

AERIAL SURVEY OF EMPEROR GEESE AND OTHER WATERBIRDS

IN

SOUTHWESTERN ALASKA,

FALL 2004

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Abstract: The fall aerial emperor goose survey was conducted in southwest Alaska for the 26th consecutive year in 2004. Emphasis was on emperor geese, Pacific brant, Canada geese, and Steller's eiders with populations estimated at 93,544, 135,203, 43,602, and 79,003, respectively. The survey was flown from 30 September to 3 October 2004 from Kuskokwim Bay to Wide Bay, along the north and south sides of the Alaska Peninsula. An amphibious Cessna 206 (N234JB), with a left seat pilot/observer and right seat observer, was flown at 45m (150 feet) ASL and 200km/hr (110 kts) along the coastline and over estuaries to determine species composition and numbers of birds. Two additional replicate surveys of the Izembek NWR area were flown on 7 October to estimate sizes of the Pacific brant and Canada goose populations. The averages of the three surveys were 134,475 (Pacific brant) and 40,052 (Canada geese).

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INTRODUCTION

This survey has annually monitored fall distribution, abundance and population trends of emperor geese and other waterbirds at migratory staging areas throughout southwest Alaska since 1979. Data from this survey are used to expand photographic estimates of emperor goose productivity (i.e. percent juveniles) based on the proportional distribution of the population at various fall staging locations. The survey includes coastline and estuarine habitats from Kuskokwim Bay south and west along the north side of the Alaska Peninsula to Unimak Island, and the south side of the Alaska Peninsula east to Wide Bay.

METHODS

The survey was flown using an amphibious Cessna 206 (N234JB) at a ground speed of approximately 200 km/hr (110 kts) and an altitude of 45m (150 feet) ASL. The 2004 survey route followed the coast from Jacksmith Bay (on the southeast coast of Kuskokwim Bay) to the lower Naknek River (near the village of King Salmon) to the tip of the Alaska Peninsula (along the north side of the Alaska Peninsula) to Wide Bay (along the south side of the Alaska Peninsula). Observations were made from both sides of the aircraft and voice recorded into two laptop computers using remote microphones. Computers received input from the aircraft Global Positioning System (GPS) saving coordinates for each observation. Special "Record" and "Transcribe" computer programs developed by Jack Hodges (USFWS-MBM, Juneau) were used to collect and process these data.

The coastal flight path was usually 100 meters offshore with deviations to confirm species identification and numbers, normally within 1.6 km (1 mile) of exposed shorelines. In estuaries, a systematic but meandering flight path was followed on a computer moving map program to ensure complete coverage. Whenever possible, flights were conducted with <20 knots of wind and primary staging areas were flown at or near high tide as this concentrated emperor geese near shorelines.

The greater survey area includes 143 shoreline/estuarine segments (Figures 1-2) which were previously described by Mallek and Dau (2000). Segments 14-22 and 29-34 were flown on 30 September. Segments 23-28 were not flown due to high winds however, we don't believe skipping these segments affected estimates of population size or distribution as few if any emperor geese have been seen in these segments during previous surveys. Segments 35-59 were flown on 1 October; segments 60-68, 79-81, and 83-85 were flown on 2 October; and most of segments 86-137 were flown on 3 October. The south side of the Alaska Peninsula (segments 86-137) is filled with many deep rocky bays and rocky points which were not surveyed due to time and fuel constraints however previous complete surveys have indicated few if any emperor geese use these areas. Two additional surveys of Izembek Lagoon and other estuaries adjacent to Izembek NWR were flown on 7 October (Mallek/Dau and Larned/Anderson). General observations of habitat and survey conditions including wind speed and direction, temperature, sky condition, visibility, and tide stage were recorded en route.

SURVEY CONDITIONS

30 September: North winds of approximately 10 knots increased to 20 knots during the day. Segments 23-28 were omitted due to local northwest winds of 25-30 knots. Sky conditions were 1,500 feet scattered to overcast with good visibility throughout the day with the exception of moderate glare to the west on segments 29-33. Air temperature was 32°F at the start of the survey.

1 October: North winds of 10 to 25 knots persisted during the day. Sky conditions were clear with unrestricted visibility initially becoming 3,000 feet scattered by mid-day. Air temperature was 32°F at the start of the survey. Tides were low in Egegik and Ugashik Bays, there were mid, flooding tides from Cinder River to Port Heiden. Tides were high in Port Moller and Nelson Lagoon.

2 October: Winds were 20 knots from the northwest increasing to 25 knots at the end of the day. Sky conditions were 3,000 feet overcast, visibility was good and air temperature was 40°F throughout the day. Tides were high in Izembek Lagoon, Kinzarof Lagoon, Morzhovoi Bay, and Bechevin Bay.

3 October: Light south winds of 5-8 knots persisted throughout the day. Sky conditions were generally 3,000 feet overcast, occasionally lowering to 500 feet overcast. There was occasional mist but overall, visibility was good and temperature at the start of the survey was 40°F.

7 October: Winds were 15 knots from the northwest, sky conditions were 2,500 feet overcast, visibility was good, and air temperature was 40°F throughout the day. Light rain was encountered over Cold Bay and Kinzarof Lagoon. Tides were low in Izembek Lagoon, mid-level in Kinzarof Lagoon, and high in Morzhovoi and Bechevin Bays.

RESULTS/DISCUSSION

The totals for all species observed during the survey are summarized in Table 1. Figure 3 depicts the 26-year trend for fall staging emperor geese. Previous estimates of emperor geese (1979-2004) and corresponding 3-year averages are summarized in Appendix 1.

Emperor Goose

We estimate the fall emperor goose population at 93,544. The 2004 population estimate is 21% above the 2003 estimate of 77,290 and the current 3-year average of 83,175 is 16% above the previous 3-year average (71,990). Numbers and proportions of emperor geese at primary staging sites were as follows: Egegik Bay 609 (<1%, segments 36-37); Ugashik Bay 867 (<1%, segment 38); Cinder River Estuary 30,342 (32%, segments 40-42); Port Heiden 11,273 (12%, segments 44-46); Seal Islands 20,085 (21%, segment 47); Nelson Lagoon 18,159 (19%, segments 551-552, 56-57); Izembek Lagoon and adjacent estuaries 5,502 (6%, segments 60-65, 67-68, 79-81, 83-85); Canoe Bay 537 (<1%, segment 93); Chignik Lagoon 399 (<1%, segment 125); and Wide Bay 904 (<1%, segment 137).

Pacific Brant

A total of 135,203 Pacific brant were observed during the 30 September to 3 October emperor goose survey of which >99% (135,140) were in Izembek Lagoon and adjacent estuaries. The replicate surveys of Izembek Lagoon and adjacent estuaries (two surveys flown on 7 October) provided counts of 105,804 and 162,479. The average of the three surveys of the Izembek area was 134,475. This average is 1% below the 2003 fall average of 135,944 (n=5 surveys) and 5% above the 30-year average peak fall count of 127,974 (1975-2004, Izembek NWR files).

Canada Goose

We observed 43,602 Canada geese during the 30 September to 3 October emperor goose survey. Izembek Lagoon and adjacent estuaries accounted for approximately 69% (29,920) of the survey total. The low count of Canada geese during the emperor goose survey around the Izembek area (2 October) can be attributed to high tides during that survey, which resulted in many Canada geese leaving the lagoon to feed in uplands. Replicate surveys of Canada geese in the Izembek area (two surveys flown on 7 October) provided counts of 40,982 and 49,252. The average of the three surveys of the Izembek area was 40,052 Canada geese. This average was 22% above the 2003 fall average (32,886, n=5 surveys) and 7% below the 30-year average peak fall count of 43,265 (1975-2004, Izembek NWR files).

Steller's Eider

We observed a total of 79,003 Steller's eiders during the 30 September to 3 October emperor goose survey. Numbers and proportions of Steller's eiders at primary staging sites were as follows: Chagvan Bay 1,743 (2%, segment 20); Cinder River Estuary 1,600 (2%, segments 40-42); Port Heiden 8,410 (11%, segments 44-46); Seal Islands 11,615 (15%, segment 47); Nelson Lagoon 42,201 (53%, segments 551-552, 56-57); and Izembek Lagoon and adjacent estuaries 11,440 (14%, segments (60-65, 67-68, 79-81, 83-85)). Replicate surveys for the Izembek area (two surveys flown on 7 October) provided counts of 5,387 and 7,095 Steller's eiders. The average of the three surveys of the Izembek area was 7,974 Steller's eiders. The average fall (September/October) population size for the Izembek area is 21,509 (1975-2004, range = 4,500-78,645, Izembek NWR files).

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Figure 1. Map of emperor goose aerial survey segments 1-36 in southwest Alaska, 1992-2004.

Appendix 1. Emperor goose fall survey data, southwest Alaska, 1979-2004.

YEAR	TOTAL	3YR. AVERAGE	SURVEY DATES	OBSERVERS	SURVEY AREA
1979	59,808	NA	10/1-4	B. Conant/R.E. Gill, Jr.	South Alaska Peninsula missing
1980	65,971	NA	10/4-8	R.J. King/R.E. Gill, Jr.	North Alaska Peninsula only
1981	63,156	62,978	10/3-8	R.J. King/R.E. Gill, Jr./D.V. Derksen	All
1982	80,608	69,912	10/6-10	R.J. King/K.S. Bollinger	All
1983	72,551	72,105	10/10-16	R.J. King/D.V. Derksen	All
1984	82,842	78,667	10/3-8	R.J. King/D.V. Derksen	All
1985	59,790	71,728	10/10-14	R.J. King/W.D. Eldridge	All
1986	68,051	70,228	10/5-11	R.J. King/W.D. Eldridge	All
1987	65,663	64,501	10/2-5	R.J. King/W.D. Eldridge	All
1988	76,165	69,960	10/7-12	R.J. King/W.D. Eldridge	All
1989	70,729	70,852	10/7-12	R.J. King/L. Denlinger	All
1990	109,531	85,475	10/17-19	R.J. King/A.W. Brackney	All
1991	75,295	85,185	10/3-8	R.J. King/A.W. Brackney	All
1992	82,295	89,040	10/10-17	R.J. King/A.W. Brackney	All
1993	71,051	76,214	10/23-26	R.J. King/D.A. Dewhurst	Alaska Peninsula only
1994	87,086	80,144	10/8-14	R.J. King/K. Laing	All
1995	91,009	83,049	10/14-20	R.J. King/K.S. Bollinger	All
1996	87,018	88,371	9/28-29	R.J. King/W.D. Eldridge	North Alaska Peninsula only [#]
1997	86,669	88,232	10/3-5	R.J. King/C.P. Dau	North Alaska Peninsula only [#]
1998	67,744	80,477	10/7-9	R.J. King/E.J. Mallek	Alaska Peninsula only
1999	60,226	71,546	10/1-5	E.J. Mallek/C.P. Dau	North Alaska Peninsula only [#]
2000	61,626	63,199	10/1-5	E.J. Mallek/C.P. Dau	Kuskokwim Bay south
2001	59,987	60,613	9/26-10/1	E.J. Mallek/C.P. Dau	Kuskokwim Bay south
2002	78,692	66,768	9/29-10/2	E.J. Mallek/C.P. Dau	Kuskokwim Bay south
2003	77,290	71,990	9/27-10/2	E.J. Mallek/C.P. Dau	Kuskokwim Bay south
2004	93,544	83,175	9/30-10/3	E.J. Mallek/C.P. Dau	Kuskokwim Bay south

[#] Previous south side of the Alaska Peninsula used in estimate.