

# **TESHEKPUK LAKE AREA MOLTING GOOSE SURVEY – 2005**

U.S. Fish and Wildlife Service  
Waterfowl Management  
1412 Airport Way, Fairbanks, AK 99701

# TESHEKPUK LAKE AREA MOLTING GOOSE SURVEY – 2005

Edward J. Mallek, U.S. Fish and Wildlife Service, Waterfowl Management, 1412 Airport Way, Fairbanks, AK 99701

**Abstract:** The 24<sup>th</sup> 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 2005. Pacific brant, Canada geese, white-fronted geese, and snow geese were recorded throughout the survey area with counts of 17,344, 11,637, 27,296, and 3,914, respectively.

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

**March 2006**

---

## INTRODUCTION

This report summarizes results from the 2005 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 2005 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 2005 survey was conducted over three days on 18-20 July. A total of 60,191 adult geese and 5,512 goslings were recorded during the survey. Pacific brant accounted for 28.8% of total adult geese observed during the survey (17,344 adults and 374 goslings), while white-fronted geese accounted for 45.4% (27,296 adults and 4,886 goslings). Canada geese totals were 11,637 adults and 56 goslings. Canada geese accounted for 19.3% of the total adult geese observed during the survey. Snow geese (*Anser chen caerulescens*) accounted for 6.5% of the adult geese observed during the survey (3,914 adults and 196 goslings). A total of 186 adult Tundra Swans (*Cygnus columbianus*) were observed along with 61 cygnets. Pacific loon (*Gavia pacifica*), red-throated loon (*Gavia stellata*), and yellow-billed loon (*Gavia adamsii*) totals were 133, 35, and 5, respectively.

Observation totals for geese, swans, and loons are provided in Table 1 for the 2005 survey. Figures 2-5 illustrate the numbers of adult geese counted on this survey from 1982-2005.

## 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. Due to 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 has also increased 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**

I thank Paul Flint (USGS-Anchorage) and Heather Wilson (MBM-Anchorage) for their help as observers during the survey. I acknowledge Rod King (USFWS-California) for collecting the majority of the data (1982-1999) presented in the figures of this report. Thanks are extended to Atkasuk Airport Manager, Richard Bordeaux, for his help in accommodating the fuel cache at the Atkasuk Airport.

## **REFERENCES**

- Derksen, D.V., K.S. Bollinger, D. Esler, K.C. Jensen, E.J. Taylor, M.W. Miller, and M.W. Weller. 1992. Effects of aircraft on behavior and ecology of molting black brant near Teshekpuk Lake, Alaska. Final Report to U.S. BLM and U.S. MMS. 227pp.
- King J.G. 1970. The swans and geese of Alaska's arctic slope. *Wildfowl* 21:11-17.
- Mallek E.J., R. Platte, and R. Stehn. 2005. Aerial breeding pair surveys of the Arctic Coastal Plain of Alaska – 2004. Unpublished Report. U.S. Fish and Wildlife Service, Fairbanks, Alaska. 25pp.

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

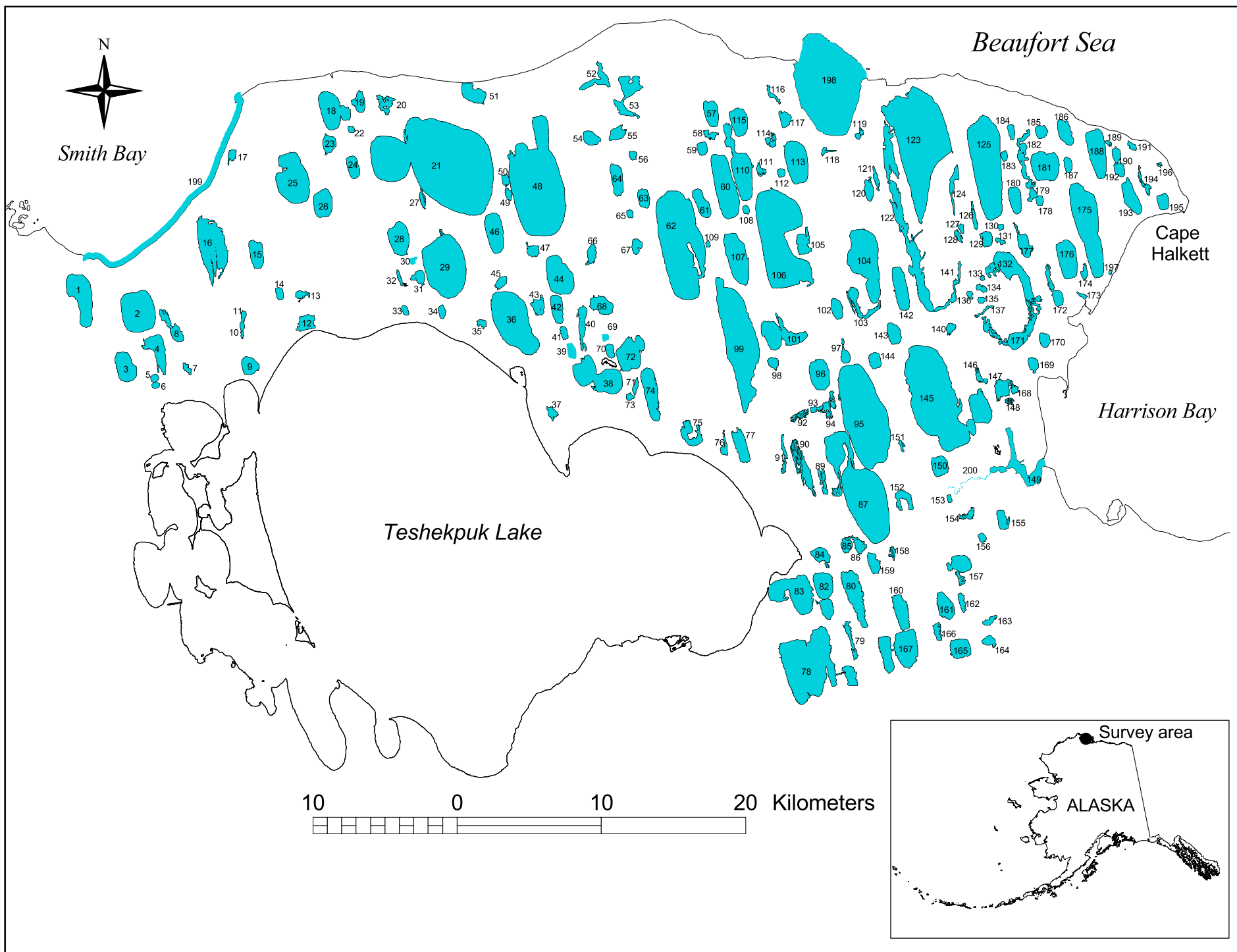


Figure 1. Lakes surveyed by airplane for molting geese on a portion of the Arctic Coastal Plain of Alaska.

Table 1. Observations of geese, swans, and loons by lake from the Teshekpuk Lake area molting goose survey 2005.

Species	1	2	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Pacific Brant	8							4									8
Pacific Brant Goslings	10							6									5
Canada Geese								2						67			165
Canada Goose Goslings								2									
White-fronted Geese	57	7	7					39				8	25	47			954
White-fronted Goose Goslings		9						2									73
Pacific Loon			4				9			5		2	5			2	2
Red-throated Loon							1										
Snow Geese																	60
Snow Goose Goslings																	
Tundra Swan		2	5		1	2	8			2	2			1			2
Tundra Swan Cygnets						2	3										
Yellow-billed Loon			1														
<b>Total</b>	<b>75</b>	<b>18</b>	<b>17</b>	<b>0</b>	<b>1</b>	<b>4</b>	<b>21</b>	<b>55</b>	<b>0</b>	<b>7</b>	<b>2</b>	<b>10</b>	<b>30</b>	<b>115</b>	<b>0</b>	<b>2</b>	<b>1269</b>

Species	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
Pacific Brant		37	2														
Pacific Brant Goslings																	
Canada Geese		27	234		1					9	89		31				
Canada Goose Goslings					1												
White-fronted Geese	37	5	262		326	56	10	5		380	115		85				
White-fronted Goose Goslings	20	5	35		5												
Pacific Loon			3	1			1	1	3			2	1				2
Red-throated Loon						1						1	4				
Snow Geese	10		330		28					1							
Snow Goose Goslings	10																
Tundra Swan			7	2			2	2	1		2					2	
Tundra Swan Cygnets																	
Yellow-billed Loon							1										
<b>Total</b>	<b>77</b>	<b>74</b>	<b>873</b>	<b>3</b>	<b>361</b>	<b>57</b>	<b>14</b>	<b>8</b>	<b>4</b>	<b>390</b>	<b>206</b>	<b>3</b>	<b>121</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>2</b>

Table 1 (continued). Observations of geese, swans, and loons by lake from the Teshekpuk Lake area molting goose survey 2005.

Species	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52
Pacific Brant	23				4								40				284
Pacific Brant Goslings	12																11
Canada Geese	101		96		4				357		508	60	377				458
Canada Goose Goslings			9		8												
White-fronted Geese	520		10	52	20	6	4		935	4	580	275	886	257		38	274
White-fronted Goose Goslings	42		14	15	30	6	5		15	5						44	487
Pacific Loon		3			4			3		1							
Red-throated Loon							1						13				
Snow Geese											601	25	95			4	25
Snow Goose Goslings											2					6	38
Tundra Swan		2				2		2					2			2	2
Tundra Swan Cygnets		4				2										3	
Yellow-billed Loon																	
Total	698	9	129	67	70	16	10	5	1307	10	1691	360	1413	257	0	97	1579

Species	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69
Pacific Brant	128		18						71	575							
Pacific Brant Goslings																	
Canada Geese	580	20	2						121	144				13	20		
Canada Goose Goslings																	
White-fronted Geese	29	155	301	37	43				462	1384	135		120	637	417	25	
White-fronted Goose Goslings	55	186	428											18			
Pacific Loon	1	2				1				1		2		3			
Red-throated Loon										2							
Snow Geese	1		2						1				7		8		
Snow Goose Goslings			2														
Tundra Swan							1				2	2				2	
Tundra Swan Cygnets												1					
Yellow-billed Loon																	
Total	794	363	753	37	43	1	1	0	655	2106	137	5	127	671	445	27	0

Table 1 (continued). Observations of geese, swans, and loons by lake from the Teshekpuk Lake area molting goose survey 2005.

Species	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86
Pacific Brant					17						6						
Pacific Brant Goslings					25						9						
Canada Geese	4		23														
Canada Goose Goslings																	
White-fronted Geese	225		77	30	520		35		38		9	23	221	576		110	24
White-fronted Goose Goslings			36		181				44		15	23	89	12			18
Pacific Loon				2		10			8	3				3	4		1
Red-throated Loon											1		2				
Snow Geese				6	33												
Snow Goose Goslings				9	12												
Tundra Swan			2		2			1	16		3	4	5	7			
Tundra Swan Cygnets									3			2		3			
Yellow-billed Loon									1								
<b>Total</b>	<b>229</b>	<b>0</b>	<b>138</b>	<b>47</b>	<b>790</b>	<b>10</b>	<b>35</b>	<b>1</b>	<b>110</b>	<b>3</b>	<b>43</b>	<b>52</b>	<b>317</b>	<b>601</b>	<b>4</b>	<b>110</b>	<b>43</b>

Species	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103
Pacific Brant	46												104	7		8	
Pacific Brant Goslings	22												20	12		18	
Canada Geese	131									78			489	40	16	30	
Canada Goose Goslings	24																
White-fronted Geese	511			82				250	48	350	8	14	3531	227	15	12	34
White-fronted Goose Goslings	684			7					20			10	4	4	25	30	
Pacific Loon	3		3			2	1	1	1								1
Red-throated Loon																	1
Snow Geese	32			7												2	
Snow Goose Goslings	58			5												2	
Tundra Swan	6		1	2	5						2					3	2
Tundra Swan Cygnets															3		3
Yellow-billed Loon																	
<b>Total</b>	<b>1517</b>	<b>0</b>	<b>4</b>	<b>103</b>	<b>5</b>	<b>2</b>	<b>1</b>	<b>251</b>	<b>69</b>	<b>428</b>	<b>10</b>	<b>24</b>	<b>4148</b>	<b>294</b>	<b>62</b>	<b>98</b>	<b>41</b>



Table 1 (continued). Observations of geese, swans, and loons by lake from the Teshekpuk Lake area molting goose survey 2005.

Species	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
Pacific Brant	711		1253	741	14		23		15	26				12			
Pacific Brant Goslings																	
Canada Geese	112	55	597	358	40		632		230	208	50	145		26			4
Canada Goose Goslings																	
White-fronted Geese	156	525	1075	460	454		88		190	12			40				
White-fronted Goose Goslings	12		4		8		62			32			84				
Pacific Loon	1																
Red-throated Loon																	
Snow Geese	2	1	27														
Snow Goose Goslings																	
Tundra Swan		2						2									
Tundra Swan Cygnets																	
Yellow-billed Loon																	
<b>Total</b>	<b>994</b>	<b>583</b>	<b>2956</b>	<b>1559</b>	<b>516</b>	<b>0</b>	<b>805</b>	<b>2</b>	<b>435</b>	<b>278</b>	<b>50</b>	<b>145</b>	<b>124</b>	<b>38</b>	<b>0</b>	<b>0</b>	<b>4</b>

Species	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137
Pacific Brant	2105		495	11	263							116		18	38		238
Pacific Brant Goslings												10					
Canada Geese	53	34	370	70	283				22		12	32			22	13	
Canada Goose Goslings					12												
White-fronted Geese	5				73	10			33	135					6		45
White-fronted Goose Goslings	15				50	4									12		60
Pacific Loon																	
Red-throated Loon						1											
Snow Geese																	2
Snow Goose Goslings																	8
Tundra Swan						3											
Tundra Swan Cygnets																	
Yellow-billed Loon																	
<b>Total</b>	<b>2178</b>	<b>34</b>	<b>865</b>	<b>81</b>	<b>681</b>	<b>18</b>	<b>0</b>	<b>0</b>	<b>55</b>	<b>135</b>	<b>12</b>	<b>158</b>	<b>0</b>	<b>18</b>	<b>78</b>	<b>13</b>	<b>353</b>

Table 1 (continued). Observations of geese, swans, and loons by lake from the Teshekpuk Lake area molting goose survey 2005.

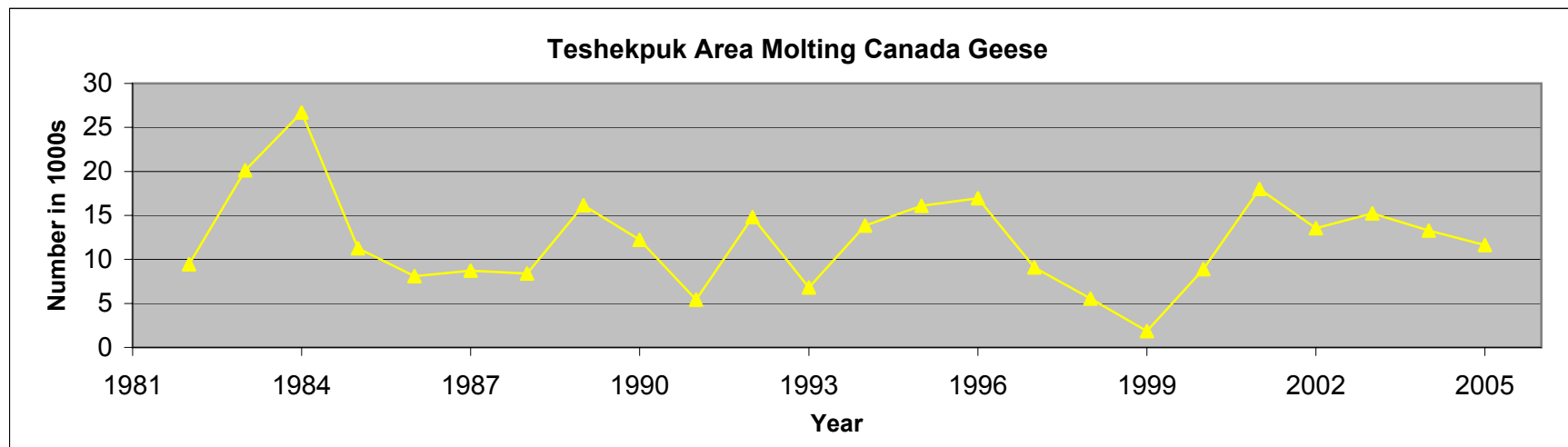
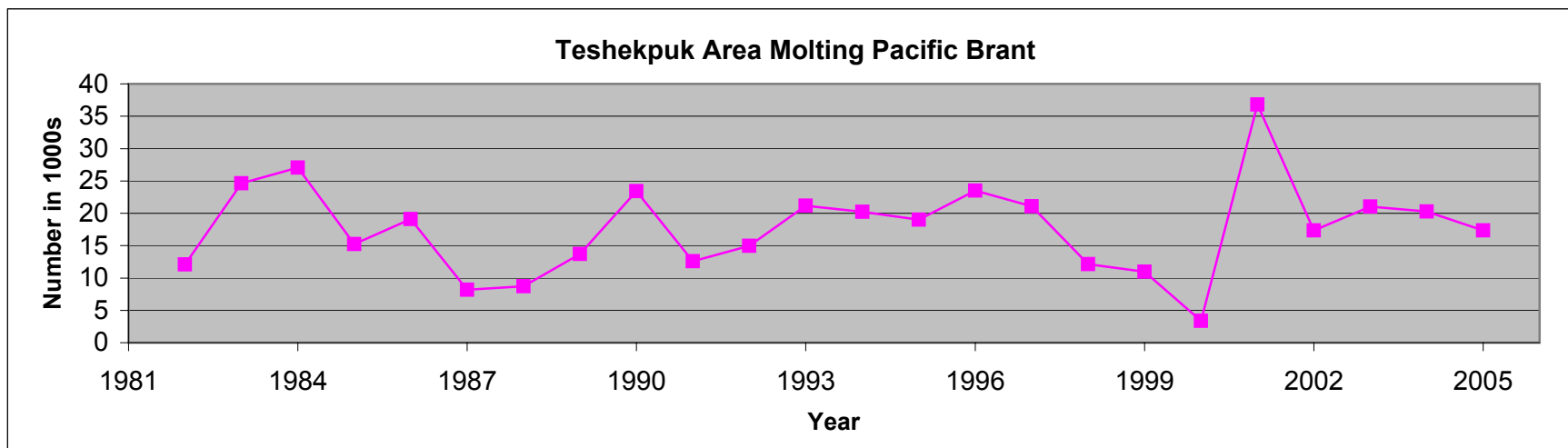
Species	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154
Pacific Brant	1000	18	8	299	256		6	729				1671	13				
Pacific Brant Goslings		20		21			7	4				17					
Canada Geese			39	195			7	478		14		323	13				
Canada Goose Goslings																	
White-fronted Geese			124	18	62	75	45	365		135		598				17	
White-fronted Goose Goslings			10	55	4		53					607			38		
Pacific Loon								3				1	4				7
Red-throated Loon							1	1									
Snow Geese												30	87				
Snow Goose Goslings												22					
Tundra Swan						2		2	2					2			
Tundra Swan Cygnets						2		4	2					3			
Yellow-billed Loon													2				
<b>Total</b>	<b>1000</b>	<b>38</b>	<b>181</b>	<b>588</b>	<b>322</b>	<b>79</b>	<b>119</b>	<b>1586</b>	<b>4</b>	<b>149</b>	<b>0</b>	<b>3269</b>	<b>119</b>	<b>5</b>	<b>55</b>	<b>0</b>	<b>7</b>

Species	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171
Pacific Brant						2	26	35					6			190	595
Pacific Brant Goslings						4	14	21									
Canada Geese							230	4							60	112	
Canada Goose Goslings																	
White-fronted Geese	9	2				42	1394	121				46	64		155	60	
White-fronted Goose Goslings	15	6				20	36	66				52	74				
Pacific Loon	4								2					1	1		
Red-throated Loon																	
Snow Geese												2					
Snow Goose Goslings												3					
Tundra Swan	1	2	2		2	6		2		2	2	1	6				
Tundra Swan Cygnets					2	3							7				
Yellow-billed Loon																	
<b>Total</b>	<b>29</b>	<b>10</b>	<b>2</b>	<b>0</b>	<b>4</b>	<b>77</b>	<b>1700</b>	<b>249</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>104</b>	<b>157</b>	<b>1</b>	<b>216</b>	<b>362</b>	<b>595</b>

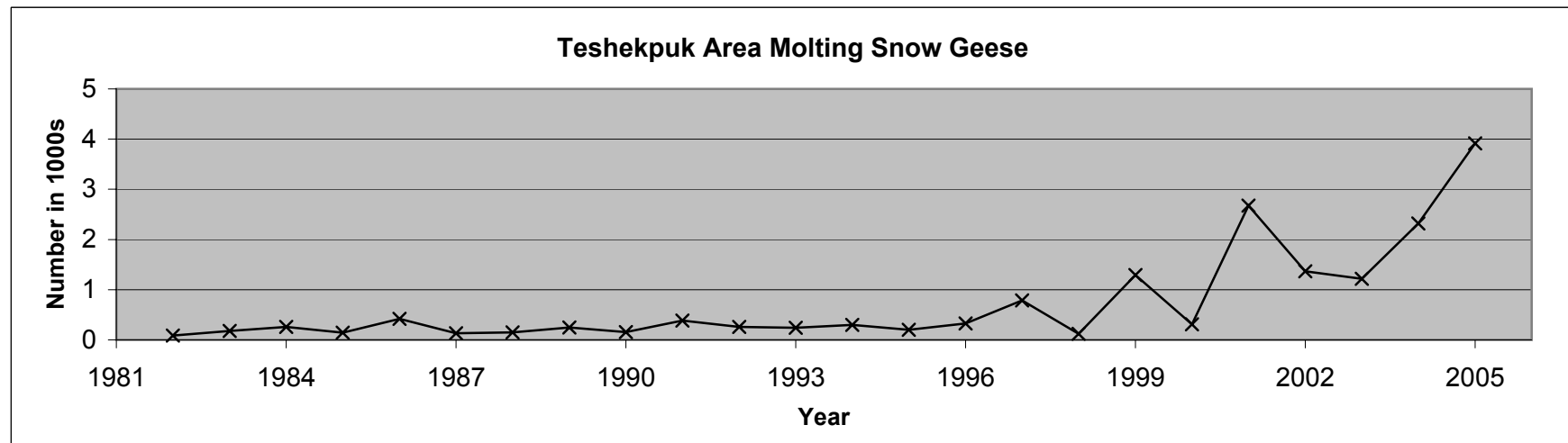
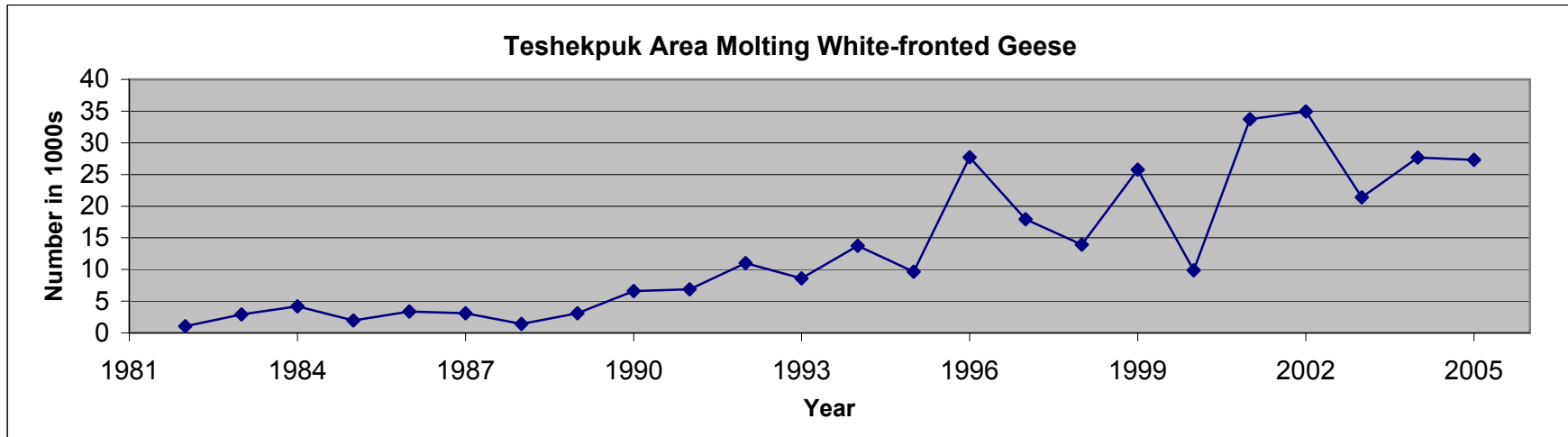
Table 1 (continued). Observations of geese, swans, and loons by lake from the Teshekpuk Lake area molting goose survey 2005.

Species	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188
Pacific Brant	45	73		347	55				8	953	382		36	24	277	38	
Pacific Brant Goslings		8															
Canada Geese	67		30	289	76				32	130			47	28	30	9	28
Canada Goose Goslings																	
White-fronted Geese	92			149	430	56			170		8		80				
White-fronted Goose Goslings	3			15		36			13				100				
Pacific Loon	1																
Red-throated Loon										1							
Snow Geese	14				1												
Snow Goose Goslings	6																
Tundra Swan	2					2	2										
Tundra Swan Cygnets							3										
Yellow-billed Loon																	
<b>Total</b>	<b>230</b>	<b>81</b>	<b>30</b>	<b>800</b>	<b>562</b>	<b>94</b>	<b>5</b>	<b>0</b>	<b>223</b>	<b>1084</b>	<b>390</b>	<b>0</b>	<b>263</b>	<b>52</b>	<b>307</b>	<b>47</b>	<b>28</b>

Species	189	190	192	193	194	195	196	197	198	199	200	201	206	207	208	209	Total
Pacific Brant			22	1104		460			1062		93			42			17344
Pacific Brant Goslings			6						12		60			20			374
Canada Geese				112		29	8		982		456		64		80		11637
Canada Goose Goslings																	56
White-fronted Geese			18	20		148	4		9	93	595	95	916	6	685	82	27296
White-fronted Goose Goslings			40			20	12		25	188	68		49	7	63	167	4886
Pacific Loon									1								133
Red-throated Loon									3		1						35
Snow Geese											2458			8	4		3914
Snow Goose Goslings														5	8		196
Tundra Swan				2	3								5	1	5		186
Tundra Swan Cygnets				3	1										2		61
Yellow-billed Loon																	5
<b>Total</b>	<b>0</b>	<b>0</b>	<b>86</b>	<b>1241</b>	<b>4</b>	<b>657</b>	<b>24</b>	<b>0</b>	<b>2094</b>	<b>281</b>	<b>3731</b>	<b>95</b>	<b>1034</b>	<b>89</b>	<b>847</b>	<b>249</b>	<b>66123</b>



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, 1982-2005 (goslings not included). Pacific brant: mean 1982-2005 = 17,660; mean 1996-2005 = 18,378; high count = 36,817 in 2001. Canada geese: mean 1982-2005 = 12,170; mean 1996-2005 = 11,404; 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, 1982-2005 (goslings not included). White-fronted goose: mean 1982-2005 = 13,244; mean 1996-2005 = 24,020; high count = 34,929 in 2002. Snow geese: mean 1982-2005 = 728; mean 1996-2005 = 1,433; high count = 3,914 in 2005.