

TESHEKPUK LAKE AREA MOLTING GOOSE SURVEY – 2008

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Abstract: The 27th annual molting goose survey, conducted in the area north and east of Teshekpuk Lake on the Arctic Coastal Plain of Alaska, was conducted on 15-18 July 2008. Pacific brant, Canada geese, white-fronted geese, and snow geese were recorded throughout the survey area with counts of adults and (young) at 19,397 (90), 11,890 (15), 30,174 (4,127), and 4,072 (570), respectively. Totals of 166 tundra swans with 59 cygnets were also counted throughout the survey area.

Key Words: aerial survey, molting geese, Teshekpuk Lake, National Petroleum Reserve **January 2009**

INTRODUCTION

This report summarizes the results from the 2008 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 Henry (Hank) 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*).

This survey documents abundance and distribution of molting geese during the survey period (mid July). This timeframe is believed to be the peak of the molting period for most geese, and observations during the survey (flightless geese) substantiate this assumption. The distribution of geese before and after the peak molting period may be different than the distribution during the survey. Furthermore, goose distribution during the survey period (mid July 1976-2008) has changed over time (Flint et al. 2007). Therefore, data collected during this survey should only be used to determine general trends (with limited temporal extent) of goose distribution during the peak molt, and should not be the sole source to determine goose distribution throughout the molt cycle in the area north and east of Teshekpuk Lake.

STUDY AREA AND METHODS

Study Area and Survey Design

The survey area included approximately 197 lakes and several bay, shoreline, 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 2008 survey was flown in a Cessna 206 amphibious equipped aircraft

(N234JB) at 45-60 meters (150-200 feet) above ground level and at airspeeds of 130-190 kilometers per hour (80-110 knots). Aircraft navigation was maintained by an aerial photographic based paper map 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 feeding or loafing geese on land would be recorded. Surfaces of large lakes were also flown in a systematic fashion providing 100% coverage of the lake. Smaller lakes were flown so that the 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 text files. The transcribed text files were then used for data analyses.

RESULTS

The 2008 survey was conducted over four days on 15-18 July. Totals of 65,533 adult geese and 4,802 goslings were recorded during the survey. Pacific brant accounted for 30% of the adult geese observed (19,397 adults, and 90 goslings), while white-fronted geese accounted for 46% of the adult geese observed (30,174 adults and 4,127 goslings). Canada goose totals were 11,890 adults and 15 goslings and accounted for 18% of the adult geese observed. Snow geese (*Anser chen caerulescens*) accounted for 6% of the adult geese observed (4,072 adults and 570 goslings). Tundra swan (*Cygnus columbianus*) totals were 166 adults and 59 cygnets. Pacific loon (*Gavia pacifica*), red-throated loon (*Gavia stellata*), and yellow-billed loon (*Gavia adamsii*) totals were 269, 53, and 1, respectively.

Observation totals for geese, swans, and loons are provided in Table 1 for the 2008 survey. Figures 2-4 and 6-7 illustrate the number of adult geese counted on this survey from 1982-2008.

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 flyway population for that year. The 2008 count for brant in this area (19,397) accounted for approximately 12% of the total Pacific flyway population that was counted the

previous winter (~156,600, Mallek and Wortham, 2008), and was similar to the previous ten-year (1998-2007) mean of 18,396.

Data from this survey are useful to determine the number of brant that use this area in any given year during peak molt, as well as to determine the proportion of the Pacific flyway population that molt in this area in a specific year. While these numbers are useful indicators of the importance of this area to brant, they can not be used to estimate the proportion of the Pacific flyway population that uses this area in their life cycle. Some brant may use this area only once in their life time (e.g., as a second-year bird), other brant may molt here occasionally (e.g., after nest failure), and some brant may use this area many times (e.g., as an adult non-breeder). Therefore, the number or proportion of the population of brant that use this area in a specific year or averaged over multiple years is probably a biased indicator (biased low) of the use of this area by the Pacific flyway population.

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. The 2008 Canada geese count was 11,890 which is similar to the previous ten-year (1998-2007) mean of 11,600.

White-fronted Geese

The nesting grounds of white-fronted geese that use this area is believed to be the Arctic Coastal Plain of Alaska (ACP). Although the estimated population of white-fronted geese during the nesting season on the ACP has grown slightly over the last two decades (Larned et al. 2008), the molting population in the Teshekpuk Lake survey area has had substantially more growth (Figure 4). The 2008 count for adult white-fronted geese was 30,174 birds, while the gosling count was 4,127. The high gosling count suggests good white-fronted goose production throughout the ACP in 2008, and suggests that use of this molting area by white-fronted geese is continuing a positive trajectory.

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 significantly (Figure 6).

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 and was reaffirmed in 2008 with a 10-year deferral to oil and gas leasing (U.S. BLM 2008). 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, continued protection of this area from disturbance caused by oil development is certainly warranted.

ACKNOWLEDGMENTS

I thank Heather Wilson (MBM-Anchorage) for her help as an observer during the survey. I acknowledge Rod King (USFWS-retired) for collecting the majority of the data (1982-1999) presented in the figures of this report.

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

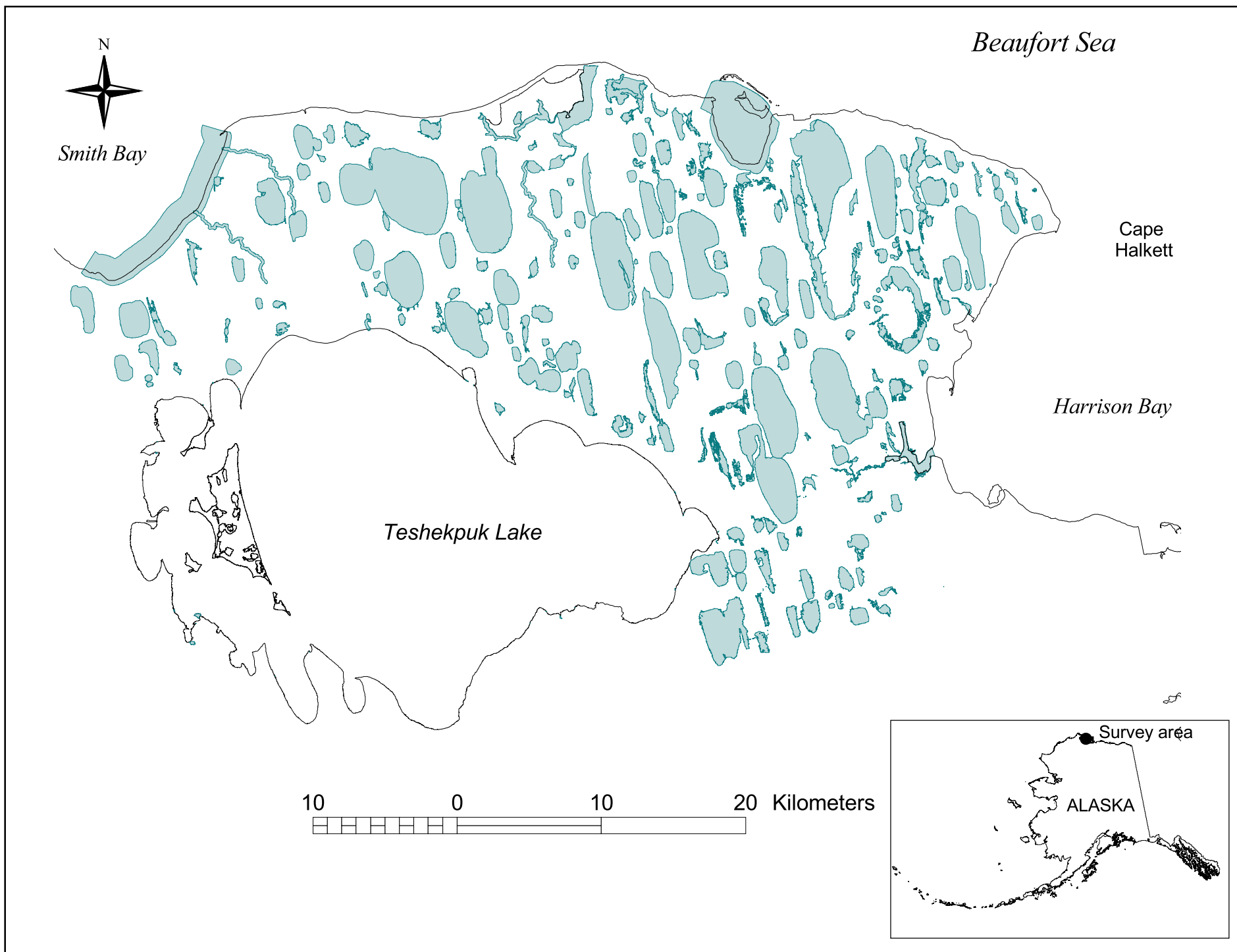


Fig. 1. Lakes, bay shorelines, and creeks surveyed by airplane for molting geese on a portion of the Arctic Coastal Plain of Alaska.

Table 1. Observations of geese, swans, loons, and snowy owls by lake from Teshekpuk Lake area molting goose survey 2008.

Lake Number	BLBR	BLBRB	CAGO	CAGOB	GWFG	GWFGB	PALO	RTLO	SNGO	SNGOB	SNOW	SWAN	SWANC	YBLO	Grand Total
1					236	127	1		10	25					399
2					303	11									314
3					159	16	2					1			178
4					72	58		1				2		1	134
5							1								1
6					5	4	7					2			18
7							1								1
8							8					6			14
9	2	3			122	75									202
10							2								2
11							1					2			3
12															0
13					28		1								29
14							1								1
15												2			2
16							1								1
17							2								2
18			302		378	32		3	52	4		2	3		776
19			26		245	71	2		62	88					494
20															0
21	72		317		671	127			205	3					1395
22												2	3		5
23					113	11	3	1							128
24			26		275	15			12	18					346
25			32		207	63	2		2	8					314
26					37		15					2			54
27							2					2			4
28			5		269	6	4								284
29			20		402	6						2			430
30			85		60		2								147
31			12		302	12	6	5							337
32					1										1
33															0
34					10	12	1					3			26
35							4					3	3		10
36	25		205		710										940
37							2					2			4
38							5								5
39					92	6	3								101
40	8	4			742	111	3		2			2			872
41					43	23	1								67
42			26		168	27									221
43							3								3
44			78		471	90	1					1			641
45					150		2								152
46	61		180		113	7		1	248						610
47			53		174				20						247
48	50		559		1300		5		35						1949
49			75		90				7						172
50															0
51					41	43		2							86
52	1203		2780		71	90			100	74		6	2		4326
53	1339		305		45	66									1755
54					236	180						2	3		421
55	829	11	260		105	84									1289
56					50	4	3								57
57			25		125			1							151
58					30		2		4			2			38
59															0
60			314												314
61	322		197		323		1								843
62	576		117		1475	30			24		1	4			2227
63					915				9						924
64							6	2				4	4		16
65					285										285

BLBR = Pacific brant, BLBRB = Pacific brant gosling, CAGO = Canada goose, CAGOB = Canada goose gosling, GWFG = greater white-fronted goose, GWFGB = greater white-fronted goose gosling, PALO = Pacific loon, RTLO = red-thoated loon, SNGO = snow goose, SNGOB = snow goose gosling, SNOW = snowy owl, SWAN = tundra swan, SWANC = tundra swan cygnet, YBLO = yellow-billed loon.

Table 1 (continued). Observations of geese, swans, loons, and snowy owls by lake from Teshekpuk Lake area molting goose survey 2008.

Lake Number	BLBR	BLBRB	CAGO	CAGOB	GWFG	GWFGB	PALO	RTLO	SNGO	SNGOB	SNOW	SWAN	SWANC	YBLO	Grand Total
66					589	9									598
67			5												5
68					575	14	3								592
69					41	10						1			52
70			42				7					1			50
71															0
72	1		14		114	33			16	10		1			189
73					35							2			37
74	21				511	15	10		14			2	4		577
75					2		5					2			9
76					112	4	3	1				4			124
77					771							2	3		776
78					199	194	23					9	8		433
79							5					8	5		18
80												3	2		5
81												4			4
82					15		1					3			19
83												7	6		13
84					346	54			2	1					403
85					9	11						2			22
86					84	17	7								108
87			47		273	264	1	1	21	13		2			622
88							2								2
89							8								8
90					631	3	4					5			643
91					83		1					3	2		89
92															0
93					875		1								876
94					8	4	2					3	1		18
95	10	13	193		174	35			18	15					458
96			10		52	10	2								74
97					14	26			2	3					45
98			7		295							2			304
99	324	5	328	4	578				5	15	1				1260
100			60		417										477
101															0
102			8		15		2								25
103	1				12		5					1			19
104	1003		232		901				34		1				2171
105	930		39		1267				5						2241
106	1365		673		25										2063
107	827		741		469						1				2038
108	18		83		435	36									572
109							1								1
110	8		465												473
111															0
112	15				13										28
113	63		20		20				2						105
114					30	15	2								47
115															0
116	4		54				1				1				60
117	285							1							286
118	178	12							18	17					225
119															0
120															0
121	11		1												12
122			197		2	3									202
123	464		118		10	46		2							640
124	11		27												38
125	324		448		120	51		3							946
126							3	1				2	3		9
127															0
128															0
129	28				60		2					2			92
130					62	10	3								75

BLBR = Pacific brant, BLBRB = Pacific brant gosling, CAGO = Canada goose, CAGOB = Canada goose gosling, GWFG = greater white-fronted goose, GWFGB = greater white-fronted goose gosling, PALO = Pacific loon, RTLO = red-thoated loon, SNGO = snow goose, SNGOB = snow goose gosling, SNOW = snowy owl, SWAN = tundra swan, SWANC = tundra swan cygnet, YBLO = yellow-billed loon.

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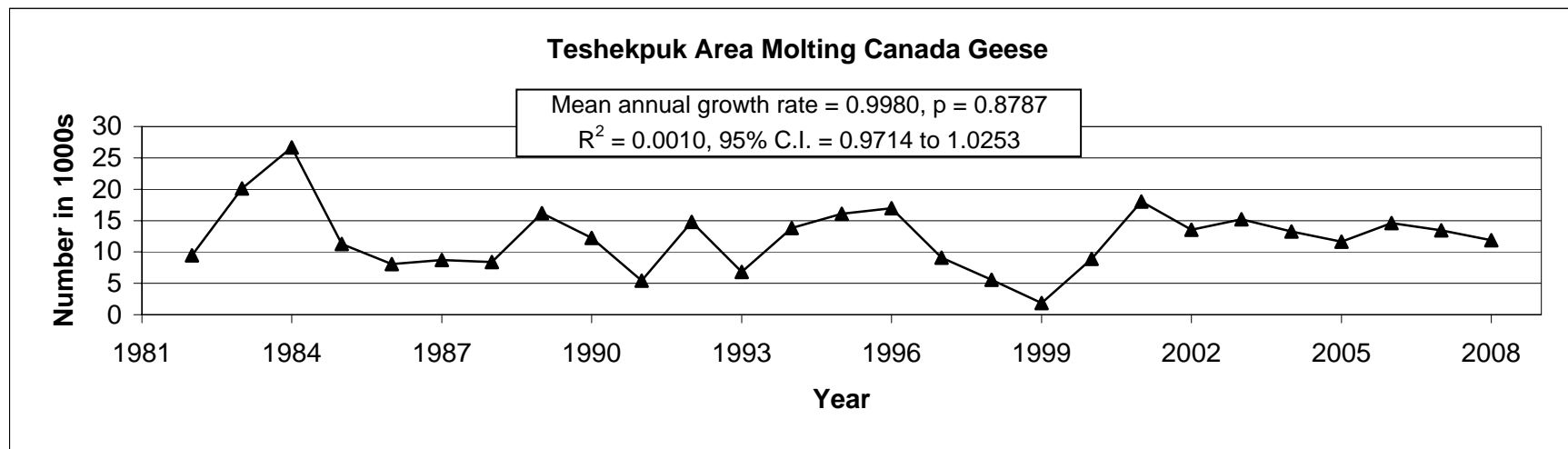
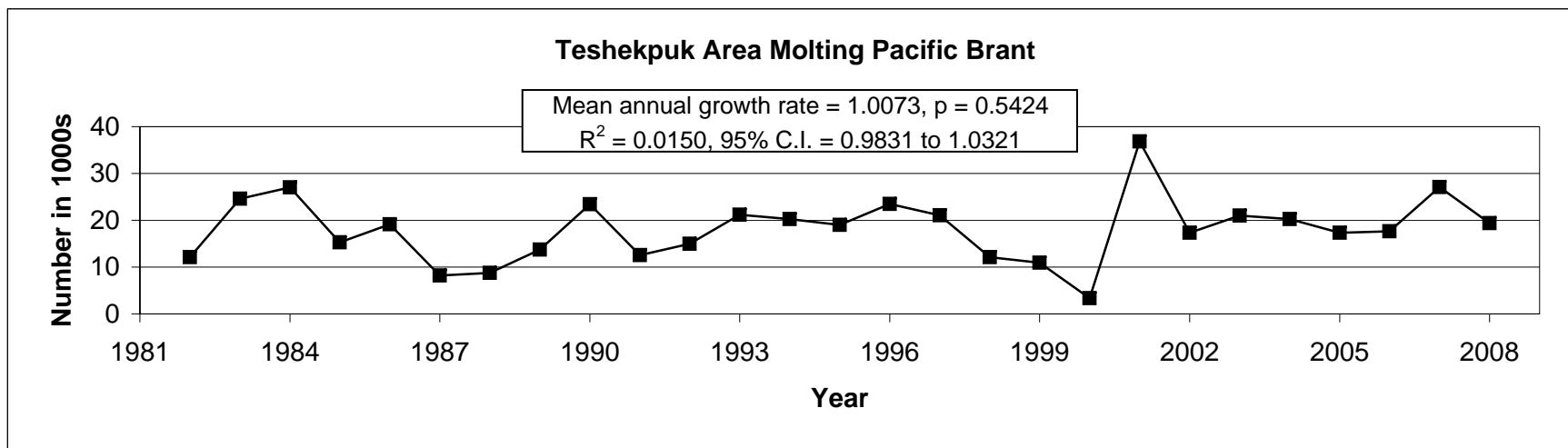
Lake Number	BLBR	BLBRB	CAGO	CAGOB	GWFG	GWFGB	PALO	RTLO	SNGO	SNGOB	SNOW	SWAN	SWANC	YBLO	Grand Total
131							3					2			5
132	476		78		6	3						2			565
133					2	5									7
134	50		18		15	20									103
135					14	30									44
136			17												17
137															137
138	176														176
139	14	7	9		1										31
140	47		31		95	60									233
141	48				9							9			57
142	263		178		70										511
143	20		49		105										174
144			12		625	3	1								641
145	911		307		417	15		2				2	3		1657
146															0
147			20		315		2								337
148															0
149	2374		108	7	352	322			99						3262
150	75				142				60						277
151							2					2			4
152					8				2						10
153															0
154					277	5	2					2			286
155					120	106	1								227
156					246	29			2						277
157					12	7	9					2	2		32
158							1								1
159							2					2			4
160												4	1		5
161	15	15	80		1092	390	4		22	45					1663
162	40	3	26		25	40			4						138
163							4								4
164							3					2			5
165					56	5	5								66
166							5					2			7
167					40	75	9					6			130
168															0
169			19		216				1						236
170	170		63		218										451
171	607		3		15	35									660
172	179	2	58		237				12						488
173	24		51												75
174	54		70		29	4						2			159
175	377		153		446	12		2							990
176	225		102		528	13	1	1							870
177			30		265	26		1							322
178															0
179								2							2
180			10		354	32									396
181															0
182	113														113
183															0
184	455		55		125							1			636
185	13														13
186	375		21												396
187	21				33			1							55
188															0
189															0
190			2		21	36						2	1		62
191															0
192							1					1			2
193	400				70			1				1			472
194							1					4			5
195	689				356	19		2							1066

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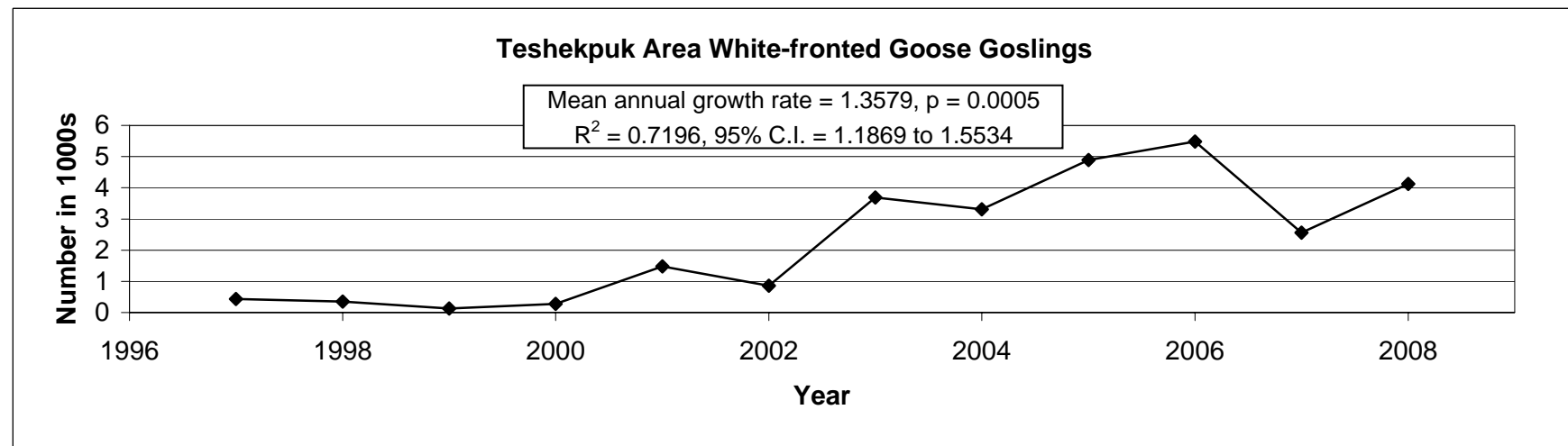
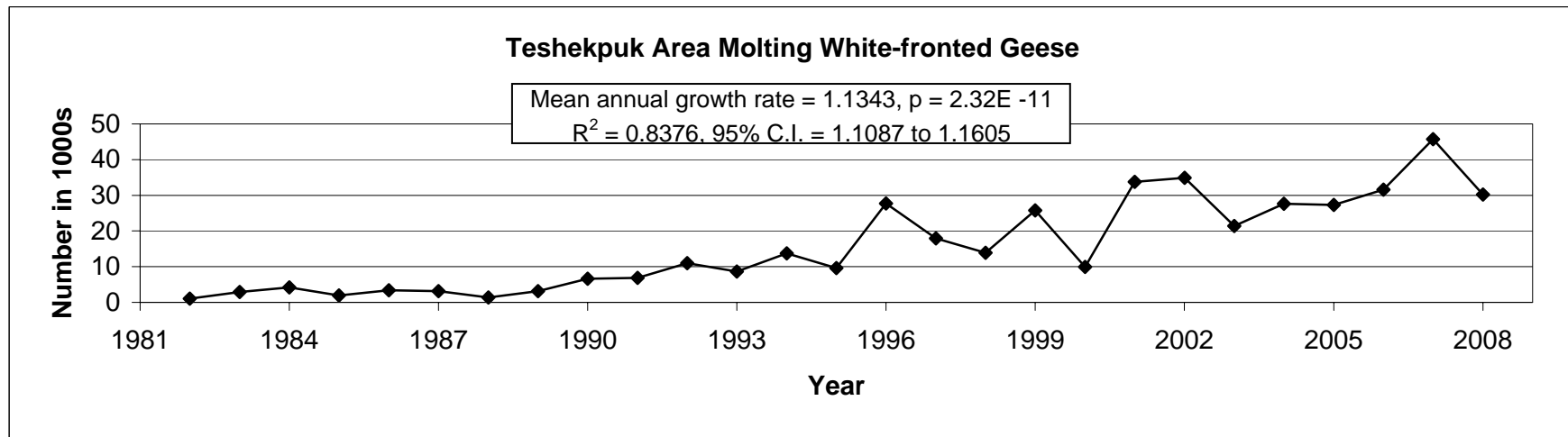
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Lake Number	BLBR	BLBRB	CAGO	CAGOB	GWFG	GWFGB	PALO	RTLO	SNGO	SNGOB	SNOW	SWAN	SWANC	YBLO	Grand Total
196											1				1
197															0
198	123						1	13							137
199	2	3			360	333	2	3	82	71					856
200	673		311	4	85	15			2754	7					3849
201					182	3						2			187
206			105		194	112			65	85		2			563
207	10	12	2		36	78			24	32					194
208			85		465	17			16	36	1	2			622
209			6		2	6									14
Grand Total	19397	90	11890	15	30174	4127	269	53	4072	570	11	166	59	1	71031

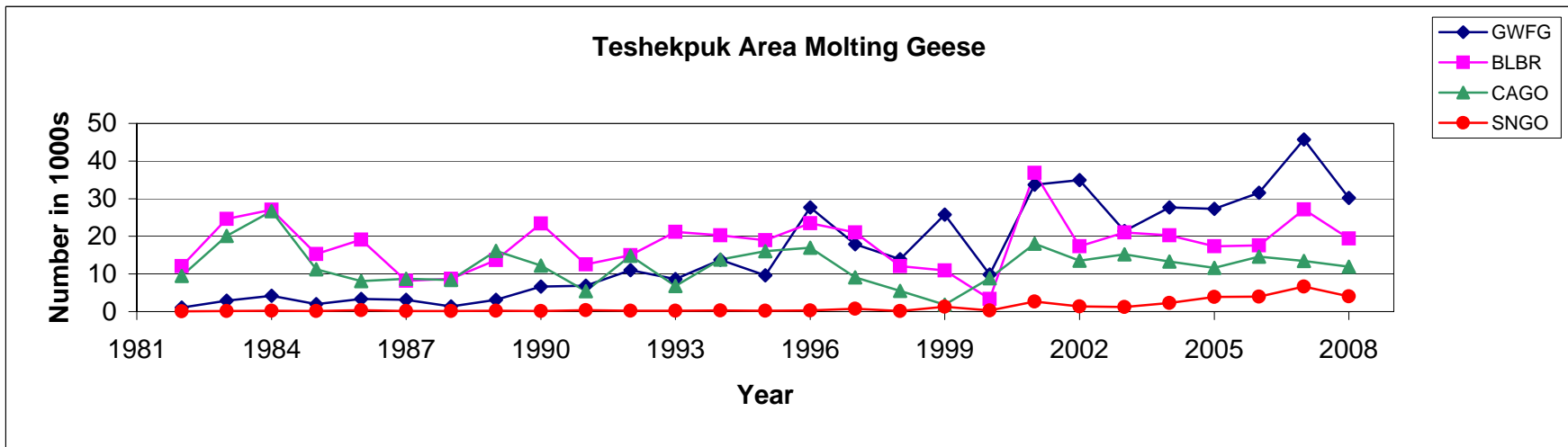
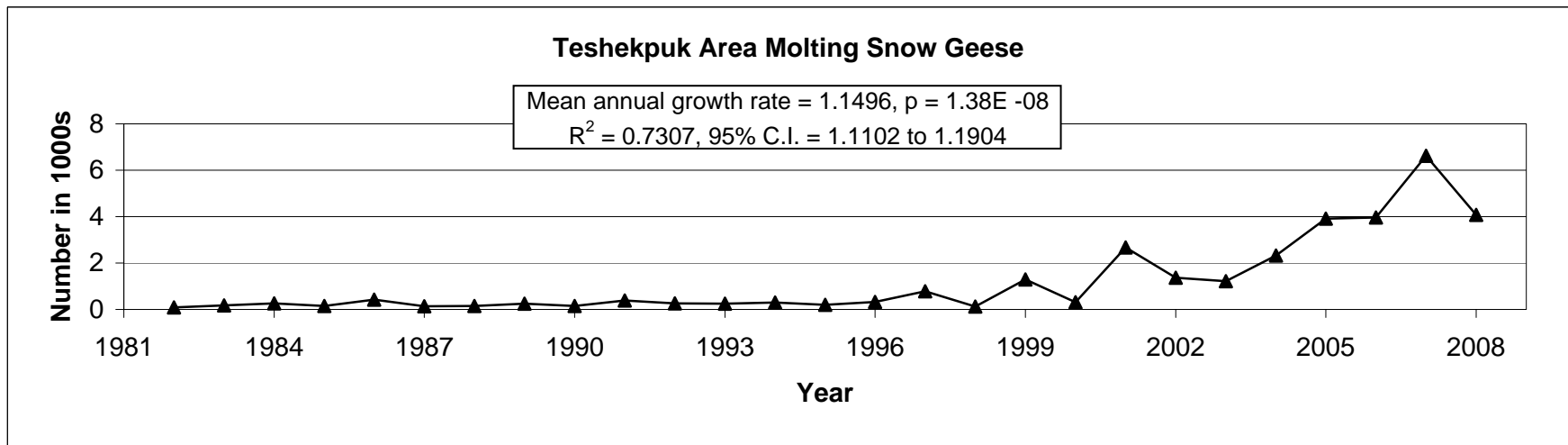
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Figures 2 and 3. Numbers of adult and subadult Pacific brant and Canada geese molting on lakes and wetlands north and east of Teshekpuk Lake, 1982-2008 (goslings not included). Pacific brant: mean 1982-2008 = 18,073; mean 1999-2008 = 19,124; high count = 36,817 in 2001. Canada geese: mean 1982-2008 = 12,296; mean 1999-2008 = 12,235; high count = 26,681 in 1984.



Figures 4 and 5. Numbers of adult and subadult molting white-fronted geese 1982-2008 (goslings not included) and white-fronted goose goslings (1997-2008) on lakes and wetlands north and east of Teshekpuk Lake. Adult and subadult white-fronted geese: mean 1982-2008 = 15,753; mean 1999-2008 = 28,813; high count = 45,747 in 2007.



Figures 6 and 7. Numbers of adult and subadult snow geese and all geese molting on lakes and wetlands north and east of Teshekpuk Lake, 1982-2008 (goslings not included). Snow geese: mean 1982-2008 = 1,191; mean 1999-2008 = 2,776; high count = 6,626 in 2007.