

TESHEKPUK LAKE AREA MOLTING GOOSE SURVEY – 2004

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Abstract: The 23rd annual molting goose survey, conducted in the area north and east of Teshekpuk Lake on the Arctic Coastal Plain of Alaska, was conducted on 18-20 July 2004. Pacific brant, Canada geese, white-fronted geese, and snow geese were recorded throughout the survey area with counts of 20,267, 13,277, 27,651, and 2,321, respectively.

Key Words: aerial survey, molting geese, Teshekpuk Lake, National Petroleum Reserve

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INTRODUCTION

This report summarizes results from the 2004 Teshekpuk Lake area molting goose survey. The survey, initiated in 1976 and repeated in 1977-78 and conducted annually since 1982, monitors the abundance and distribution of molting geese that use the area north and east of Teshekpuk Lake. The significance of this area to molting geese was first documented by Hansen in 1957 (King 1970). Past surveys of the area have documented large concentrations of molting Pacific brant (*Branta bernicla nigricans*), Canada geese (*Branta canadensis*), and white-fronted geese (*Anser albifrons frontalis*).

STUDY AREA AND METHODS

Study Area and Survey Design

The survey area included approximately 196 lakes and several bay and creek segments located north and east of Teshekpuk Lake (Figure 1). Each lake was identified by a unique number and observations of geese, swans, and loons were recorded for each lake. The 2004 survey was flown in a Cessna 206 amphibious equipped aircraft (N234JB) at 150-200 feet above ground level and at 80-120 mph. Aircraft navigation was maintained by 1:63,360 maps with lake identifiers (numbers) printed on the map and by a remote computer screen running a moving map program developed by John Hodges (USFWS, Waterfowl Management-Juneau). The aircraft flight path was recorded by a laptop computer connected to the aircraft global positioning system (GPS).

Survey Procedures

Shorelines of large lakes were flown so that any feeding or loafing geese on land would be recorded. The surface of large lakes was also flown in a systematic fashion providing 100% coverage of the lake. For smaller lakes, a flight path over the lake provided an unrestricted view of the entire lake and shoreline. Observations from both observers were recorded directly into one laptop computer by the pilot/observer via a remote microphone (as sound files) using a

program developed by John Hodges. A second computer program, also developed by John Hodges, was used later to replay sound files and transcribe data to ASCII files. The transcribed ASCII files were then used for data analyses.

RESULTS

The 2004 survey was conducted over three days on 18-20 July. Pacific brant accounted for 31.9% of total adult geese observed during the survey (20,267 adults and 96 goslings), while white-fronted geese accounted for 43.5% (27,651 adults and 3,312 goslings). Canada geese totals were 13,277 adults and 149 goslings. Canada geese accounted for 20.9% of the total adult geese observed during the survey. Snow geese (*Anser chen caerulescens*) accounted for 3.7% of the adult geese observed during the survey (2,309 adults and 79 goslings) of which 12 were blue-phase snow geese. A total of 163 adult Tundra Swans (*Cygnus columbianus*) were observed along with 37 cygnets. Pacific loon (*Gavia pacifica*), red-throated loon (*Gavia stellata*), and yellow-billed loon (*Gavia adamsii*) totals were 201, 54, and 4, respectively.

Observation totals for geese, swans, and loons are provided in Table 1 for the 2004 survey. Figures 2-5 illustrate the numbers of adult geese counted on this survey from 1982-2004.

DISCUSSION

Pacific Brant

The importance of this survey area to molting Pacific brant (Figure 2) is well documented in previous reports of this survey. The 2001 count for Pacific brant in this area (36,817) was the highest ever recorded and constituted approximately 30% of the total Pacific brant population for that year. Furthermore, recent winter surveys for Pacific brant suggest an overall population decline (Conant and King 2005). Due to declining populations and high use of this area by Pacific brant, any disturbance to molting brant north and east of Teshekpuk Lake could be significant and detrimental to this species.

Canada Geese

Use of the survey area by molting Canada geese is highly variable (Figure 3) and appears to be weakly correlated to use by Pacific brant.

White-fronted Geese

The nesting grounds of white-fronted geese that use this area is believed to be the Arctic Coastal Plain of Alaska. Although the estimated population of white-fronted geese during the nesting season on the Arctic Coastal Plain has grown over the last two decades (Mallek et al. 2005), the molting population in the Teshekpuk Lake survey area has had substantially more growth (Figure 4). Furthermore, the number of white-fronted goose goslings is also increasing at a similar rate. The reason(s) for this disproportionate growth rate are unknown.

Snow Geese

Use of the survey area by snow geese is relatively low when compared to other species of geese, although in recent years snow goose numbers have increased (Figure 5).

CONCLUSION

The importance of the Teshekpuk Lake survey area to molting geese has been well documented and is a major reason this area gained temporary protection from oil development in 1998. Data from this survey since 1998 confirms this importance. Since molting geese are highly susceptible to disturbance (Derksen et al. 1992), and in some years molting habitat provided by this small area is extremely important to the global population of Pacific brant, further protection of this area from disturbance caused by oil development is certainly warranted.

ACKNOWLEDGMENTS

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Data and conclusions presented in this report are preliminary and are not for publication or citation in published manuscripts without permission from the author.

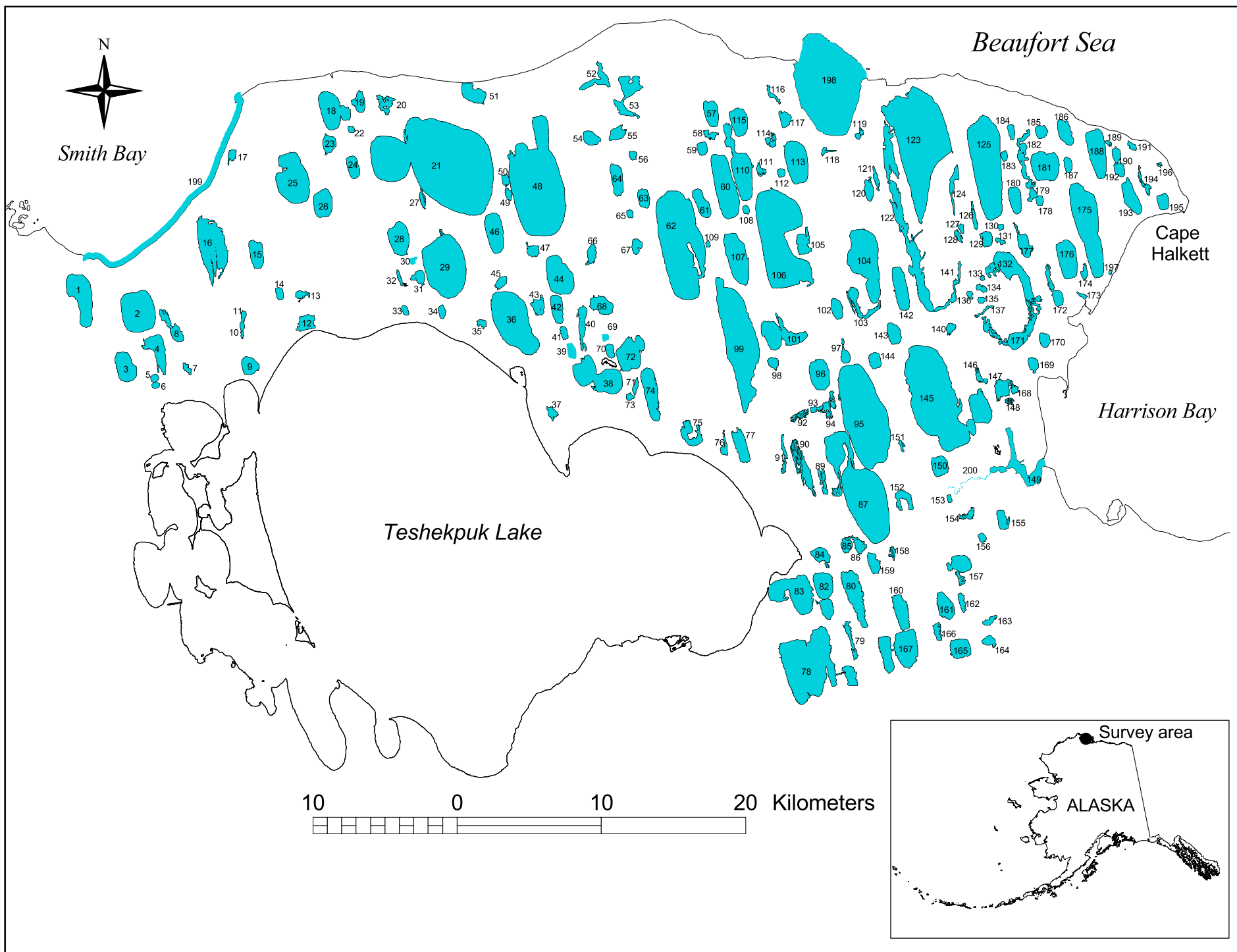


Figure 1. Lakes surveyed by airplane for molting geese on a portion of the Arctic Coastal Plain of Alaska.

Table 1. Observations of geese, swans, and loons by lake from the Teshekpuk Lake area molting goose survey 2004.

Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Pacific Brant																		
Pacific Brant Goslings																		
Canada Geese															60			110
Canada Goose Goslings																		
White-fronted Geese	51	93	483	58				91	95			203		8	50			84
White-fronted Goose Goslings	19	25	10	37				10				10		12				
Pacific Loon								11	1	1	2		1	6			2	
Red-throated Loon																		2
Snow Geese																		
Snow Goose Goslings																		
Tundra Swan		2	2	4				5					2				2	
Tundra Swan Cygnets				3														
Yellow-billed Loon				1					1									
Total	70	120	495	103	0	0	0	117	97	1	2	213	3	26	110	0	4	196

Species	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
Pacific Brant		157	25															39
Pacific Brant Goslings		10																24
Canada Geese			392				4			15	84	18			8			90
Canada Goose Goslings																		
White-fronted Geese	130		271	29	432	158	136	29		195	429	7	4		42	145		934
White-fronted Goose Goslings	100		26	5	15	9	17	13		7		15	1		45			22
Pacific Loon	3			1	1			6		1				2			3	2
Red-throated Loon	4		4								2		3					3
Snow Geese			89		2						1							
Snow Goose Goslings																		
Tundra Swan			2	2			2							1		1	2	
Tundra Swan Cygnets														3				
Yellow-billed Loon																		
Total	237	167	809	37	450	167	159	48	0	218	516	40	8	6	95	146	5	1114

Table 1 (continued). Observations of geese, swans, and loons by lake from the Teshekpuk Lake area molting goose survey 2004.

Species	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54
Pacific Brant												55			18	240	320	
Pacific Brant Goslings												10			12	20	20	
Canada Geese		91	25	24				135		120		415		19	40	833	970	25
Canada Goose Goslings				4								2				2		
White-fronted Geese		120	40	333	14	12		530	80		30	1101			4	347	400	307
White-fronted Goose Goslings				10	22	25									4	423	95	227
Pacific Loon	1			1			5		1									1
Red-throated Loon												4			4		11	
Snow Geese				2						325		15				2		
Snow Goose Goslings				3												3		
Tundra Swan	2						2				1	2			1		1	4
Tundra Swan Cygnets																	2	4
Yellow-billed Loon																		
Grand Total	3	211	65	377	36	37	7	665	81	445	31	1604	0	19	83	1870	1819	568

Species	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72
Pacific Brant							92	240						3				
Pacific Brant Goslings																		
Canada Geese	22		5			109	150	82				6	38	8				92
Canada Goose Goslings								1				10						
White-fronted Geese	277	25	10			19	864	1334	150		43	22	146	380	30	3		20
White-fronted Goose Goslings	170					8	12					36				4		3
Pacific Loon		2		3			1	2		1		3		2		1		
Red-throated Loon																		
Snow Geese								1										
Snow Goose Goslings																		
Tundra Swan	2							1								2	3	1
Tundra Swan Cygnets																		
Yellow-billed Loon																		
Grand Total	471	27	15	3	0	136	1119	1661	150	1	43	77	184	393	30	10	3	116

Table 1 (continued). Observations of geese, swans, and loons by lake from the Teshekpuk Lake area molting goose survey 2004.

Species	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90
Pacific Brant																		
Pacific Brant Goslings																		
Canada Geese		39													162		40	
Canada Goose Goslings		8																
White-fronted Geese	25	329	5	182	34	50		78		46	453	23		225	81		373	54
White-fronted Goose Goslings		9	5		19	45		34		25	55				35		81	6
Pacific Loon		3	4	3		15	6	4	2		3	7	3	3	2	3	7	1
Red-throated Loon									2									
Snow Geese		18	2														4	
Snow Goose Goslings		10	3															
Tundra Swan			3		2	9	2	6	6	2	7	6					7	4
Tundra Swan Cygnets						8			2								4	
Yellow-billed Loon																		
Grand Total	25	416	22	185	55	127	8	122	12	73	518	36	3	228	280	3	516	65

Species	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108
Pacific Brant	1								95					790	35	1007	1007	
Pacific Brant Goslings																		
Canada Geese					275	70		9	263	30		45	9	167	20	291	252	50
Canada Goose Goslings					32									75				
White-fronted Geese			275	4	49	68	8	137	1581	40	177	8		687	325	923	1	75
White-fronted Goose Goslings				10	6		12							10				
Pacific Loon	4	1		2	1		1				2		6					
Red-throated Loon														1				
Snow Geese					5		2							27		25	8	
Snow Goose Goslings							4											
Tundra Swan	1						2			2		1	2					
Tundra Swan Cygnets							1			1								
Yellow-billed Loon																		
Grand Total	6	1	275	16	368	138	30	146	1939	73	179	54	17	1757	380	2246	1268	125

Table 1 (continued). Observations of geese, swans, and loons by lake from the Teshekpuk Lake area molting goose survey 2004.

Species	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126
Pacific Brant					110				1025		2050		261	6	925		5	
Pacific Brant Goslings																		
Canada Geese		348		246	479		82		185		100		28	201	278		289	
Canada Goose Goslings														15				
White-fronted Geese				88	55	14								7			233	
White-fronted Goose Goslings						24											15	
Pacific Loon					2													
Red-throated Loon																		
Snow Geese																		
Snow Goose Goslings																		
Tundra Swan	2		2		3													
Tundra Swan Cygnets																		
Yellow-billed Loon																		
Grand Total	2	348	2	334	649	38	82	0	1210	0	2150	0	289	229	1203	0	542	0

Species	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144
Pacific Brant			385								735				25	325		
Pacific Brant Goslings																		
Canada Geese			35	115		178								80	209	103	50	10
Canada Goose Goslings																		
White-fronted Geese			75	450		30		40	24					6		37	80	155
White-fronted Goose Goslings						15		68	30					15				
Pacific Loon														1				2
Red-throated Loon																		
Snow Geese				1				2										
Snow Goose Goslings																		
Tundra Swan																	2	
Tundra Swan Cygnets																		
Yellow-billed Loon																		
Grand Total	0	0	495	566	0	223	0	110	54	0	735	0	0	102	234	465	132	167

Table 1 (continued). Observations of geese, swans, and loons by lake from the Teshekpuk Lake area molting goose survey 2004.

Species	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162
Pacific Brant	1146				300	54												
Pacific Brant Goslings																		
Canada Geese	462		544		573													
Canada Goose Goslings																		
White-fronted Geese	539	45	600		213			200		170	12	18			230		100	10
White-fronted Goose Goslings	15				149			55				5						12
Pacific Loon	1							6		4			1	1	2			
Red-throated Loon																		
Snow Geese					70			5									2	4
Snow Goose Goslings								5									4	5
Tundra Swan	4				2					2	2				3	7		
Tundra Swan Cygnets	2										3					1		
Yellow-billed Loon																	1	
Grand Total	2169	45	1144	0	1307	54	0	271	0	176	17	23	1	1	235	8	107	31

Species	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180
Pacific Brant									1900				383	65				
Pacific Brant Goslings																		
Canada Geese							30	75	12		111	12	528	12	1			30
Canada Goose Goslings																		
White-fronted Geese			25	2	19		180	50		182			240	170	50			60
White-fronted Goose Goslings				4	14					9				14	43			1
Pacific Loon	4	4	7	2								2						
Red-throated Loon										1								
Snow Geese										2			10					
Snow Goose Goslings										2								
Tundra Swan	1	1	4		7											2		
Tundra Swan Cygnets		1														2		
Yellow-billed Loon																		
Grand Total	5	6	36	8	40	0	210	125	1912	196	111	14	1161	261	94	4	0	91

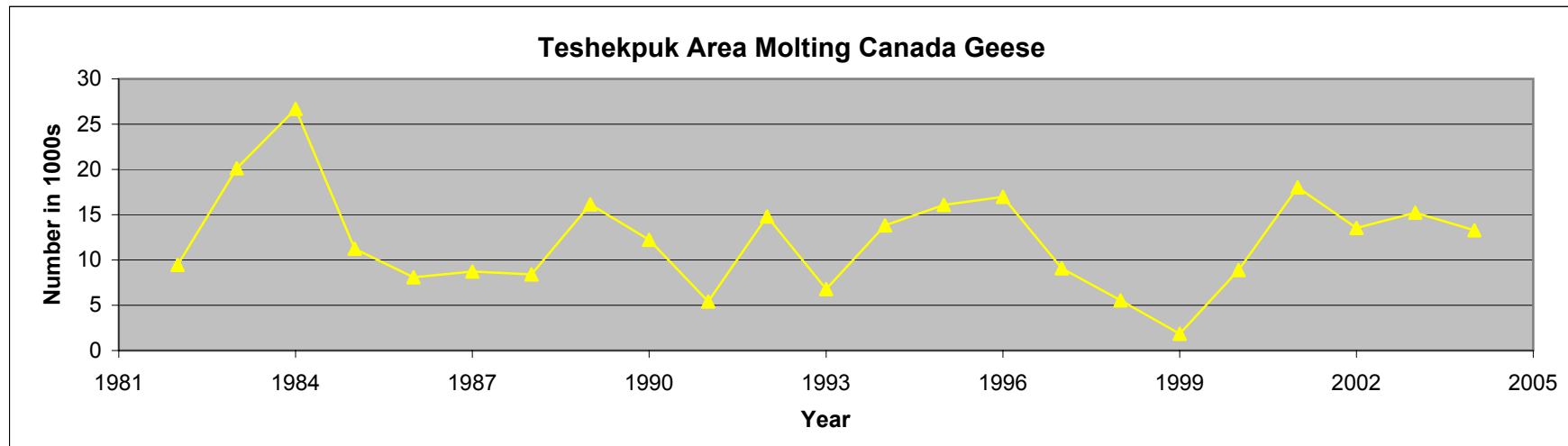
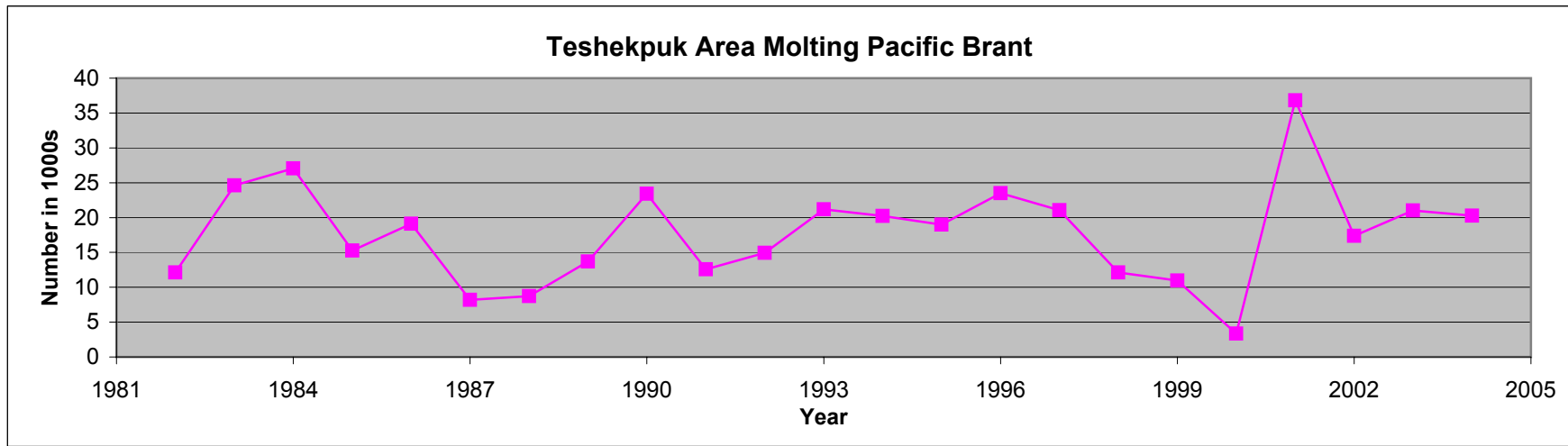
Table 1 (continued). Observations of geese, swans, and loons by lake from the Teshekpuk Lake area molting goose survey 2004.

Species	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	16 CREEK
Pacific Brant	2110	160			12	580							2258		530		20
Pacific Brant Goslings																	
Canada Geese	204	179			6								148				75
Canada Goose Goslings																	
White-fronted Geese				18			9			3			35				953
White-fronted Goose Goslings				25			13										490
Pacific Loon																	
Red-throated Loon						1				3				3			
Snow Geese																	8
Snow Goose Goslings																	15
Tundra Swan													2				
Tundra Swan Cygnets																	
Yellow-billed Loon																	
Grand Total	2314	339	0	43	18	581	22	0	0	6	0	0	2443	3	530	0	1561

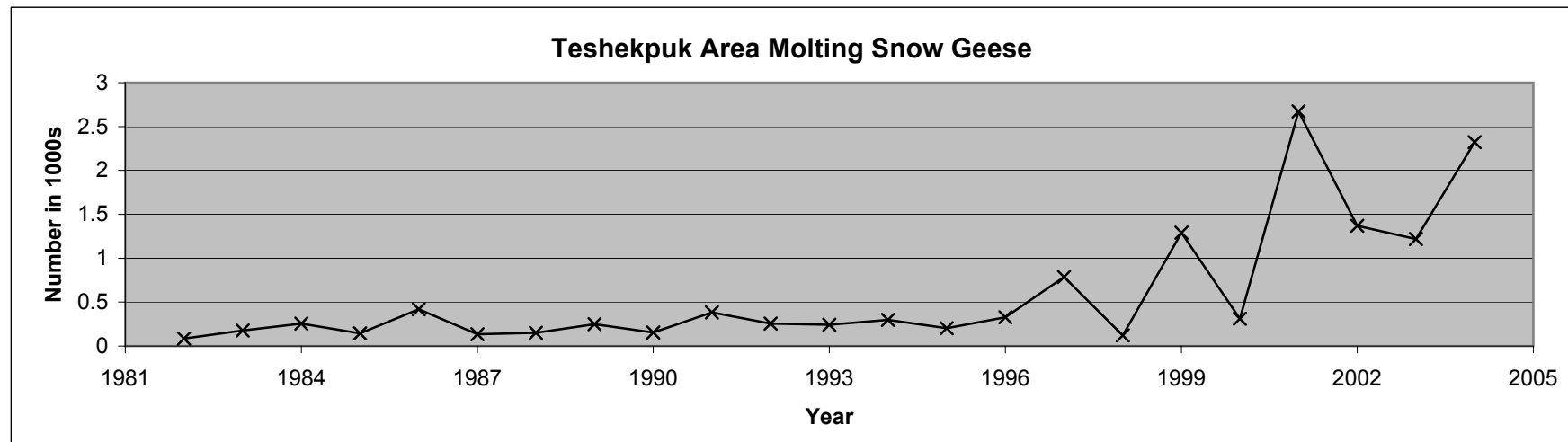
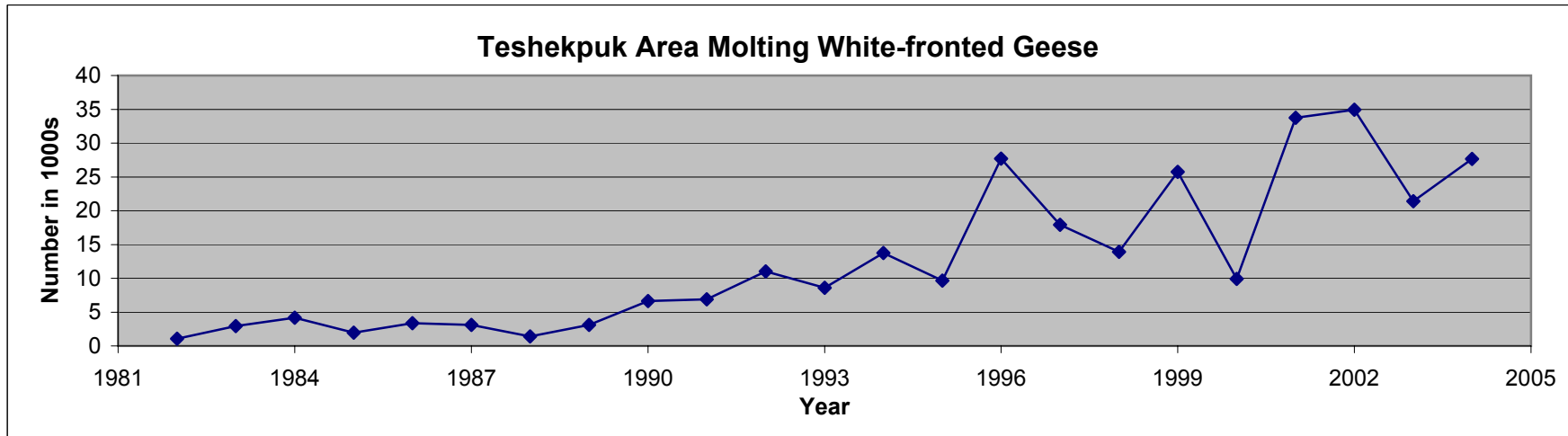
Table 1 (continued). Observations of geese, swans, and loons by lake from the Teshekpuk Lake area molting goose survey 2004.

Species	BOAT CREEK	GARRY CREEK	KOGRU	NE156	NE195	OFFSHORE 186	OFFSHORE 191	POGIK BAY
Pacific Brant	15				15		40	703
Pacific Brant Goslings								
Canada Geese		397	245			365	160	380
Canada Goose Goslings								
White-fronted Geese	110	535	3765	45	30		208	15
White-fronted Goose Goslings	188		20		10		40	
Pacific Loon						2		5
Red-throated Loon								3
Snow Geese	20	1622						1
Snow Goose Goslings	25							
Tundra Swan	1							1
Tundra Swan Cygnets								
Yellow-billed Loon								
Grand Total	359	2554	4030	45	55	367	448	1108

Species	S56	SMITH BAY	SW166	Grand Total
Pacific Brant				20267
Pacific Brant Goslings				96
Canada Geese				13277
Canada Goose Goslings				149
White-fronted Geese	47	314	41	27651
White-fronted Goose Goslings		230	19	3312
Pacific Loon	2			201
Red-throated Loon		6		54
Snow Geese		44	2	2321
Snow Goose Goslings				79
Tundra Swan		4		163
Tundra Swan Cygnets				37
Yellow-billed Loon		1		4
Grand Total	49	599	62	67611



Figures 2 and 3. Numbers of adult and subadult Pacific brant and Canada geese molting on lakes and wetlands north and east of Teshekpuk Lake, 1982-2004 (goslings not included). Pacific brant: mean 1982-2004 = 17,674; mean 1995-2004 = 18,543; high count = 36,817 in 2001. Canada geese: mean 1982-2004 = 12,194; mean 1995-2004 = 11,849; high count = 26,681 in 1984.



Figures 4 and 5. Numbers of adult and subadult white-fronted geese and snow geese molting on lakes and wetlands north and east of Teshekpuk Lake, 1982-2004 (goslings not included). White-fronted goose: mean 1982-2004 = 12,633; mean 1995-2004 = 22,255; high count = 34,929 in 2002. Snow geese: mean 1982-2004 = 590; mean 1995-2004 = 1,062; high count = 2,674 in 2001.