928	3630	21596	3115	103234	14953
1990	101	3961.3	27430	3424	0.232	6361	33791	3690	24428	2956	113853	14770
1991	97	2661.9	37017	4066	0.134	4966	41983	4212	35252	3461	170854	17617
1992	66	1974.4	28088	3514	0.524	14705	42793	4424	37375	3832	178452	18552
1993	99	2263.2	33852	4216	0.205	6926	40778	4419	36392	4209	166089	19465
1994	43	715.7	27094	3039	1.090	29526	56620	5190	47381	4589	216920	20700
1995	50	715.7	43841	5413	1.058	46380	90221	9092	78795	7932	353310	35459
1996	54	715.7	39763	4828	0.964	38312	78075	7826	71279	7368	323286	33546
1997	75	715.7	36136	4411	1.070	38680	74816	7205	61818	6405	249772	26224
1998	72	856.6	50713	5149	1.030	52229	102942	8485	96028	8120	437407	37037
1999	59	856.6	43427	5389	1.155	50165	93592	8987	81217	8093	332514	32917
2000	80	715.7	46281	3884	1.270	58796	105077	7592	99859	7330	470706	35033
2001	81	715.7	32939	3999	1.299	42802	75741	7323	45995	4934	168486	17500
2002	84	715.7	40440	3989	1.492	60319	100759	8500	86176	7443	386482	32722
2003	83	715.7	27324	2905	1.233	33701	61025	5174	40268	4089	166243	16815
2004	81	715.7	36576	3024	1.356	49589	86165	6651	75491	6131	358999	29402
Emperor Goose												
1985	48	1421.6	5023	1268	2.970	14918	19941	4653	9452	2967	49422	15312
1986	101	3961.3	19633	2129	0.295	5799	25432	2447	17830	1752	90482	8933
1987	125	4536.1	20749	2273	0.184	3820	24569	2491	22728	2320	114672	12048
1988	95	3961.3	14430	2055	0.142	2050	16480	2133	15033	2081	77714	11937
1989	89	4137.4	22980	3163	0.125	2882	25862	3236	23089	2816	116311	14387
1990	101	3961.3	19754	1837	0.227	4485	24239	2015	21438	1957	107902	9741
1991	97	2661.9	22857	2470	0.447	10209	33066	3232	31432	3076	155655	16039
1992	66	1974.4	15071	1798	0.779	11736	26807	2645	25548	2608	127809	13305
1993	99	2263.2	16545	1736	0.456	7540	24085	2524	22851	2428	108142	11652
1994	43	715.7	13367	1629	1.865	24927	38294	4053	36231	3949	179393	20344
1995	50	715.7	9739	1127	2.223	21649	31388	3431	30367	3363	147737	16140
1996	54	715.7	11008	1105	1.915	21078	32086	3031	30264	2947	155068	15507
1997	75	715.7	7074	725	2.119	14988	22062	2227	21142	2184	101024	10497
1998	72	856.6	9996	1042	1.690	16894	26890	2653	25515	2583	119215	12226
1999	59	856.6	9822	807	2.196	21569	31391	3087	28971	2878	128247	12718
2000	80	715.7	9716	929	2.653	25774	35490	3607	34982	3549	174409	17979
2001	81	715.7	4503	478	2.148	9671	14174	1390	10995	1207	52486	6179
2002	84	715.7	8700	942	3.145	27362	36062	4226	33546	3952	168609	19806
2003	83	715.7	7057	768	2.424	17109	24166	2784	19334	2407	92930	12085
2004	81	715.7	9690	909	2.336	22634	32324	3085	30866	2991	150507	14764

Table 1 (continued)

Year	Ground plot sampled area				Expanded to entire coast							
	No. plots	Area (km ²)	Total nests	SE	Aerial obs out/in sampled area	Estimated nests out of sampled area	Total nests	SE	Active nests	SE	Active eggs	SE
White-fronted Goose												
1985	48	1421.6	2009	633	4.545	9131	11140	3180	6138	2228	21619	7836
1986	101	3961.3	6697	1019	0.991	6638	13335	1738	12045	1667	52336	7561
1987	125	4536.1	9115	1226	0.482	4397	13512	1569	12887	1526	58456	6824
1988	95	3961.3	7721	1266	0.767	5923	13644	1778	13071	1665	56037	6925
1989	89	4137.4	9308	1751	0.753	7007	16315	2397	16197	2384	71062	9738
1990	101	3961.3	14270	2216	0.780	11128	25398	3174	22771	3073	104493	14656
1991	97	2661.9	17394	2378	1.001	17414	34808	3854	32539	3567	156609	19495
1992	66	1974.4	13784	1739	1.575	21708	35492	4052	34223	3996	156391	19294
1993	99	2263.2	11974	1544	1.167	13973	25947	2937	25082	2771	109240	12070
1994	43	715.7	8637	1066	5.228	45154	53791	7562	52514	7364	230857	32617
1995	50	715.7	9993	1093	5.074	50705	60698	7143	58961	6968	249724	29842
1996	54	715.7	12849	1303	4.534	58260	71109	8320	68663	8117	308892	36740
1997	75	715.7	10847	1127	4.772	51761	62608	7011	61586	6997	264711	30918
1998	72	856.6	14538	1339	4.931	71686	86224	9089	83947	8843	361604	38520
1999	59	856.6	11881	1236	5.350	63567	75448	8815	71390	8393	298427	35270
2000	80	715.7	13646	1258	6.294	85884	99530	10178	97312	10076	433252	45263
2001	81	715.7	11407	935	8.172	93222	104629	10163	97869	9848	377719	39187
2002	84	715.7	11995	1002	6.825	81861	93856	9993	91790	9830	402850	44260
2003	83	715.7	11265	1151	5.993	67506	78771	9408	74121	9024	314351	38626
2004	81	715.7	17032	1465	5.840	99475	116507	13106	113148	12749	521120	58237
Black Brant												
1985	48	1421.6	3424	1534	--	--	--	--	--	--	--	--
1986	101	3961.3	9586	1623	0.422	4048	13634	2296	9754	1647	37109	6417
1987	125	4536.1	8965	2626	0.254	2274	11239	2930	9972	2635	42111	11823
1988	95	3961.3	6394	2003	0.473	3024	9418	2422	6996	1752	24586	6019
1989	89	4137.4	37201	21808	0.300	11143	48344	22908	44448	21662	171083	85834
1990	101	3961.3	15524	5381	0.499	7739	23263	6364	16081	4414	52199	14519
1991	97	2661.9	14546	7119	0.327	4751	19297	7637	16558	7350	59840	26785
1992	66	1974.4	19026	8566	1.676	31885	50911	17941	48869	17634	183820	65280
1993	99	2263.2	18303	6205	0.556	10176	28479	7767	24521	7384	86144	26732
1994	43	715.7	8277	5430	3.007	24890	33167	17840	30903	17423	117017	66421
1995	50	715.7	6186	3119	4.255	26320	32506	15042	23505	10395	86683	38166
1996	54	715.7	4050	2022	3.505	14196	18246	7989	15921	7362	59710	28191
1997	75	715.7	3655	1368	3.801	13893	17548	6579	16559	6288	57877	21950
1998	72	856.6	15213	5499	2.190	33310	48523	15026	41545	13455	151532	49292
1999	59	856.6	5012	1491	2.908	14575	19587	5363	15546	4243	49851	13548
2000	80	715.7	15141	5069	2.377	35987	51128	15754	45614	14796	169088	54444
2001	81	715.7	8487	2391	3.266	27714	36201	10194	19208	6539	56804	18729
2002	84	715.7	11178	4344	2.474	27660	38838	12904	34074	12233	121729	42653
2003	83	715.7	8229	4048	2.705	22260	30489	12392	14802	8688	49436	29943
2004	81	715.7	4968	1710	1.833	9105	14073	4054	11212	3305	39124	11461
Tundra Swan												
1985	48	1421.6	1447	379	3.280	4746	6193	1411	5255	1218	20448	4903
1986	101	3961.3	3021	706	1.041	3145	6166	1073	5358	1007	20506	3991
1987	125	4536.1	2196	468	0.806	1770	3966	625	3863	624	15008	2543
1988	95	3961.3	2208	520	1.260	2781	4989	888	4989	888	22817	4077
1989	89	4137.4	2398	734	0.850	2038	4436	989	4436	989	18972	4215
1990	101	3961.3	2422	673	1.096	2655	5077	1030	5014	1029	21391	4617
1991	97	2661.9	2150	520	1.539	3310	5460	1005	5241	994	22823	4753
1992	66	1974.4	1366	477	2.502	3418	4784	1321	4784	1321	17697	4720
1993	99	2263.2	2166	538	2.017	4369	6535	1271	6481	1270	25944	5004
1994	43	715.7	977	222	7.178	7013	7990	1763	7990	1763	33218	7205
1995	50	715.7	730	135	6.609	4825	5555	1021	5068	954	19068	3633
1996	54	715.7	1141	177	8.038	9171	10312	1645	9987	1576	48914	7657
1997	75	715.7	1032	151	7.491	7730	8762	1380	8261	1312	34786	5639
1998	72	856.6	1697	207	7.082	12017	13714	1837	12389	1746	42606	5954
1999	59	856.6	907	172	7.283	6606	7513	1387	6759	1337	25024	5111
2000	80	715.7	913	153	8.938	8160	9073	1525	8527	1460	31910	5372
2001	81	715.7	819	134	7.535	6171	6990	1170	5821	977	19802	3510
2002	84	715.7	1054	166	8.330	8780	9834	1602	8854	1534	38375	6700
2003	83	715.7	1198	187	7.876	9435	10633	1735	10403	1698	49643	8230
2004	81	715.7	1337	189	8.427	11267	12604	1983	12350	1949	67679	10603

Table 1 (continued)

Year	Ground plot sampled area				Expanded to entire coast							
	No. plots	Area (km ²)	Total nests	SE	Aerial obs out/in sampled area	Estimated nests out of sampled area	Total nests	SE	Active nests	SE	Active eggs	SE
Sandhill Crane												
1985	48	1421.6	1024	253	--	--	--	--	--	--	--	--
1986	101	3961.3	3309	916	--	--	--	--	--	--	--	--
1987	125	4536.1	3330	784	1.193	3972	7302	1318	7131	1303	11030	2247
1988	95	3961.3	4091	1131	1.722	7045	11136	2465	11136	2465	21888	4891
1989	89	4137.4	2609	849	2.167	5654	8263	2099	7734	2082	15107	4139
1990	101	3961.3	5257	893	1.889	9932	15189	2286	15036	2274	25299	3929
1991	97	2661.9	4560	902	2.547	11614	16174	2763	15628	2678	29673	4912
1992	66	1974.4	2683	522	3.058	8206	10889	1904	10706	1883	20926	3886
1993	99	2263.2	3062	557	2.930	8972	12034	1955	11220	1917	19006	3312
1994	43	715.7	1182	245	7.423	8775	9957	2267	9957	2267	17757	4218
1995	50	715.7	983	154	8.768	8619	9602	1722	8987	1687	17046	3242
1996	54	715.7	1362	213	8.705	11857	13219	2361	12860	2344	24303	4412
1997	75	715.7	1002	181	7.671	7686	8688	1709	8688	1709	16102	3258
1998	72	856.6	1287	205	9.463	12179	13466	2545	13466	2545	23720	4475
1999	59	856.6	728	183	8.052	5862	6590	1633	5757	1560	9866	2919
2000	80	715.7	969	139	12.790	12394	13363	2298	12977	2261	23664	4197
2001	81	715.7	355	111	12.171	4321	4676	1458	4307	1419	7547	2554
2002	84	715.7	1054	149	12.752	13440	14494	2748	13779	2677	27558	5354
2003	83	715.7	1092	155	9.759	10656	11748	2070	11458	2046	22346	4025
2004	81	715.7	1256	161	8.415	10569	11825	2052	11825	2052	22869	3918
Spectacled Eider												
1985	48	1421.6	2051	513	--	--	--	--	--	--	--	--
1986	101	3961.3	5060	846	--	--	--	--	--	--	--	--
1987	125	4536.1	4357	802	--	--	--	--	--	--	--	--
1988	95	3961.3	3344	725	0.726	2428	5772	1315	5190	1208	26786	6274
1989	89	4137.4	2359	433	0.385	908	3267	589	2940	541	14529	2459
1990	101	3961.3	2078	414	0.307	637	2715	501	2476	478	13237	2597
1991	97	2661.9	1905	398	0.439	836	2741	624	2458	556	12891	2923
1992	66	1974.4	1324	263	0.412	546	1870	344	1613	315	8787	1700
1993	99	2263.2	1696	367	0.089	151	1847	375	1618	349	7419	1670
1994	43	715.7	1697	333	0.483	819	2516	439	1982	357	9223	1743
1995	50	715.7	2094	417	0.468	981	3075	563	2468	498	12437	2593
1996	54	715.7	1988	377	0.563	1119	3107	539	2532	458	12830	2360
1997	75	715.7	1680	389	0.612	1029	2709	555	2423	525	10645	2352
1998	72	856.6	2330	372	0.614	1431	3761	547	3500	498	16980	2401
1999	59	856.6	2401	577	0.633	1521	3922	799	3549	731	17483	3528
2000	80	715.7	1965	295	0.465	913	2878	382	2676	369	14310	1967
2001	81	715.7	1474	275	0.440	649	2123	336	1336	213	5580	956
2002	84	715.7	2135	407	0.326	696	2831	450	2341	428	12163	2402
2003	83	715.7	1651	350	0.540	892	2543	442	1969	374	8574	1748
2004	81	715.7	2102	387	0.679	1427	3529	584	2840	507	14113	2542
Common Eider												
1985	48	1421.6	35	23	--	--	--	--	--	--	--	--
1986	101	3961.3	178	57	--	--	--	--	--	--	--	--
1987	125	4536.1	746	237	--	--	--	--	--	--	--	--
1988	95	3961.3	651	200	0.550	358	1009	292	806	227	3806	1083
1989	89	4137.4	1446	549	0.186	269	1715	588	1715	588	9434	3183
1990	101	3961.3	448	150	0.329	148	596	194	526	181	2686	997
1991	97	2661.9	2970	2191	0.193	575	3545	2252	3455	2250	17808	11644
1992	66	1974.4	1169	710	0.238	278	1447	739	1425	739	7232	3697
1993	99	2263.2	506	176	0.297	150	656	201	429	133	2293	742
1994	43	715.7	411	196	0.635	261	672	250	589	225	2607	918
1995	50	715.7	539	247	1.048	565	1104	405	1040	398	5262	2058
1996	54	715.7	773	271	1.375	1063	1836	565	1748	522	9270	2822
1997	75	715.7	707	274	1.641	1160	1867	698	1711	647	7782	2984
1998	72	856.6	868	229	1.590	1380	2248	582	1754	455	8652	2225
1999	59	856.6	470	177	0.690	324	794	259	537	192	2614	920
2000	80	715.7	775	212	0.705	546	1321	332	1273	313	6229	1551
2001	81	715.7	901	292	1.352	1218	2119	632	1926	581	7767	2343
2002	84	715.7	685	191	1.625	1113	1798	565	1730	551	8167	2617
2003	83	715.7	639	225	0.513	328	967	281	725	238	3102	1064
2004	81	715.7	600	212	0.698	419	1019	324	973	314	4683	1453

Table 1 (continued)

Year	Ground plot sampled area				Expanded to entire coast							
	No. plots	Area (km ²)	Total nests	SE	Aerial obs out/in sampled area	Estimated nests out of sampled area	Total nests	SE	Active nests	SE	Active eggs	SE
Pacific Loon												
1985	48	1421.6	--	--	--	--	--	--	--	--	--	--
1986	101	3961.3	--	--	--	--	--	--	--	--	--	--
1987	125	4536.1	--	--	--	--	--	--	--	--	--	--
1988	96	3961.3	--	--	--	--	--	--	--	--	--	--
1989	89	4137.4	4169	1067	1.795	7481	11650	2688	11553	2680	20978	4936
1990	101	3961.3	4109	1018	1.071	4401	8511	1710	6884	1471	12452	2730
1991	97	2661.9	5608	1101	2.567	14396	20005	3642	18830	3517	33628	6202
1992	69	1974.4	2861	712	4.595	13147	16008	3816	14429	3474	25514	6053
1993	99	2263.2	2487	586	2.731	6792	9279	1962	9165	1956	17522	3844
1994	43	715.7	648	236	15.430	9995	10643	3927	10643	3927	19160	6673
1995	50	715.7	976	167	22.195	21665	22642	6012	22642	6012	40644	11034
1996	54	715.7	462	142	25.535	11797	12259	4206	12259	4206	20914	7458
1997	75	715.7	789	168	21.845	17238	18027	4584	17471	4475	33312	8616
1998	72	856.6	1240	205	12.401	15374	16613	3575	15127	3206	27224	5904
1999	59	856.6	1929	305	29.738	57349	59278	12940	56624	12641	100003	23137
2000	80	715.7	1202	181	17.468	20989	22190	4906	21479	4735	40449	9057
2001	81	715.7	1195	231	14.381	17183	18377	4664	17728	4573	28688	7498
2002	84	715.7	1227	173	11.046	13551	14778	3056	14321	3008	25228	5359
2003	83	715.7	698	151	16.596	11590	12288	3159	11677	3023	20284	5491
2004	81	715.7	836	131	17.429	14564	15399	3324	13528	3074	23285	5215
Red-throated Loon												
1985	48	1421.6	--	--	--	--	--	--	--	--	--	--
1986	101	3961.3	--	--	--	--	--	--	--	--	--	--
1987	125	4536.1	--	--	--	--	--	--	--	--	--	--
1988	96	3961.3	--	--	--	--	--	--	--	--	--	--
1989	89	4137.4	769	197	1.519	1169	1938	600	1922	596	3489	1090
1990	101	3961.3	735	182	1.369	1006	1741	448	1408	376	2547	691
1991	97	2661.9	931	183	0.917	853	1784	424	1679	404	2998	716
1992	69	1974.4	625	156	3.926	2454	3079	940	2775	852	4907	1495
1993	99	2263.2	594	140	2.171	1289	1883	461	1860	458	3556	893
1994	43	715.7	123	45	7.761	956	1079	435	1079	435	1943	753
1995	50	715.7	420	72	6.324	2655	3075	1052	3075	1052	5520	1908
1996	54	715.7	164	51	11.344	1861	2025	812	2025	812	3454	1419
1997	75	715.7	184	39	10.454	1922	2106	684	2041	666	3892	1276
1998	72	856.6	559	93	3.632	2031	2591	634	2359	572	4245	1043
1999	59	856.6	774	122	6.861	5314	6089	1493	5816	1446	10271	2615
2000	80	715.7	514	78	2.961	1523	2038	451	1972	436	3714	829
2001	81	715.7	361	70	4.270	1542	1904	565	1836	550	2972	896
2002	84	715.7	487	69	3.835	1868	2356	564	2283	551	4021	977
2003	83	715.7	367	79	4.102	1504	1871	494	1778	472	3088	846
2004	81	715.7	283	44	8.132	2305	2588	675	2274	612	3913	1044
Glaucous Gull												
1985	48	1421.6	2520	684	--	--	--	--	--	--	--	--
1986	101	3961.3	3375	637	--	--	--	--	--	--	--	--
1987	125	4536.1	2516	439	--	--	--	--	--	--	--	--
1988	95	3961.3	3253	735	--	--	--	--	--	--	--	--
1989	89	4137.4	2412	574	--	--	--	--	--	--	--	--
1990	101	3961.3	3227	1065	--	--	--	--	--	--	--	--
1991	97	2661.9	7121	2373	--	--	--	--	--	--	--	--
1992	66	1974.4	4035	1756	1.156	4663	8698	3352	7957	3012	21493	8126
1993	99	2263.2	2463	574	1.860	4582	7045	1814	6839	1782	17643	4560
1994	43	715.7	2211	1053	6.538	14455	16666	7593	16274	7534	46117	21964
1995	50	715.7	2252	643	5.154	11607	13859	5034	13859	5034	36118	13130
1996	54	715.7	957	278	4.965	4751	5708	2020	5708	2020	14273	4967
1997	75	715.7	2446	1141	4.023	9840	12286	5541	12140	5429	31092	13951
1998	72	856.6	3760	1821	5.964	22424	26184	13068	25676	12820	67974	33901
1999	59	856.6	1564	398	3.446	5390	6954	2167	6544	2034	17744	5647
2000	80	715.7	3709	974	3.064	11366	15075	4781	14738	4670	38701	12332
2001	81	715.7	2347	955	4.557	10696	13043	5711	12281	5551	30025	13130
2002	84	715.7	2531	579	5.189	13134	15665	4985	14031	4478	38014	12113
2003	83	715.7	3835	1748	4.709	18058	21893	9411	18548	8575	45762	21420
2004	81	715.7	2293	716	3.980	9127	11420	3908	11286	3886	28139	9774

Table 1 (continued)

Year	Ground plot sampled area				Expanded to entire coast							
	No. plots	Area (km ²)	Total nests	SE	Aerial obs out/in sampled area	Estimated nests out of sampled area	Total nests	SE	Active nests	SE	Active eggs	SE
Mew Gull												
1985	48	1421.6	1174	407	--	--	--	--	--	--	--	--
1986	101	3961.3	2310	732	--	--	--	--	--	--	--	--
1987	125	4536.1	1845	505	--	--	--	--	--	--	--	--
1988	95	3961.3	2528	1917	--	--	--	--	--	--	--	--
1989	89	4137.4	2444	687	--	--	--	--	--	--	--	--
1990	101	3961.3	1365	648	--	--	--	--	--	--	--	--
1991	97	2661.9	1559	334	--	--	--	--	--	--	--	--
1992	66	1974.4	2031	752	3.521	7152	9183	3334	8717	3259	21386	7784
1993	99	2263.2	2366	282	1.586	3751	6117	1474	6117	1474	16480	3959
1994	43	715.7	1028	522	2.515	2585	3613	1576	3434	1556	9036	4181
1995	50	715.7	1396	403	3.655	5103	6499	2368	6499	2368	16834	6173
1996	54	715.7	773	234	4.599	3555	4328	1803	4328	1803	11546	4921
1997	75	715.7	265	82	2.416	640	905	302	905	302	2214	752
1998	72	856.6	1308	455	3.795	4964	6272	2565	6272	2565	15008	6174
1999	59	856.6	1365	396	2.800	3822	5187	1732	5016	1699	12841	4314
2000	80	715.7	1024	189	3.967	4063	5087	1113	4813	1071	12652	2847
2001	81	715.7	982	300	2.429	2385	3367	1110	3367	1110	7954	2593
2002	84	715.7	1687	378	2.645	4463	6150	1641	5956	1600	15952	4232
2003	83	715.7	1465	387	3.612	5292	6757	2387	6144	2217	15599	5462
2004	81	715.7	1419	326	3.498	4964	6383	1897	6140	1823	14489	4268
Sabine's Gull												
1985	48	1421.6			--	--	--	--	--	--	--	--
1986	101	3961.3	664	233	--	--	--	--	--	--	--	--
1987	125	4536.1	875	326	--	--	--	--	--	--	--	--
1988	95	3961.3	747	301	--	--	--	--	--	--	--	--
1989	89	4137.4	1559	986	--	--	--	--	--	--	--	--
1990	101	3961.3	2406	1350	--	--	--	--	--	--	--	--
1991	97	2661.9	1304	387	--	--	--	--	--	--	--	--
1992	66	1974.4	840	282	0.738	620	1460	374	1460	374	3186	801
1993	99	2263.2	2388	813	0.436	1041	3429	928	3359	898	8011	2031
1994	43	715.7	617	210	1.892	1168	1785	524	1785	524	4460	1342
1995	50	715.7	698	185	1.486	1038	1736	457	1736	457	4180	1077
1996	54	715.7	736	216	2.834	2086	2822	849	2684	813	6495	1951
1997	75	715.7	442	130	4.048	1789	2231	699	2231	699	5210	1787
1998	72	856.6	1454	741	2.890	4202	5656	2388	5656	2388	11199	4484
1999	59	856.6	1248	604	1.870	2334	3582	1348	3582	1348	8079	3026
2000	80	715.7	775	182	3.074	2382	3157	727	3157	727	8005	1959
2001	81	715.7	1201	423	3.544	4257	5458	1866	5330	1851	11411	4131
2002	84	715.7	1239	404	3.120	3866	5105	1474	5105	1474	12056	3418
2003	83	715.7	692	186	1.979	1370	2062	477	1984	471	4365	970
2004	81	715.7	600	148	1.897	1138	1738	388	1582	371	3085	730
Arctic Tern												
1985	48	1421.6	340	172	--	--	--	--	--	--	--	--
1986	101	3961.3	911	588	--	--	--	--	--	--	--	--
1987	125	4536.1	760	318	--	--	--	--	--	--	--	--
1988	95	3961.3	200	99	--	--	--	--	--	--	--	--
1989	89	4137.4	414	175	--	--	--	--	--	--	--	--
1990	101	3961.3	1047	387	--	--	--	--	--	--	--	--
1991	97	2661.9	652	290	--	--	--	--	--	--	--	--
1992	66	1974.4	1024	323	4.669	4781	5805	1863	5805	1863	11282	3611
1993	99	2263.2	1068	304	1.542	1647	2715	637	2715	637	6083	1407
1994	43	715.7	308	156	9.989	3077	3385	1614	3385	1614	7912	3959
1995	50	715.7	539	165	8.226	4434	4973	1762	4973	1762	9955	3538
1996	54	715.7	221	85	9.758	2157	2378	928	2378	928	4357	1728
1997	75	715.7	147	75	10.408	1530	1677	856	1677	856	3365	1721
1998	72	856.6	764	208	7.499	5729	6493	2848	6493	2848	13615	5965
1999	59	856.6	755	199	6.179	4665	5420	1392	5420	1392	10847	2812
2000	80	715.7	277	90	9.252	2563	2840	1024	2840	1024	5106	1820
2001	81	715.7	682	269	8.605	5868	6550	2446	6291	2242	12054	4332
2002	84	715.7	1529	434	8.330	12737	14266	5127	14266	5127	29269	10436
2003	83	715.7	506	136	8.307	4203	4709	1272	4709	1272	8422	2340
2004	81	715.7	737	137	7.182	5293	6030	1644	5809	1605	10277	2834

¹ Estimate of total nests in ground plot sampled area is not directly comparable among years because area has varied. In contrast, the size of the expansion area has been constant, thus the estimate of total nests in the coastal zone expansion is directly comparable among years.

Table 2. Annual proportion of nests active at time of plot visit, mean clutch size of apparently viable eggs found in actively incubated nests, and predicted mean date of hatch based on egg float angles. Means are calculated considering each nest found on a random ground plot as a sample unit.

Year	Proportion of Nests Active		Clutch Size (Active nests)		Predicted Hatch Date			n
	Prop	n	Eggs	n	Mean	Min	Max	
Cackling Canada Goose								
1982	0.307	584	4.5	168	04 July	25 June	18 July	170
1983	0.693	518	5.2	355	25 June	15 June	14 July	284
1984	0.477	214	4.6	102	25 June	16 June	11 July	92
1985	0.472	667	4.1	284	03 July	24 June	15 July	278
1986	0.642	648	4.7	404	29 June	13 June	15 July	346
1987	0.906	575	5.0	504	28 June	20 June	18 July	204
1988	0.742	306	4.6	223	24 June	15 June	08 July	66
1989	0.844	443	4.8	373	01 July	22 June	10 July	55
1990	0.745	514	4.6	377	24 June	13 June	06 July	194
1991	0.852	675	4.7	571	22 June	12 June	03 July	352
1992	0.890	674	4.8	590	30 June	20 June	21 July	391
1993	0.885	705	4.5	616	24 June	09 June	06 July	358
1994	0.814	625	4.6	501	19 June	08 June	09 July	409
1995	0.873	1382	4.5	1189	20 June	11 June	05 July	725
1996	0.913	1080	4.5	978	17 June	07 June	05 July	755
1997	0.826	1226	4.0	1010	17 June	03 June	04 July	812
1998	0.937	1602	4.5	1483	25 June	12 June	09 July	889
1999	0.869	1113	4.1	931	27 June	17 June	16 July	772
2000	0.950	1672	4.7	1509	24 June	14 June	10 July	1014
2001	0.607	1207	3.7	729	28 June	15 June	09 July	522
2002	0.855	1534	4.5	1293	20 June	10 June	04 July	930
2003	0.660	1026	4.1	648	17 June	03 June	04 July	562
2004	0.876	1340	4.8	1151	13 June	04 June	01 July	964
Emperor Goose								
1982	0.699	133	4.9	78	03 July	16 June	11 July	71
1983	0.831	177	5.4	141	22 June	14 June	06 July	100
1984	0.728	81	5.5	58	23 June	16 June	02 July	43
1985	0.618	191	5.2	113	01 July	23 June	11 July	107
1986	0.696	335	5.2	218	27 June	18 June	09 July	196
1987	0.934	395	5.1	361	27 June	18 June	07 July	141
1988	0.894	217	5.1	192	21 June	16 June	04 July	67
1989	0.916	322	5.1	292	30 June	18 June	07 July	63
1990	0.875	336	4.9	288	21 June	11 June	06 July	99
1991	0.947	380	5.0	356	20 June	10 June	02 July	256
1992	0.959	270	5.0	259	29 June	21 June	09 July	182
1993	0.954	306	4.9	285	21 June	11 June	04 July	139
1994	0.939	328	4.9	308	19 June	12 June	30 June	192
1995	0.967	307	4.9	297	18 June	10 June	06 July	188
1996	0.943	299	5.1	280	16 June	04 June	23 June	185
1997	0.958	240	4.8	230	15 June	06 June	30 June	153
1998	0.954	281	4.7	266	24 June	16 June	03 July	215
1999	0.919	247	4.5	224	27 June	17 June	06 July	188
2000	0.986	351	5.0	344	23 June	13 June	08 July	280
2001	0.776	165	4.8	127	27 June	19 June	02 July	104
2002	0.930	330	5.0	303	18 June	09 June	29 June	249
2003	0.800	265	4.8	211	15 June	05 June	26 June	153
2004	0.955	355	4.9	338	12 June	04 June	24 June	253

Table 2. (Continued) Annual proportion of active nests, mean clutch size, and predicted mean date of hatch.

Year	Proportion of Nests Active		Clutch Size (Active nests)		Predicted Hatch Date			n
	Prop	n	Eggs	n	Mean	Min	Max	
White-fronted Goose								
1982	0.643	28	3.7	15	04 July	26 June	12 July	14
1983	0.922	51	4.3	38	21 June	13 June	19 July	25
1984	0.903	31	4.6	28	23 June	16 June	01 July	25
1985	0.741	58	4.1	42	30 June	23 June	07 July	42
1986	0.878	123	4.3	104	26 June	17 June	12 July	102
1987	0.944	144	4.7	133	26 June	19 June	03 July	60
1988	0.963	81	4.5	78	22 June	15 June	03 July	32
1989	0.991	112	4.5	111	28 June	22 June	04 July	21
1990	0.936	173	4.6	161	22 June	11 June	29 June	52
1991	0.935	214	4.7	198	21 June	12 June	03 July	138
1992	0.971	204	4.5	197	29 June	19 June	24 July	110
1993	0.970	199	4.3	191	23 June	17 June	05 July	84
1994	0.973	222	4.4	214	19 June	11 June	28 June	129
1995	0.971	315	4.2	306	21 June	09 June	01 July	178
1996	0.966	349	4.5	337	18 June	07 June	30 June	144
1997	0.984	368	4.3	360	18 June	07 June	29 June	184
1998	0.974	392	4.3	380	25 June	17 June	06 July	261
1999	0.947	263	4.2	246	27 June	19 June	10 July	208
2000	0.978	493	4.5	478	25 June	14 June	09 July	334
2001	0.935	418	3.9	390	28 June	19 June	07 July	311
2002	0.978	455	4.4	444	22 June	14 June	30 June	306
2003	0.941	423	4.2	397	19 June	06 June	01 July	272
2004	0.971	624	4.6	602	15 June	04 June	27 June	364
Black Brant								
1982	0.043	47	2.0	1	28 June	28 June	28 June	1
1983	0.462	52	3.4	24	23 June	15 June	03 July	11
1984	0.294	17	4.2	5	20 June	19 June	20 June	4
1985	0.129	271	3.6	21	27 June	23 June	08 July	29
1986	0.735	298	3.8	215	25 June	19 June	06 July	126
1987	0.952	652	4.2	615	25 June	22 June	03 July	167
1988	0.698	222	3.4	155	20 June	14 June	03 July	38
1989	0.929	1011	3.8	939	27 June	19 June	06 July	40
1990	0.727	428	3.2	310	21 June	15 June	01 July	119
1991	0.867	542	3.6	373	19 June	12 June	01 July	183
1992	0.963	898	3.9	551	26 June	19 June	06 July	152
1993	0.852	562	3.3	328	21 June	12 June	27 June	107
1994	0.883	274	3.7	119	17 June	10 June	27 June	93
1995	0.723	195	3.7	103	18 June	12 June	01 July	41
1996	0.873	110	3.8	96	17 June	11 June	26 June	44
1997	0.944	124	3.5	110	14 June	03 June	24 June	100
1998	0.875	488	3.7	427	23 June	16 June	04 July	260
1999	0.821	156	3.2	126	26 June	17 June	07 July	108
2000	0.892	547	3.7	372	23 June	16 June	03 July	216
2001	0.531	311	3.0	165	26 June	19 June	05 July	77
2002	0.877	424	3.6	324	19 June	06 June	03 July	163
2003	0.485	309	3.0	62	16 June	07 June	26 June	56
2004	0.797	182	3.5	135	11 June	04 June	24 June	101

Table 2. (Continued) Annual proportion of active nests, mean clutch size, and predicted mean date of hatch.

Year	Proportion of Nests Active		Clutch Size (Active nests)		Predicted Hatch Date			n
	Prop	n	Eggs	n	Mean	Min	Max	
Tundra Swan								
1982	0.824	17	3.7	13	05 July	23 June	14 July	11
1983	0.933	15	4.8	14	24 June	15 June	30 June	6
1984	0.933	15	4.6	14	27 June	20 June	05 July	6
1985	0.839	31	3.8	24	04 July	26 June	10 July	14
1986	0.872	47	3.6	38	28 June	19 June	10 July	23
1987	0.962	26	3.8	24	30 June	23 June	06 July	12
1988	1.000	24	4.6	23	27 June	17 June	04 July	4
1989	1.000	24	4.3	24	01 July	29 June	03 July	4
1990	0.964	28	4.1	26	25 June	21 June	27 June	4
1991	0.926	27	4.2	25	24 June	17 June	08 July	12
1992	1.000	20	3.8	20	30 June	24 June	07 July	8
1993	0.964	28	4.0	26	26 June	19 June	01 July	6
1994	1.000	27	4.3	27	22 June	13 June	30 June	9
1995	0.913	23	3.8	21	25 June	21 June	02 July	9
1996	0.968	31	4.9	30	19 June	10 June	28 June	9
1997	0.943	35	4.2	33	21 June	14 June	25 June	13
1998	0.905	42	3.4	36	30 June	23 June	12 July	20
1999	0.900	20	3.7	18	01 July	24 June	09 July	14
2000	0.939	33	3.7	30	26 June	18 June	05 July	22
2001	0.833	30	3.4	25	30 June	19 June	09 July	16
2002	0.900	40	4.3	36	26 June	20 June	01 July	10
2003	0.978	45	4.8	44	18 June	11 June	24 June	21
2004	0.980	49	5.5	48	19 June	10 June	27 June	16
Sandhill Crane								
1982	0.889	9	2.0	6	24 June	22 June	25 June	4
1983	1.000	27	1.8	24	26 June	17 June	11 July	14
1984	0.929	14	1.9	13	19 June	15 June	21 June	6
1985	0.958	24	1.5	20	30 June	19 June	04 July	13
1986	0.805	41	1.6	30	27 June	16 June	09 July	25
1987	0.973	37	1.6	34	25 June	18 June	10 July	16
1988	1.000	34	1.9	34	19 June	17 June	25 June	6
1989	0.850	20	1.9	17	19 June	17 June	21 June	2
1990	0.979	47	1.8	45	18 June	15 June	22 June	9
1991	0.980	50	2.0	48	16 June	10 June	26 June	25
1992	0.967	30	1.8	29	30 June	24 June	05 July	9
1993	0.943	35	1.7	33	19 June	15 June	27 June	14
1994	1.000	32	1.8	31	14 June	11 June	16 June	5
1995	0.935	31	1.9	29	18 June	12 June	30 June	10
1996	0.973	37	1.9	35	14 June	10 June	25 June	14
1997	1.000	34	1.8	32	15 June	11 June	24 June	8
1998	1.000	35	1.8	35	21 June	15 June	26 June	19
1999	0.875	16	1.7	14	23 June	19 June	28 June	12
2000	0.971	35	1.8	34	19 June	13 June	29 June	22
2001	0.923	13	1.8	12	21 June	19 June	23 June	7
2002	0.950	40	2.0	38	19 June	08 June	03 July	12
2003	0.976	41	2.0	40	14 June	07 June	25 June	13
2004	1.000	46	1.9	46	15 June	09 June	22 June	10

Table 2. (Continued) Annual proportion of active nests, mean clutch size, and predicted mean date of hatch.

Year	Proportion of Nests Active		Clutch Size (Active nests)		Predicted Hatch Date			n
	Prop	n	Eggs	n	Mean	Min	Max	
Spectacled Eider								
1982	0.287	87	3.6	21	08 July	30 June	22 July	18
1983	0.550	111	4.5	61	29 June	20 June	06 July	22
1984	0.500	18	3.9	8	02 July	25 June	05 July	3
1985	0.545	99	4.2	50	04 July	26 June	18 July	20
1986	0.683	101	4.6	66	02 July	22 June	20 July	38
1987	0.848	105	5.0	87	28 June	17 June	09 July	27
1988	0.806	67	5.0	52	26 June	20 June	02 July	19
1989	0.927	41	5.1	37	02 July	22 June	07 July	5
1990	0.927	41	5.3	36	23 June	18 June	27 June	15
1991	0.875	40	5.4	35	22 June	16 June	10 July	25
1992	0.889	27	5.6	24	02 July	26 June	14 July	17
1993	0.868	38	4.4	31	25 June	17 June	09 July	18
1994	0.743	35	4.6	25	23 June	12 June	06 July	15
1995	0.803	66	5.0	51	24 June	14 June	04 July	44
1996	0.815	54	5.1	44	18 June	12 June	02 July	33
1997	0.895	57	4.4	50	19 June	11 June	30 June	39
1998	0.928	69	4.8	64	28 June	17 June	07 July	52
1999	0.911	56	4.9	51	28 June	18 June	09 July	51
2000	0.930	71	5.4	66	28 June	18 June	09 July	52
2001	0.630	54	4.2	34	03 July	25 June	16 July	32
2002	0.827	81	5.2	67	22 June	15 June	02 July	59
2003	0.774	62	4.4	48	22 June	09 June	02 July	36
2004	0.805	77	5.0	62	15 June	05 June	30 June	57
Common Eider								
1982	1.000	4	4.8	4	09 July	08 July	10 July	4
1983	0.600	5	4.3	3	26 June	21 June	30 June	3
1984	0.000	0	0.0	0	--	--	--	0
1985	0.333	3	6.0	1	--	--	--	0
1986	0.667	6	3.7	3	--	--	--	0
1987	0.941	34	5.4	31	29 June	25 June	08 July	10
1988	0.704	27	4.5	19	10 July	13 July	13 July	1
1989	1.000	31	5.5	31	02 July	29 June	08 July	4
1990	0.929	14	5.3	13	22 June	21 June	24 June	3
1991	0.865	37	5.0	32	26 June	19 June	05 July	27
1992	0.941	17	5.3	16	02 July	26 June	06 July	12
1993	0.600	15	5.1	9	24 June	18 June	27 June	5
1994	0.857	14	4.2	11	24 June	16 June	04 July	9
1995	0.941	17	5.1	16	23 June	14 June	02 July	13
1996	0.952	21	5.3	20	19 June	10 June	02 July	14
1997	0.917	24	4.6	22	19 June	10 June	01 July	15
1998	0.781	32	5.0	25	28 June	20 June	04 July	18
1999	0.765	17	4.5	13	30 June	22 June	09 July	12
2000	0.964	28	4.9	27	29 June	24 June	05 July	23
2001	0.909	33	4.0	30	30 June	20 June	08 July	23
2002	0.962	26	4.7	25	24 June	15 June	30 June	17
2003	0.750	24	4.3	18	22 June	14 June	04 July	16
2004	0.955	22	4.8	21	17 June	06 June	26 June	18

Table 2. (Continued) Annual proportion of active nests, mean clutch size, and predicted mean date of hatch.

Year	Proportion of Nests Active		Clutch Size (Active nests)		Predicted Hatch Date			n
	Prop	n	Eggs	n	Mean	Min	Max	
Red-throated and Pacific Loons (combined)								
1982	0.886	35	1.7	31	08 July	03 July	24 July	25
1983	0.947	38	1.8	36	29 June	21 June	29 July	15
1984	0.909	11	2.0	10	02 July	26 June	08 July	5
1985	0.898	59	1.7	53	07 July	25 June	21 July	15
1986	0.867	75	1.6	64	05 July	26 June	25 July	37
1987	0.938	81	1.9	76	03 July	27 June	12 July	34
1988	0.846	52	1.7	42	27 June	16 June	05 July	5
1989	0.956	45	1.8	43	02 July	22 June	15 July	5
1990	0.915	47	1.8	43	01 July	25 June	09 July	11
1991	0.925	67	1.8	62	26 June	18 June	05 July	21
1992	0.927	41	1.8	38	05 July	29 June	18 July	12
1993	0.979	47	1.9	45	26 June	18 June	05 July	12
1994	1.000	29	1.9	29	24 June	19 June	29 June	6
1995	1.000	44	1.8	44	26 June	21 June	01 July	10
1996	1.000	17	1.7	17	22 June	15 June	01 July	9
1997	0.970	33	1.9	32	22 June	15 June	29 June	17
1998	0.911	56	1.8	51	01 July	20 June	14 July	37
1999	0.937	63	1.8	58	03 July	22 June	14 July	48
2000	0.968	62	1.9	60	30 June	15 June	09 July	40
2001	0.965	57	1.6	55	04 July	27 June	15 July	27
2002	0.969	65	1.8	62	25 June	12 June	03 July	42
2003	0.950	40	1.7	38	24 June	12 June	03 July	14
2004	0.878	41	1.7	36	23 June	13 June	30 June	10
Glaucous Gull								
1982	0.797	59	2.5	45	05 July	29 June	22 July	23
1983	0.945	55	2.4	52	22 June	13 June	04 July	14
1984	0.875	8	2.3	7	23 June	18 June	26 June	5
1985	0.835	115	2.2	92	03 July	23 June	12 July	23
1986	0.768	69	2.3	51	27 June	22 June	05 July	18
1987	0.987	77	2.4	67	28 June	20 June	10 July	19
1988	0.932	74	2.4	66	22 June	15 June	03 July	9
1989	0.894	47	2.5	38	22 June	22 June	22 June	3
1990	0.839	56	2.6	47	17 June	16 June	18 June	2
1991	0.826	92	2.8	61	18 June	12 June	03 July	26
1992	0.947	75	2.8	71	27 June	22 June	04 July	23
1993	0.983	59	2.7	54	20 June	15 June	07 July	11
1994	0.981	54	2.8	53	17 June	10 June	27 June	17
1995	1.000	71	2.6	65	17 June	14 June	26 June	17
1996	1.000	26	2.5	26	14 June	11 June	20 June	15
1997	0.988	83	2.5	58	17 June	10 June	29 June	19
1998	0.983	116	2.7	114	22 June	15 June	09 July	64
1999	0.949	39	2.7	37	27 June	19 June	07 July	25
2000	0.978	134	2.6	124	22 June	12 June	09 July	72
2001	0.942	86	2.4	79	24 June	17 June	07 July	50
2002	0.896	96	2.7	83	17 June	06 June	04 July	56
2003	0.847	144	2.4	83	13 June	04 June	26 June	58
2004	0.988	84	2.5	83	10 June	03 June	19 June	21

Table 2. (Continued) Annual proportion of active nests, mean clutch size, and predicted mean date of hatch.

Year	Proportion of Nests Active		Clutch Size (Active nests)		Predicted Hatch Date			n
	Prop	n	Eggs	n	Mean	Min	Max	
Mew Gull								
1982	0.800	20	2.1	16	10 July	07 July	22 July	11
1983	0.946	37	2.6	35	26 June	17 June	03 July	6
1984	1.000	2	2.0	2	--	--	--	0
1985	0.909	44	1.9	38	04 July	27 June	12 July	8
1986	0.919	37	2.3	34	02 July	21 June	12 July	18
1987	1.000	29	2.4	23	26 June	21 June	04 July	8
1988	0.977	43	2.7	41	18 June	14 June	24 June	4
1989	0.918	49	2.6	45	22 June	22 June	22 June	1
1990	0.960	25	2.5	24	21 June	17 June	26 June	2
1991	0.857	42	2.6	36	20 June	14 June	02 July	8
1992	0.941	34	2.6	32	27 June	23 June	04 July	10
1993	1.000	92	2.8	92	24 June	17 June	02 July	7
1994	0.963	27	2.5	26	15 June	11 June	21 June	8
1995	1.000	44	2.6	44	18 June	15 June	22 June	16
1996	1.000	21	2.7	21	14 June	08 June	20 June	10
1997	1.000	9	2.4	9	19 June	16 June	27 June	8
1998	1.000	40	2.4	40	24 June	19 June	04 July	19
1999	0.972	36	2.5	35	25 June	21 June	09 July	25
2000	0.946	37	2.6	35	25 June	17 June	05 July	17
2001	1.000	36	2.4	36	26 June	19 June	07 July	18
2002	0.969	64	2.7	62	16 June	06 June	03 July	40
2003	0.909	55	2.5	50	17 June	08 June	27 June	20
2004	0.962	52	2.4	50	13 June	09 June	19 June	19
Sabine's Gull								
1982	1.000	2	1.0	2	29 June	29 June	29 June	1
1983	1.000	5	2.4	5	21 June	14 June	02 July	3
1984	1.000	1	0.0	0	--	--	--	0
1985	1.000	5	1.6	5	02 July	26 June	18 July	3
1986	1.000	11	1.9	10	24 June	15 June	07 July	7
1987	1.000	17	2.2	17	21 June	15 June	04 July	7
1988	1.000	14	2.4	14	24 June	18 June	08 July	7
1989	1.000	15	2.7	15	01 July	21 June	11 July	2
1990	1.000	20	2.5	14	--	--	--	0
1991	1.000	20	2.0	19	15 June	09 June	22 June	9
1992	1.000	18	2.2	18	--	--	--	0
1993	0.967	60	2.3	57	17 June	14 June	23 June	8
1994	1.000	38	2.7	38	11 June	09 June	16 June	6
1995	1.000	22	2.4	22	18 June	12 June	28 June	6
1996	0.950	20	2.4	19	11 June	07 June	14 June	3
1997	1.000	15	2.3	15	14 June	08 June	22 June	8
1998	1.000	44	2.0	44	21 June	15 June	06 July	11
1999	1.000	28	2.3	28	21 June	16 June	03 July	20
2000	1.000	28	2.5	28	22 June	14 June	02 July	7
2001	0.977	44	2.1	43	27 June	19 June	04 July	10
2002	1.000	47	2.4	47	14 June	08 June	26 June	28
2003	0.962	26	2.2	25	12 June	06 June	17 June	5
2004	0.909	22	2.0	20	09 June	03 June	19 June	3

Table 2. (Continued) Annual proportion of active nests, mean clutch size, and predicted mean date of hatch.

Year	Proportion of Nests Active		Clutch Size (Active nests)		Predicted Hatch Date			n
	Prop	n	Eggs	n	Mean	Min	Max	
Arctic Tern								
1982	0.857	7	1.5	6	--	--	--	0
1983	1.000	4	2.5	4	--	--	--	0
1984	1.000	2	1.5	2	--	--	--	0
1985	1.000	17	1.9	16	29 June	22 June	04 July	8
1986	1.000	8	2.1	8	26 June	16 June	24 July	6
1987	1.000	9	1.3	9	24 June	20 June	26 June	3
1988	0.857	7	1.7	6	24 June	24 June	24 June	2
1989	1.000	7	1.9	7	22 June	22 June	22 June	1
1990	1.000	10	1.6	8	24 June	24 June	24 June	1
1991	1.000	8	1.9	8	17 June	12 June	20 June	4
1992	1.000	15	1.9	15	01 July	25 June	10 July	6
1993	1.000	28	2.2	28	17 June	15 June	20 June	3
1994	1.000	8	2.1	8	15 June	15 June	15 June	1
1995	1.000	17	2.0	17	16 June	13 June	20 June	3
1996	1.000	6	1.8	6	11 June	11 June	11 June	1
1997	1.000	5	2.0	5	--	--	--	0
1998	1.000	21	2.1	21	26 June	19 June	05 July	5
1999	1.000	16	2.0	15	25 June	21 June	02 July	8
2000	1.000	10	1.8	10	26 June	23 June	01 July	5
2001	0.960	25	1.9	24	22 June	15 June	29 June	5
2002	1.000	58	2.1	58	18 June	08 June	26 June	37
2003	1.000	19	1.8	19	13 June	08 June	21 June	5
2004	0.963	27	1.8	26	17 June	09 June	29 June	9
Diving Ducks								
1982	0.500	14	4.7	6	10 July	13 July	22 July	5
1983	0.714	7	6.6	5	24 June	24 June	24 June	1
1984	0.727	11	5.0	8	--	--	--	0
1985	0.556	9	5.4	5	10 July	25 July	25 July	1
1986	0.929	14	6.9	13	08 July	01 July	11 July	4
1987	0.824	17	7.1	14	07 July	02 July	11 July	4
1988	0.824	17	6.7	14	08 July	08 July	08 July	1
1989	1.000	18	7.3	18	08 July	08 July	08 July	1
1990	1.000	9	6.3	9	07 July	06 July	08 July	2
1991	0.571	7	6.5	4	28 June	23 June	02 July	2
1992	0.967	30	7.4	29	06 July	30 June	22 July	19
1993	0.909	33	6.1	30	02 July	29 June	08 July	18
1994	0.941	17	5.6	16	02 July	30 June	03 July	7
1995	0.857	28	6.8	24	03 July	20 June	10 July	14
1996	0.917	12	6.3	11	28 June	17 June	05 July	7
1997	0.917	12	6.4	11	27 June	17 June	04 July	10
1998	0.960	25	6.9	24	04 July	26 June	10 July	14
1999	0.800	15	7.0	12	08 July	01 July	13 July	10
2000	0.935	31	7.8	29	06 July	28 June	11 July	26
2001	1.000	7	3.3	7	07 July	04 July	17 July	6
2002	0.833	12	6.9	10	01 July	29 June	04 July	8
2003	1.000	3	7.0	3	30 June	29 June	01 July	3
2004	0.600	5	5.7	3	20 June	18 June	22 June	2

Table 2. (Continued) Annual proportion of active nests, mean clutch size, and predicted mean date of hatch.

Year	Proportion of Nests Active		Clutch Size (Active nests)		Predicted Hatch Date			n
	Prop	n	Eggs	n	Mean	Min	Max	
Dabbling Ducks								
1982	0.190	21	6.7	3	10 July	12 July	12 July	1
1983	1.000	4	4.0	4	23 June	23 June	23 June	1
1984	0.500	6	5.0	3	03 July	03 July	03 July	1
1985	0.500	10	5.8	5	08 July	06 July	15 July	2
1986	0.773	22	6.1	17	03 July	22 June	17 July	13
1987	0.833	36	6.3	30	03 July	18 June	14 July	12
1988	0.811	37	6.7	30	01 July	28 June	03 July	2
1989	0.722	36	6.4	25	06 July	03 July	11 July	4
1990	0.700	20	5.6	14	28 June	24 June	03 July	4
1991	0.929	28	6.8	26	24 June	12 June	04 July	13
1992	0.831	59	6.8	49	04 July	21 June	13 July	16
1993	0.852	54	6.5	46	28 June	24 June	01 July	16
1994	0.762	21	6.8	16	28 June	26 June	29 June	5
1995	0.722	36	5.3	26	27 June	18 June	06 July	11
1996	0.762	21	7.6	15	25 June	13 June	02 July	10
1997	0.900	10	7.4	9	17 June	13 June	21 June	4
1998	0.720	82	6.8	59	01 July	18 June	10 July	39
1999	0.794	34	7.2	27	02 July	20 June	12 July	17
2000	0.898	49	6.3	44	30 June	21 June	08 July	28
2001	0.667	30	6.7	20	02 July	27 June	08 July	13
2002	0.750	40	6.0	30	24 June	13 June	03 July	21
2003	0.647	17	8.2	11	20 June	10 June	29 June	8
2004	0.719	32	7.2	23	18 June	05 June	28 June	19
Small Shorebirds (sandpipers, dunlin, phalaropes, turnstones)								
1982	1.000	5	3.4	5	30 June	30 June	30 June	1
1983	1.000	17	3.9	17	--	--	--	0
1984	1.000	2	4.0	2	--	--	--	0
1985	1.000	19	3.3	19	03 July	22 June	17 July	4
1986	0.943	53	3.5	50	27 June	16 June	11 July	23
1987	0.969	32	3.6	31	21 June	15 June	25 June	7
1988	0.930	43	3.8	40	17 June	16 June	18 June	2
1989	1.000	71	3.5	71	24 June	18 June	04 July	3
1990	0.952	83	3.8	79	25 June	21 June	30 June	2
1991	1.000	90	3.9	90	22 June	08 June	06 July	21
1992	0.975	81	3.8	79	26 June	22 June	29 June	8
1993	0.989	91	3.6	90	21 June	14 June	29 June	15
1994	1.000	55	3.8	55	18 June	13 June	24 June	2
1995	1.000	72	3.8	72	19 June	10 June	25 June	6
1996	0.986	71	3.7	69	20 June	08 June	02 July	10
1997	1.000	76	3.5	75	12 June	09 June	14 June	3
1998	0.955	67	3.6	64	22 June	14 June	28 June	8
1999	0.977	88	3.8	83	25 June	16 June	05 July	17
2000	1.000	92	3.7	92	23 June	14 June	27 June	13
2001	0.965	113	3.7	109	27 June	18 June	04 July	22
2002	0.980	98	3.9	96	19 June	12 June	25 June	21
2003	0.989	88	3.8	87	16 June	13 June	17 June	3
2004	1.000	120	3.9	120	12 June	08 June	20 June	10

Table 3. Annual growth rates of nest populations in 5-year increments as estimated through log-linear regression, Yukon Kuskokwim Delta, AK, 1985-2004.

Species	1985-2004	1985-1989	1990-1994	1995-1999	2000-2004
Cackling Canada goose	0.067	-0.273	0.100	0.035	-0.061
Emperor goose	0.012	0.009	0.060	-0.018	0.035
Greater white-fronted goose	0.130	0.079	0.121	0.063	0.003
Black brant	0.033	0.362	0.110	-0.003	-0.275
Tundra swan	0.047	-0.088	0.109	0.089	0.108
Sandhill crane	-0.001	0.062	-0.114	-0.073	0.068
Spectacled eider ¹	-0.005	-0.569	-0.055	0.068	0.059
Common eider ¹	0.008	0.531	-0.144	-0.046	-0.130
Pacific loon	0.031	--	-0.032	0.223	-0.113
Red-throated loon	0.019	--	-0.090	0.161	0.046
Glaucous gull	0.045	--	0.325	0.014	-0.004
Mew gull	0.003	--	-0.466	-0.008	0.115
Sabine's gull	0.038	--	0.100	0.214	-0.217
Arctic Tern	0.061	--	-0.270	0.118	0.118

¹ Annual growth rates of eider nests for 1985-1989 increment based on 1988-1989.