AERIAL SURVEY OF EMPEROR GEESE AND OTHER WATERBIRDS

IN

SOUTHWESTERN ALASKA,

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By

Christian P. Dau
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U. S. Fish and Wildlife Service
Migratory Bird Management
1011 E. Tudor Road
Anchorage, Alaska 99503

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Christian P. Dau and Heather M. Wilson, U.S. Fish and Wildlife Service, Migratory Bird Management, 1011 E. Tudor Rd, Anchorage, AK, 99503

Abstract: This report presents results of the 35th consecutive, annual fall emperor goose population survey in southwest Alaska. The 2013 fall emperor goose estimate is 78,100 birds. The survey was flown on 30 September, Naknek River to Izembek Lagoon, and 19-20 October from Izembek Lagoon to Bechevin Bay including all the north side of the Alaska Peninsula and south side estuaries from Cold Bay west. The survey was suspended from 1-18 October due to a lapse in appropriations resulting in a partial Government shut-down. A USFWS amphibious Cessna 206 (N9623R) was used as the survey aircraft and a left seat pilot/observer and right seat observer made observations along coastlines and over estuaries at an altitude of 45m (150 feet) ASL and airspeed of 200km/hr (110 kts). All species of waterbirds and marine mammals were counted, but emphasis was placed on emperor geese, Pacific brant, Canada geese, and Steller's eiders. The south side of the Alaska Peninsula east of Cold Bay was not flown in 2013, so the most recent 3-year average estimate (2,485 emperor geese at primary sites) was added to this year's estimate. Total counts for Pacific brant, Canada geese, and Steller's eiders were 165,252, 16,644 and 47,321, respectively. Additional replicate surveys of the Izembek NWR area were flown on 19 and 20 October to aid in estimating sizes of Pacific brant and Canada goose populations. Average counts for those species (n=2 surveys) were 157,781 and 20,628, respectively. A single count of 4,174 Steller's eiders was used for the Izembek NWR estimate.

Key words: aerial survey, emperor geese, waterbirds, southwest Alaska. December 2013

INTRODUCTION

Fall distribution and abundance of emperor geese and other waterbirds at migratory staging areas throughout southwest Alaska have been monitored annually since 1979 (see References). Data from fall surveys are used annually 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 (Stehn, R.A., USFWS-MBM, Anchorage). The survey traditionally included 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. In recent years including 2013, the survey included only those areas where photographs for age ratios were collected (e.g., Naknek River, Seg. 35 to Moffet Bay and Izembek Lagoon, Segs.60-65 and Kinzarof Lagoon, Seg.85, Fig. 2).

METHODS

The survey was flown using a USFWS Cessna 206, (N9623R) equipped with amphibious floats, at a ground speed of approximately 200 km/hr (110 kts) and an altitude of 45m (150 feet) ASL. The survey route included the north side of the Alaska Peninsula from Naknek to Bechevin Bay, and the south side estuaries west of Cold Bay. Observations were made from both sides of the aircraft and voice recorded into two laptop computers. GPS coordinates were automatically recorded and linked to the position of the aircraft track and individual aerial observations using custom computer programs developed by Jack Hodges (USFWS-MBM, Juneau).

Coast line segments were usually flown 100 meters offshore with deviations to confirm species

identification and numbers seaward within 1.6 km (1 mile) of shorelines. Estuaries were flown in their entirety following a meandering flight path and monitoring real-time aircraft tracks, to complete coverage of the survey area. Flights were primarily conducted with <20 knots of wind.

The maximum survey area includes 143 shoreline/estuarine segments (Figures 1-2) which were previously described by Mallek and Dau (2000). In 2013, segments 35 to 59 were flown on 30 September and segments 60-68, 80-85 on 19 October. The delay in survey completion was due to a lapse in appropriations resulting in a partial Government shut-down. Survey segments north of Naknek and south side Alaska Peninsula areas east of Cold Bay were omitted in 2013. A replicate survey of segments 60-65**,** 84-85 flown on 20 October was supplemented with observations in segments 67-68, 80-83 on 19 Octobers to cover the Izembek area. Observations of survey conditions including wind speed and direction, temperature, sky and water conditions, visibility, and tide stage were recorded during surveys.

SURVEY CONDITIONS

30 September: Survey conditions were good with northwesterly winds of 20-25 mph, broken ceilings to 2,500 feet and 20-30 mile visibility. Visibility lowered between Port Heiden (Seg. 44) and Port Moller (Seg. 50) due to occasional mist and overcast ceilings to 500 feet. Tides were medium and ebbing from Naknek (Seg. 35) to Cinder River (Segs. 40-41) and low south to Port Moller (Seg. 50). Tide was low in the Nelson Lagoon complex (Segs. 52-57, 551-552). Air temperatures increased from 33 to 45^{o}F throughout the day.

19 October: Survey conditions were good with ceilings of 4,000 feet broken, southwest winds of 15-25 mph and temperatures of approximately 45^{o} F. Visibility was lower in occasional squalls and due to some glare. Tides were medium to high throughout the survey.

20 October: Survey conditions were fair with considerable glare. Ceiling was 3,000 feet scattered to broken with southeast winds of 15-20 mph and the temperature was 45^{o} F. Tides were medium to high throughout the survey.

RESULTS/DISCUSSION

The totals for all species observed during the survey are summarized in Table 1. Estimates of emperor goose fall population sizes (1979-2013) and corresponding 3-year averages are summarized in Table 2.

Emperor Goose

The 2013 fall population index of emperor geese was 78,100, which includes 75,615 birds observed, plus an estimated 2,485 birds representing the most recent 3-year average (2005, 2008-9) of complete coverages along the south side of the Alaska Peninsula. The south side Alaska Peninsula estimate includes primary staging areas (Segs. 90-93, 107, 112, 125-130, 134-137) and coastlines between those sites. North side Alaska Peninsula estuaries (Segments 34-65) contained 71,034 (91.0%) of the fall population index. Small numbers of emperor geese ($\leq$0.02% of the population) were observed in northern Bristol Bay estuaries during previous surveys. Therefore, that area has been omitted from surveying since 2005. The 2013 total

emperor goose population index is 33.1% above the 2012 index of 58,683 and 5.4% above the reported 34-year average of 74,132 for this survey (1979-2012, MBM files) (Table 2).

Numbers and proportions of emperor geese at primary staging sites along the Alaska Peninsula in 2013 were as follows: Egegik Bay 2,717 (3.6%, Segments 36-37); Ugashik Bay 711 (0.9%, Segment 38); Cinder River Estuary 6,410 (8.5%, Segments 39-43); Port Heiden 10,292 (13.7%, Segments 44-45); Seal Islands 15,806 (21.0%, Segment 46-47); Nelson Lagoon and adjacent estuaries 32,284 (42.9%, Segments 50-58, 551-552); Izembek Lagoon and adjacent estuaries 7,088 (9.4%, Segments 60-68 and 80-85); Cold Bay to Wide Bay estimate was the 3-year average of 2,485 (Segments 86-137).

Pacific Brant

A total of 165,252 Pacific brant was observed, essentially all of which (165,207; 99.9%) were in Izembek Lagoon and adjacent estuaries (Segments 60-65, 67-68, 80, 85). The total population index was not expanded for omitted segments along the south side of the Alaska Peninsula. The 2013 brant index is 34.6% above the 2012 total of 122,740. One replicate count of Izembek Lagoon and adjacent estuaries on 19-20 October was 150,355. Thus, the average fall brant population index in the Izembek area is 157,781 (n= 2 surveys). The 2013 Izembek area index is 2.1% above the 2012 estimate of 154,481 (n= 3 surveys) and 17.8% above the 38-year average fall count of 133,990 (1975-2012, MBM R7 files).

Canada Goose

Our 2013 fall population index of Canada geese from the emperor goose survey was 16,644 with Izembek Lagoon and adjacent estuaries accounting for 90.9% (15,122) of the observations. One replicate count of Izembek Lagoon and adjacent estuaries on 19-20 October was 26,133 which results in an average index of 20,628 (n= 2) Canada geese for the Izembek area. The 2013 average is 36.8% below the 2012 estimate of 32,651 (n=3 surveys) and 49.3% below the 37-year average fall count of 40,719 (1975-2012 MBM R7 files).

Steller's Eider

We observed a total of 47,321 Steller's eiders during the 2013 emperor goose survey, 61.7% above the 2012 count of 29,263 and 20.6% below the 1979-2012 average of 59,612. The population trend of Steller's eiders indicates a 0.4%/year increase based on counts during the fall emperor goose survey (1979-2013 MBM R7 files).

Numbers and proportions of Steller's eiders at primary southwest Alaska estuarine staging sites were as follows: Egegik Bay 0 (Segments 36-37); Ugashik Bay 0 (Segment 38); Cinder River Estuary 20 (0.04%, Segments 40-42); Port Heiden 270 (0.6%, Segments 44-46); Seal Islands 8,025 (17.0%, Segment 46-47); Nelson Lagoon and adjacent estuaries 34,832 (73.6%, Segments 50-58, 551-552); and Izembek Lagoon and adjacent estuaries 4,174 (0.8%, Segments 60-68 and 80-85).

One replicate survey of Steller's eider in Izembek Lagoon and adjacent estuaries on 19-20 October was 717 birds. However, this count was compromised due to glare and rough water conditions and was not used to provide a population average. Thus, we report the fall 2013

Steller's eider count for the Izembek area as 4,174. This 2013 estimate is 19.3% below the 2012 estimate of 5,170 (n=3 surveys) and 79.9% below the 37-year average fall count of 20,795 (1975-2012, MBM R7 files). Fall counts of Steller's eiders are indices of the size of molting populations returning to each estuary and long-term trends indicate a 5.7% decline/year at Izembek (1979-2013) and a 1.7% increase/year at Nelson Lagoon (1980-2013). Steller's eiders show high site fidelity during molting so the indicated decline in number at Izembek is of concern.

The findings and conclusions in this report are those of the author(s) and do not necessarily represent the views of the U.S. Fish and Wildlife Service.

AKNOWLEDGMENTS

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Figure 1. Map of emperor goose aerial survey segments 1-36 in southwest Alaska, 1992-2013.

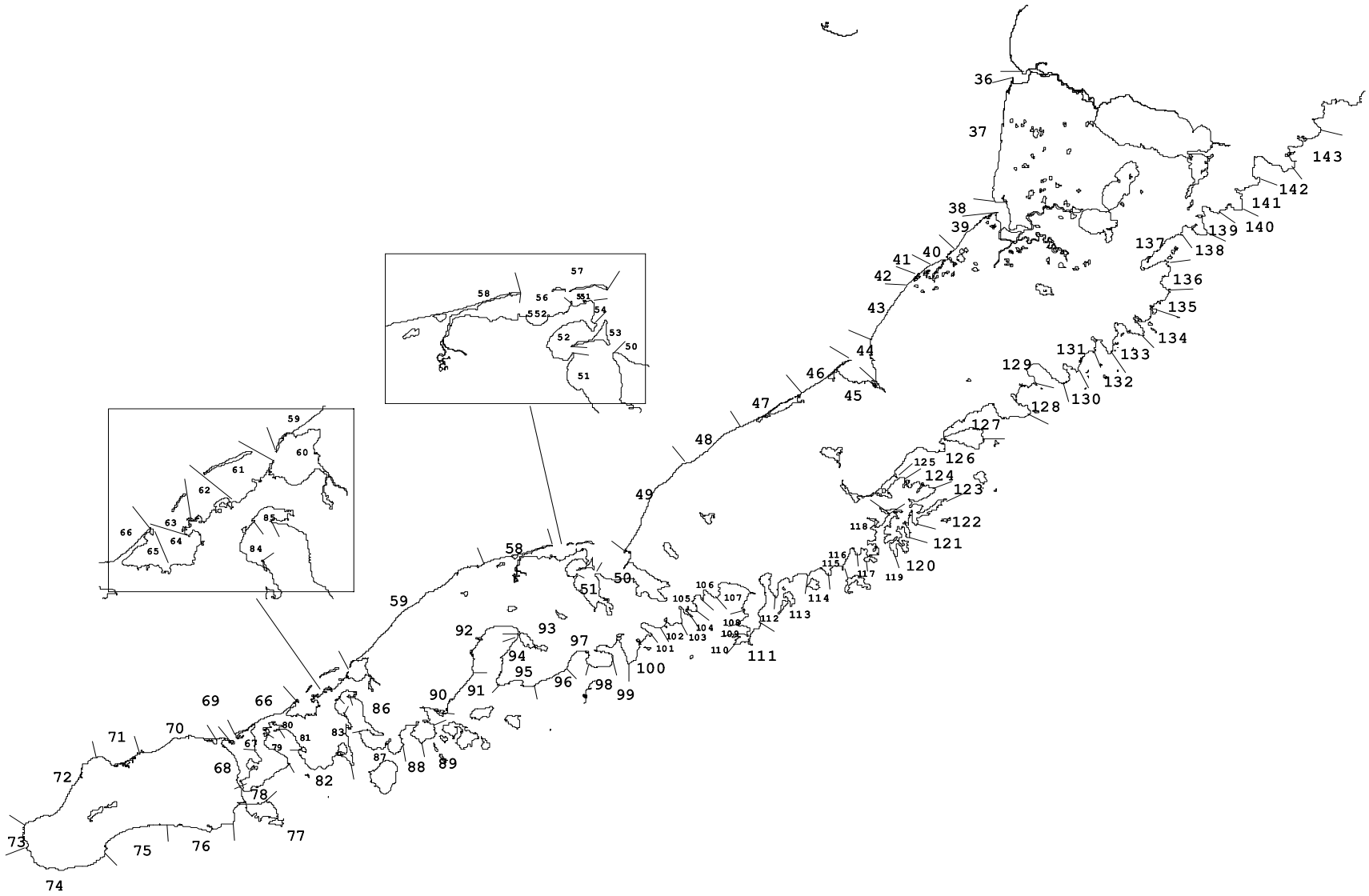

Figure 2. Map of emperor goose aerial survey segments 36-143 in southwest Alaska. 1992-2013.

Table 1. Waterbird and mammal observations by segment, southwest Alaska 30 September and 19 October 2013.

SPECIES	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
Am. Green-winged Teal						25										
Am. Wigeon																
Bald Eagle adult	1				1				1	1					4	2
Bald Eagle juvenile													1			
Beluga				1												
Pacific Brant						2		3								
Black-legged Kittiwake															1428	226
Black Scoter	321		1829	485	41	1			4		3518	747			25	23
Brown Bear																
Canada Goose	105	50		134	2	35		25		70	435	357			4	
Caribou			25													
Common Eider		110									1012					
Common Loon																4
Common Raven	4		1									1			1	
D-c Cormorant													3			
Emperor Goose	277	2717		711		5720	480	210		1832	8460	123	15683		26	1785
Goldeneye spp.															1	
Greater Scaup				202		15					30					
Gray Whale			1													
Harlequin Duck																
Harbor Seal											700				175	
Large gull	2597	1516	550	1841	154	1438	52	265	1007	212	3435	701	949	504	378	1388
Large shorebird		125									20					
Mallard	30	2995		2189		1097	10	93		25	360		160			36
Mew Gull	55	206	1238	26	75	142	42	50	1099	99	4389	742	722	47	323	2367
Medium shorebird		100														
Northern Fulmar																
Northern Pintail	47	2617		2778		1730	4	25			13980	2865	702	6		465
Pacific Loon																2
Pelagic Cormorant				1											1	
Horned Puffin		1														
R-b Merganser																
Red-necked Grebe																
Harbor Seal		225														
Sea Otter				60							390				8	69
Small shorebird	5170	9995		3600		1850	60	55	330	100	6520		8200			300
Lesser Snow Goose		3														
Steller's Eider						20					270		8025			1775
Steller's Sealion																
Surf Scoter				225								45				20
Tundra Swan	2	2		2										2		
Tundra Swan juv.														3		
Walrus														2	450	
Whimbrel											35					
White-winged Scoter			5	5					16						23	26

Table 1(cont). Waterbird and mammal observations by segment, southwest Alaska 30 September and 19 October 2013.

SPECIES	51	52	53	54	551	552	56	57	58	59	60	61	62	63
Am. Green-winged Teal														
Am. Wigeon												100		
Bald Eagle adult								1		1			1	2
Bald Eagle juvenile						2								
Beluga														
Pacific Brant					4					36	7000	46206	12718	34877
Black-legged Kittiwake									4					
Black Scoter	10			255	4		600			170				
Brown Bear											5			
Canada Goose					305						3240	697	1733	3
Caribou														
Common Eider						550	127							
Common Loon														
Common Raven														
Double-crested Cormorant	3													
Emperor Goose	2654	2040		639	9154	8975	2337	4670	30	4	785	520	700	302
Goldeneye spp.														
Greater Scaup	125				10	40					280			
Gray Whale														
Harlequin Duck														
Harbor Seal										125	1			
Large gull	1218	475		82	4347	422	7670	185	75	792	261	958	2410	2875
Large shorebird														
Mallard		25			1006	1112								
Mew Gull	1356	923		51	4	2112	5427	807	48	1436				
Medium shorebird														
Northern Fulmar									1					
Northern Pintail	1035	805		20	4571	1390					926	500		
Pacific Loon								1						
Pelagic Cormorant										3				55
Horned Puffin														
Red-breasted Merganser														
Red-necked Grebe	1													
Harbor Seal														
Sea Otter	52	6		124	2	5	30	1	1	2	8	65	41	36
Small shorebird		3900			2100	15600	175		200	700		1000	3020	
Lesser Snow Goose						1								
Steller's Eider		310		1449	4092	9346	17660	200			445	1213	933	109
Steller's Sealion														
Surf Scoter														
Tundra Swan													5	
Tundra Swan juv.														
Walrus														
Whimbrel														
White-winged Scoter					1					5				

Table 1(cont). Waterbird and mammal observations by segment, southwest Alaska 30 September and 19 October 2013.

SPECIES	64	65	66	67	68	80	81	82	83	84	85	**Total**
Am. Green-winged Teal												**25**
Am. Wigeon												**100**
Bald Eagle adult							2		4		1	**22**
Bald Eagle juvenile						2						**5**
Beluga												**1**
Pacific Brant	26612	22593		4174	725	8772					1530	**165252**
Black-legged Kittiwake				1					1			**1660**
Black Scoter				4	1		30		1			**8069**
Brown Bear												**5**
Canada Goose	390	5495		28	1201	1000			20		1315	**16644**
Caribou												**25**
Common Eider												**1799**
Common Loon												**4**
Common Raven	1											**8**
Double-crested Cormorant	1			1	2		1					**11**
Emperor Goose	200			6	1025	12	2560		623	70	285	**75615**
Goldeneye spp.												**1**
Greater Scaup												**702**
Gray Whale												**1**
Harlequin Duck				10				15	21			**46**
Harbor Seal												**1001**
Large gull	1127	1089		64	106	582	191	146	120	49	1376	**43607**
Large shorebird												**145**
Mallard						1230						**10368**
Mew Gull		5			1							**23792**
Medium shorebird												**100**
Northern Fulmar												**1**
Northern Pintail	250			100	1200						630	**36646**
Pacific Loon												**3**
Pelagic Cormorant				1								**61**
Horned Puffin												**1**
Red-breasted Merganser						35			450		5	**490**
Red-necked Grebe												**1**
Harbor Seal												**225**
Sea Otter	63	80		143	38	1		15	116		15	**1371**
Small shorebird										7000	90	**69965**
Lesser Snow Goose												**4**
Steller's Eider	1455	6							5	8		**47321**
Steller's Sealion								2				**2**
Surf Scoter					4						8	**302**
Tundra Swan						5						**18**
Tundra Swan juv.												**3**
Walrus												**452**
Whimbrel												**35**
White-winged Scoter									18			**99**

Table 2. Fall emperor goose fall survey data, southwest Alaska, 1979-2013.

YEAR	TOTAL	3YR. AVG.	DATES	OBSERVERS	SURVEY AREA
1979	59808	NA	10/1-10/4	B.Conant/R.E.Gill, Jr.	North Alaska Peninsula only
1980	65971	NA	10/4-10/8	R.J. King/R.E. Gill, Jr.	North Alaska Peninsula only
1981	63156	62978	10/3-10/8	R.J. King/R.E. Gill, Jr./D.V. Derksen	Kuskokwim Bay south
1982	80608	69912	10/6-10/10	R.J. King/K.S. Bollinger	Kuskokwim Bay south
1983	72551	72105	10/10-10/16	R.J. King/D.V. Derksen	Kuskokwim Bay south
1984	82842	78667	10/3-10/8	"	Kuskokwim Bay south
1985	59790	71728	10/10-10/14	R.J.King/W.D. Eldridge	Kuskokwim Bay south
1986	68051	70228	10/5-10/11	"	Kuskokwim Bay south
1987	65663	64501	10/2-10/5	"	Kuskokwim Bay south
1988	76165	69960	10/7-10/12	"	Kuskokwim Bay south
1989	70729	70852	10/7-10/12	R.J. King/L. Denlinger	Kuskokwim Bay south
1990	109531	85475	10/17-10/19	R.J. King/A.W. Brackney	Kuskokwim Bay south
1991	75295	85185	10/3-10/8	"	Kuskokwim Bay south
1992	82295	89040	10/10-10/17	"	Kuskokwim Bay south
1993	71051	76214	10/23-10/26	R.J. King/D.A. Dewhurst	Alaska Peninsula only
1994	87086	80144	10/8-10/14	R.J. King/K. Laing	Kuskokwim Bay south
1995	91009	83049	10/14-10/20	R.J. King/K.S. Bollinger	Kuskokwim Bay south
1996	87018	88371	9/28-9/29	R.J. King/W.D. Eldridge	North Alaska Peninsula only[1]
1997	86669	88232	10/3-10/5	R.J. King/C.P. Dau	North Alaska Peninsula only[1]
1998	67744	80477	10/7-10/9	R.J. King/E.J. Mallek	Alaska Peninsula only
1999	60226	71546	10/1-10/5	E.J. Mallek/C.P. Dau	North Alaska Peninsula only[1]
2000	61626	63199	9/26-28,10/2	"	Kuskokwim Bay south
2001	59987	60613	9/26-28,10/1	"	Kuskokwim Bay south
2002	78692	66768	9/29-10/2	"	Kuskokwim Bay south
2003	77290	71990	9/27-10/2	"	Kuskokwim Bay south
2004	93544	83175	9/30-10/3	"	Kuskokwim Bay south
2005	73212	81349	10/4-10/8	"	Alaska Peninsula only
2006	81078	82611	9/26-9/28	"	Alaska Peninsula only
2007	73531	75940	9/26-10/3	"	North Alaska Peninsula only[1]
2008	78201	77604	9/26-9/28	"	Kuskokwim Bay south
2009	79647	77127	9/29-10/5	"	Kuskokwim Bay south
2010	59924	72591	9/30, 10/4	"	North Alaska Peninsula only[1]
2011	62561	67377	9/27-9/30	"	North Alaska Peninsula only[1]
2012	58683	60389	9/28-9/30	"	North Alaska Peninsula only[1]
2013	78100	66448	9/30, 10/19	H.M. Wilson/C.P. Dau	North Alaska Peninsula only[1]

[1] Average count of south side of the Alaska Peninsula used in estimate.