Sea Duck Joint Venture
Annual Project Summary for Endorsed Projects
FY 2008 - (October 1, 2007 to Sept 30, 2008)

Project Title: Central Arctic Waterfowl Breeding Population Surveys
Sea Duck Joint Venture Project 98
Arctic Goose Joint Venture Project 77

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Partners: Sea Duck Joint Venture (SDJV), Arctic Goose Joint Venture (AGJV), U.S. Fish and Wildlife Service (USFWS - Regions 9, 2, 3 and 6), Canadian Wildlife Service (CWS), Central Flyway Council (CFC)

Survey Objective: Obtain population size estimates and monitor long-term population trends of several arctic nesting migratory bird species including the Long-tailed Duck, King Eider, Cackling Goose, and Greater White-fronted goose.

Project Description: During summers of 2002-2006, the AGJV, SDJV, USFWS, CWS, and other partners conducted aerial surveys of migratory birds throughout a large expanse of important lowland habitats in Canada's central and western Arctic. These efforts and those of previous helicopter surveys were drawn upon to begin development of an operational survey of migratory birds in these regions. Here, we provide a summary of Project 98 activities in 2008 and a preliminary compilation of project results from 2007 surveys.

2008 Activities and Project Status:

In 2008, we conducted surveys using the turbine-powered de Havilland beaver aircraft that has been used for associated surveys since 2005. Survey procedures followed U.S. Fish and Wildlife Service protocol for waterfowl breeding pair surveys (USFWS and CWS 1987). Each transect was flown at 30-45 m above ground level and at a speed of 145-170 km/hr, using a Global Positioning System (GPS) in the aircraft panel to navigate along transects to preprogrammed endpoint coordinates. Both pilot and observer recorded observations of all waterbirds, raptors, and ptarmigan within 200 m of the flight path. Each observation was recorded as an electronic wave file, linked with simultaneous GPS coordinates, and stored via separate on-board computers for each observer.
We initially planned to survey western Victoria Island and Banks Island in 2008, but the Hunter Trapper Association from Sach's Harbour temporarily denied the permit application for Banks Island (permit for another Canadian Wildlife Service project was also delayed). Although a permit was eventually granted, it was too late for logistic preparations to be completed. We surveyed the western Victoria Island units- at a 4% sampling intensity (Fig. 1) transects spaced at 10-km intervals). We conducted surveys

from 19 June to 1 July 2008 and surveyed 6,155 km of transect in 70hrs of flight time. A total of 90 hours of flight time were expended including ferrying to and from Alaska.

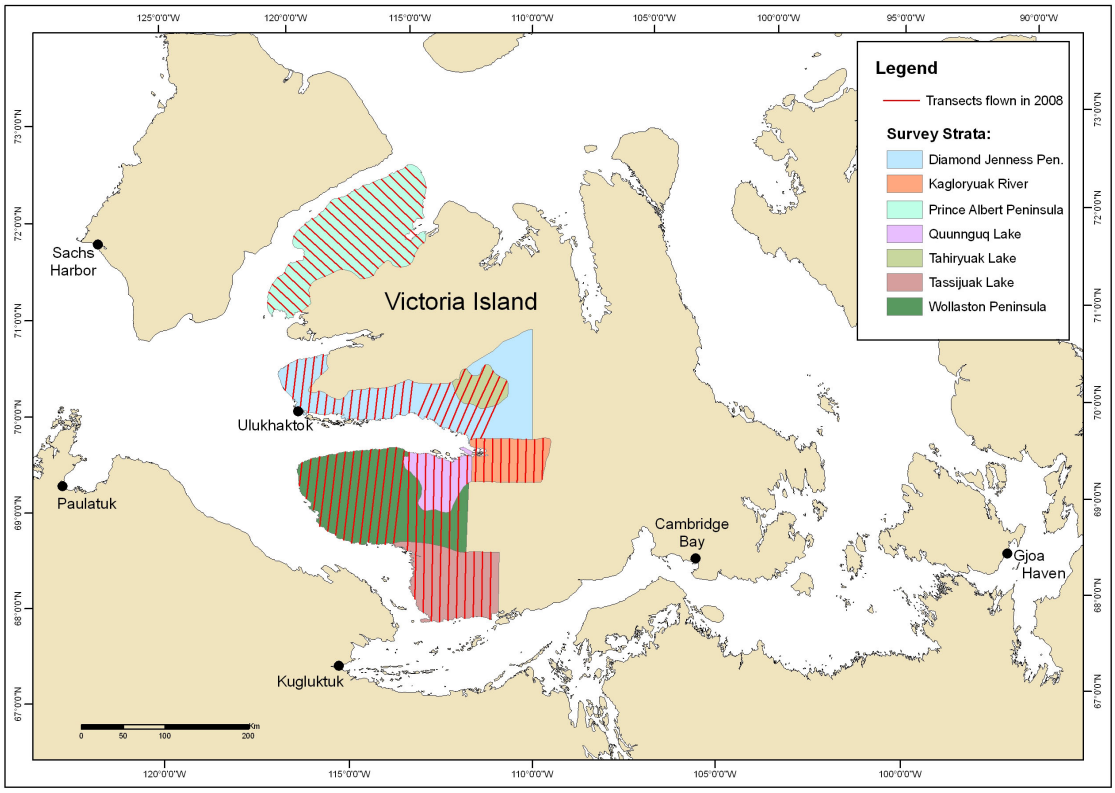

Fig. 1. Locations of aerial transects flown via turbine aircraft during June 2008 on western Victoria Island, year two of Project 98.

Prior to the survey, transects in some survey strata were redrawn to provide a more efficient and complete design, enabled by the extended range of turbine beaver compared to that of jet ranger helicopters.

Snow cover during the survey ranged from 0-60%, with more cover at higher elevations. Spring phenology in the central Arctic during 2008 was reported as near average. Pilots and observers again report that the survey logistics were reasonable and that the survey can be conducted safely. Fixed-wing survey efforts were not constrained substantially by weather conditions during 2005-2008.

Compilation of 2008 data is ongoing, as is examination of previous work with differential detection probabilities for flying versus grounded birds and comparisons between fixed-wing and rotary-wing platforms. Based on the information being gained through these cooperative surveys there is substantial support for continuing these efforts using turbine-powered fixed-wing aircraft, and developing these surveys into an operational monitoring method for several migratory bird species and populations. We intend to compile survey estimates from fixed-wing surveys 2005-2008 and, working with previous estimates from

rotary-wing surveys 2003-2006, develop a final survey design to efficiently monitor priority species in this vast Arctic range.

Acknowledgements: We wish to express our special thanks to Deborah Groves, Ed Mallek, and Rob MacDonald (USFWS, Alaska) for all their efforts in conducting these surveys.

Preliminary Results from 2007:

Below we present survey estimates resulting from Project 98 efforts in 2007.

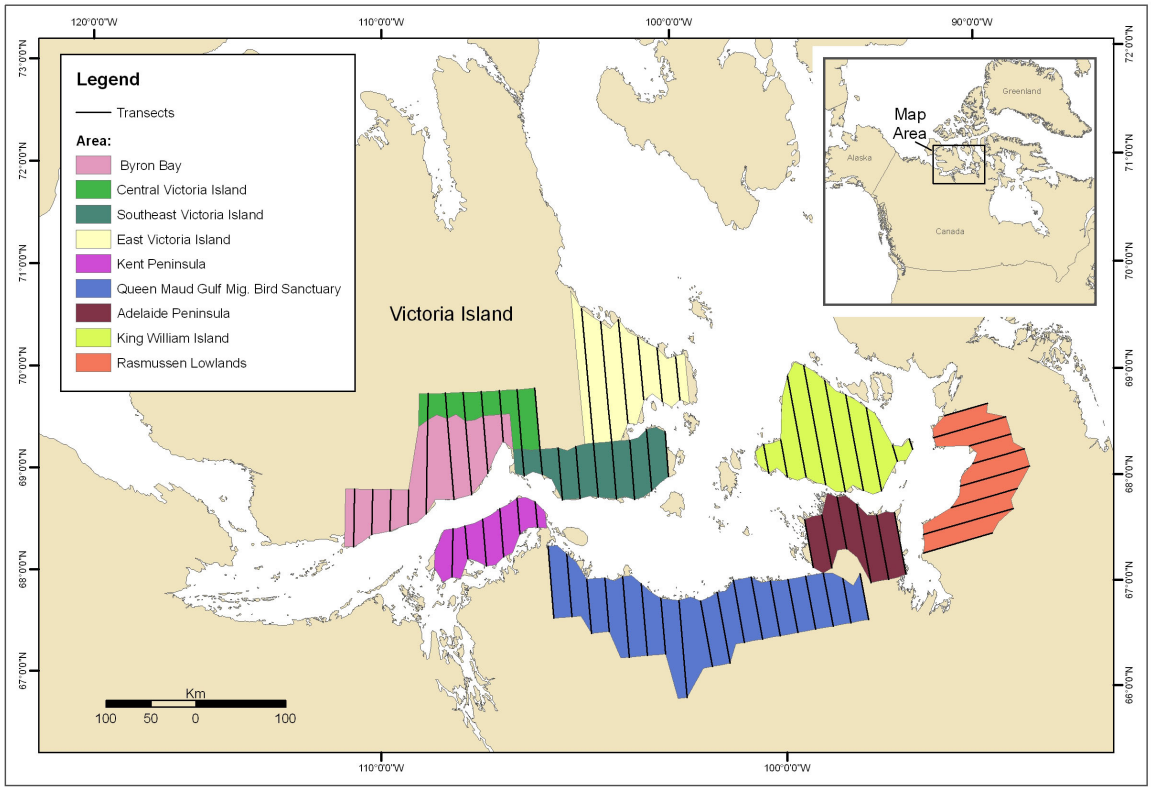

Fig. 2. Locations of spring aerial transects flown via turbine aircraft in 2007, the first year of Sea Duck Joint Venture Project 98 (transects shown indicate 2% sampling rate).

Table 1. Population estimates, by area, of waterfowl from the fixed-wing survey in Nunavut, Canada in June 2007. Single birds (except scaup and tundra swans) were doubled when calculating estimates. Visibility correction factors (VCF's) are from 1989-1991 fixed-wing vs. helicopter comparison surveys in Alaska tundra habitats. VCF = 1 indicates that no correction factor was applied.

Species	VCF	Byron Bay	SE	Central Victoria Island	SE	Southeast Victoria Island	SE	East Victoria Island	SE	Kent Peninsula	SE	Queen Maud Gulf	SE
Canada Goose	1	30,074	4,338	11,886	1,781	38,708	4,025	44,290	8,652	15,008	3,133	143,078	27,874
White-fronted Goose	1	6,840	1,946	1,938	582	14,475	2,706	16,304	2,175	11,602	1,340	51,780	8,880
Brant	1	163	164	0	0	92	98	0	0	0	0	1,172	1,173
Snow/Ross' Goose	1	2,063	1,391	431	372	23,401	5,426	19,961	10,521	1,331	1,160	1,677,418	603,011
Green-winged Teal	8.36	0	0	0	0	0	0	0	0	0	0	1,634	1,110
Northern Pintail	3.05	11,424	8,398	0	0	564	360	310	344	10,389	9,175	90,436	18,884
Scaup	1.93	1,257	863	0	0	0	0	0	0	0	0	1,131	395
Common Eider	1	1,194	906	0	0	370	194	305	225	319	225	537	538
King Eider	1	8,848	2,109	5,254	951	11,469	3,793	10,768	1,506	2,022	573	15,485	2,495
Long-tailed Duck	1.87	22,536	3,977	8,375	1,097	7,783	1,890	7,503	3,490	10,350	1,681	68,876	9,666
Red-breasted Merganser	1.27	0	0	0	0	0	0	0	0	0	0	496	281
Tundra Swan	1	3,094	746	1,550	348	4,162	895	2,793	704	2,608	836	8,255	788
Tundra Swan Nest	1	0	0	86	91	277	128	102	91	106	102	391	179

Table1 (continued). Population estimates, by area, of waterfowl from the fixed-wing survey in Nunavut, Canada in June 2007. Single birds (except scaup and tundra swans) were doubled when calculating estimates. Visibility correction factors (VCF's) are from 1989-1991 fixed-wing vs. helicopter comparison surveys in Alaska tundra habitats. VCF = 1 indicates that no correction factor was applied.

Species	VCF	Adelaide Peninsula	SE	King William Island	SE	Rasmussen Lowlands	SE	Total	SE
Canada Goose	1	27,867	1,775	50,735	7,491	26,493	4,246	388,139	31,259
White-fronted Goose	1	7,212	2,616	9,782	2,399	29,227	6,390	149,160	12,258
Brant	1	0	0	0	0	0	0	1,428	1,189
Snow/Ross' Goose	1	434,561	296,621	52,661	14,188	193,654	85,666	2,405,480	677,709
Green-winged Teal	8.36	0	0	0	0	0	0	1,634	1,110
Northern Pintail	3.05	9,241	5,069	0	0	2,188	1,610	124,552	23,235
Scaup	1.93	659	686	0	0	0	0	3,047	1,171
Common Eider	1	0	0	0	0	0	0	2,726	1,118
King Eider	1	4,524	1,049	8,211	581	4,483	1,239	71,064	5,615
Long-tailed Duck	1.87	18,355	6,252	8,151	1,622	9,892	2,439	161,821	13,293
Red-breasted Merganser	1.27	0	0	0	0	0	0	496	281
Tundra Swan	1	3,627	760	7,096	1,632	4,617	1,148	37,804	2,803
Tundra Swan Nest	1	85	87	1,014	233	807	440	2,868	575

Table 2. Population estimates, by area, of additional bird and mammal species from the fixed-wing survey in Nunavut, Canada in June 2007. VCF = 1 indicates that no visibility correction factor was applied.

Species	VCF	Byron Bay	SE	Central Victoria Island	SE	Southeast Victoria Island	SE	East Victoria Island	SE	Kent Peninsula	SE	Queen Maud Gulf	SE
Sandhill Crane	1	1,574	429	86	90	185	93	51	46	1,011	410	6,546	972
Pacific Loon	1	2,769	693	1,421	358	2,220	401	1,828	236	1,650	449	4,348	821
Red-throated Loon	1	2,117	496	474	217	370	144	508	222	319	154	3,615	744
Yellow-billed Loon	1	380	269	86	77	370	181	203	124	905	435	244	200
Unidentified Loon	1	0	0	0	0	0	0	102	50	0	0	0	0
Glaucous Gull	1	1,357	337	560	196	2,451	626	2,438	981	2,182	713	13,873	3,315
Sabine's Gull	1	651	339	861	311	2,775	991	3,149	814	0	0	488	228
Franklin's Gull	1	54	55	0	0	0	0	0	0	0	0	0	0
Unidentified Gull	1	217	174	86	77	0	0	0	0	213	96	1,124	353
Arctic Tern	1	1,574	606	301	167	1,480	351	305	126	373	214	5,227	2,334
Unidentified Jaeger	1	869	249	172	69	555	160	609	274	160	87	879	219

Unidentified Ptarmigan	1	2,063	932	732	231	509	226	2,743	506	852	236	5,031	1,071
Common Raven	1	109	112	0	0	92	92	0	0	0	0	98	95
Rough-legged Hawk	1	54	57	0	0	46	46	0	0	53	51	0	0
Unidentified Hawk	1	163	119	0	0	46	46	0	0	0	0	98	65
Golden Eagle	1	163	119	0	0	0	0	0	0	0	0	49	48
Gyrfalcon	1	0	0	0	0	0	0	0	0	0	0	49	48
Short-eared Owl	1	0	0	43	46	46	46	0	0	160	106	147	102
Snowy Owl	1	54	53	0	0	0	0	102	57	160	166	195	118
Musk Ox Adult	1	7,817	2,055	4,436	1,546	2,590	494	3,403	1,293	1,543	793	195	155
Musk Ox Calf	1	706	283	431	174	416	152	660	227	0	0	0	0
Caribou Adult	1	2,389	437	904	406	277	187	2,387	754	373	257	119,289	38,349
Caribou Calf	1	109	100	129	135	0	0	762	178	0	0	41,473	18,698
Arctic Fox	1	54	55	86	63	92	91	51	50	0	0	0	0
Wolf	1	0	0	43	39	0	0	0	0	0	0	49	49

Table 2 (continued). Population estimates, by area, of additional bird and mammal species from the fixed-wing survey in Nunavut, Canada in June 2007. VCF = 1 indicates that no visibility correction factor was applied.

Species	VCF	Adelaide Peninsula	SE	King William Island	SE	Rasmussen Lowlands	SE	Total	SE
Sandhill Crane	1	1,195	433	203	123	1,121	305	11,971	1,270
Pacific Loon	1	299	134	1,318	697	717	277	16,569	1,510
Red-throated Loon	1	683	285	1,014	404	538	339	9,637	1,140
Yellow-billed Loon	1	128	89	51	45	0	0	2,367	605
Unidentified Loon	1	0	0	0	0	0	0	102	50
Glaucous Gull	1	1,750	539	8,008	1,009	1,390	369	34,009	3,801
Sabine's Gull	1	128	82	2,382	625	0	0	10,435	1,518
Franklin's Gull	1	0	0	0	0	0	0	54	55
Unidentified Gull	1	0	0	101	107	90	89	1,831	435
Arctic Tern	1	854	691	1,723	615	179	99	12,016	2,625
Unidentified Jaeger	1	299	96	963	193	134	71	4,640	524
Unidentified Ptarmigan	1	640	155	405	254	583	284	13,558	1,613
Common Raven	1	43	44	0	0	224	100	566	205
Rough-legged Hawk	1	0	0	0	0	0	0	154	89
Unidentified Hawk	1	0	0	0	0	45	45	352	150
Golden Eagle	1	0	0	0	0	0	0	212	128
Gyrfalcon	1	0	0	0	0	0	0	49	48
Short-eared Owl	1	0	0	0	0	0	0	396	161
Snowy Owl	1	43	42	558	219	179	77	1,290	321
Musk Ox Adult	1	0	0	405	374	90	62	20,479	3,054
Musk Ox Calf	1	0	0	0	0	0	0	2,213	429

Caribou Adult	1	11,480	6,009	101	63	10,310	2,027	147,510	38,883
Caribou Calf	1	6,145	3,399	51	51	2,331	656	50,999	19,017
Arctic Fox	1	128	90	152	62	0	0	564	173
Wolf	1	0	0	0	0	45	45	137	77