Sea Duck Joint Venture
Annual Project Summary for Endorsed Projects
FY 2009 – (October 1, 2008 to Sept 30, 2009)

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 2, 3, 6, 7, and 9), Canadian Wildlife Service (CWS), Central Flyway Council (CFC)

Project Description: During summers of 2002-2008, the AGJV, SDJV, USFWS, CWS, CFC, 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. In this report we provide a summary of SDJV Project 98/Arctic Goose Joint Venture Project 77 activities in 2009 and a compilation of results from 2008 surveys.

In 2009, we conducted surveys using the turbine-powered de Havilland beaver aircraft that has been used for associated surveys since 2005. We surveyed areas on southern and southeastern Victoria Island, King William Island, and the north coast mainland (Figure 1). Transects were spaced systematically at 20-km intervals, resulting in a 2% sampling intensity (Figure 1). Survey procedures followed USFWS and CWS protocol for aerial waterfowl breeding population surveys (USFWS and CWS 1987). We flew each transect at a height of 30-45 m above ground level and at a speed of 145-170 km/hr. The pilot used the aircraft Global Positioning System (GPS) to navigate to transect "start" and "end" waypoints and to maintain the flight path along the transect centerline. Both pilot and observer recorded observations of all birds (except shorebirds) and large mammals within 200 m of the flight path. We recorded each observation to an electronic sound file, where it was linked with simultaneous GPS coordinates and stored via separate on-board computers for each observer.

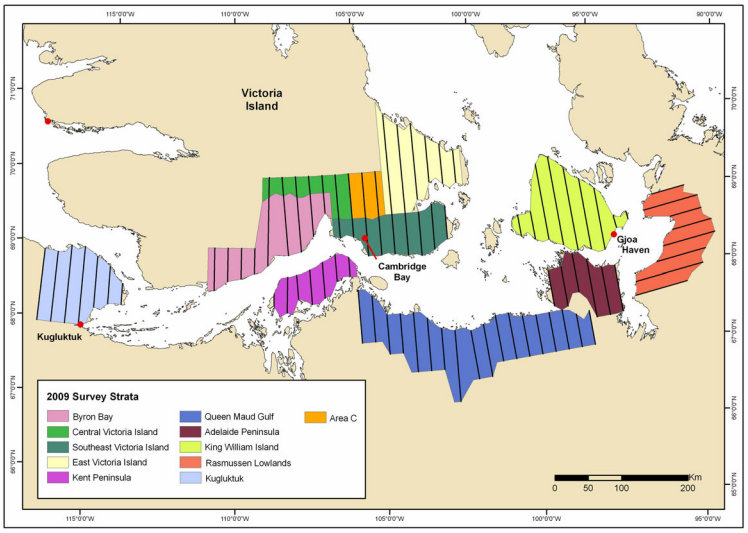

Figure 1. Survey areas and transects in the central Canadian Arctic flown via turbine fixed-wing aircraft during June 2009.

Objectives: Obtain indices to abundance, distribution, and population trends of several arctic-nesting migratory bird species including the Long-tailed Duck, King Eider, Canada Goose ("Cackling Goose"), Greater White-fronted Goose, and Tundra Swan.

Preliminary Results: We conducted surveys from 19 June to 1 July 2009 and surveyed 5,847 km of transect in 65 hrs of flight time. A total of 97 hours of flight time was expended including ferrying to and from Alaska. Snow cover during the 2009 survey was 0-10% at lower elevations, increasing to 70-80% in a few areas at higher elevations and parts of King William Island. Spring phenology in the central Arctic during 2009 was approximately 2 weeks later than average. We experienced several days of inclement weather during the survey, making it a challenge to complete all of the survey areas within the 2-week survey window. Although this was the first time we encountered logistic difficulties since 2005, it highlighted the need to accommodate some number of potential non-flying days in the final survey design (by slightly reducing the expected number of flight hours per aircraft).

Compilation of 2009 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. Survey estimates resulting from Project 98/77 efforts in 2008 are presented below (Fig. 2, Tables 1 and 2).

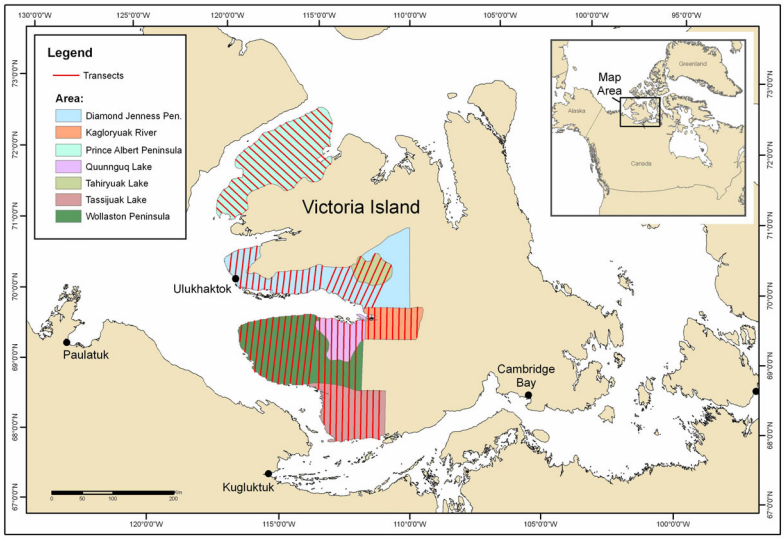

Figure 2. Locations of aerial transects flown via turbine aircraft in June 2008 (transects shown indicate 4% sampling rate).

Table 1. Population indices, by area, of waterfowl from the fixed-wing survey on western Victoria Island, Canada, 19 June-1 July 2008. Singles birds (except tundra swans) were doubled when calculating estimates. Indices of selected species are presented both with and without visibility correction factors (VCFs) applied to adjust for incomplete detection. VCFs are from 1989-1991 fixed-wing vs. helicopter comparison surveys in Alaska tundra habitats (Conant et al. 1991).

Species	VCF	Diamond Jenness Peninsula	SE	Kagloryuak River	SE	Prince Albert Peninsula	SE	Quunnguq Lake	SE	Tahiryuak Lake	SE	Tassijuak Lake	SE	Wollaston Peninsula	SE	Total	SE
Canada/Cackling Goose	---	16,685	3,237	12,167	2,067	16,103	3,420	6,229	707	2,612	569	25,182	4,760	34,334	3,344	113,312	7,817
White-fronted Goose	---	965	527	928	403	226	140	204	162	0	0	5,121	1,805	2,099	754	9,543	2,077
Brant	---	0	0	0	0	0	0	0	0	0	0	315	319	0	0	315	319
Snow/Ross's Goose	---	322	191	611	312	452	279	791	423	0	0	578	462	855	405	3,609	876
Am. Green-winged Teal	---	0	0	0	0	0	0	0	0	0	0	53	52	52	51	105	73
Am. Green-winged Teal	8.36	0	0	0	0	0	0	0	0	0	0	439	431	433	425	872	605
Northern Pintail	---	80	80	269	268	0	0	102	66	50	52	2,206	319	1,840	673	4,547	800
Northern Pintail	3.05	245	244	820	819	0	0	311	203	153	158	6,728	1,094	5,611	2,090	13,869	2,522
Common Eider	---	965	489	49	49	754	344	408	311	0	0	840	335	207	123	3,223	764
King Eider	---	2,814	592	3,518	659	4,773	664	1,838	324	1,859	239	4,044	713	5,882	713	24,728	1,551
Long-tailed Duck	---	9,890	2,760	3,029	763	3,819	708	1,353	451	904	294	8,429	1,304	5,260	804	32,684	3,367
Long-tailed Duck	1.87	18,495	5,771	5,665	1,635	7,141	1,672	2,530	912	1,691	596	15,762	3,328	9,837	2,064	61,121	7,436
Red-breasted Merganser	---	0	0	0	0	327	334	0	0	0	0	0	0	0	0	327	334
Red-breasted Merganser	1.27	0	0	0	0	415	423	0	0	0	0	0	0	0	0	415	423
Tundra Swan	---	884	319	2,125	454	352	130	408	137	50	48	3,099	576	3,084	475	10,003	950
Tundra Swan Nest	---	40	39	244	93	25	25	77	42	0	0	394	131	259	81	1,039	190

Table 2. Population indices, by area, of additional bird and mammal species from the fixed-wing survey on western Victoria Island, Canada, 19 June-1 July 2008. Indices were not adjusted to account for incomplete detection.

Species	Diamond Jenness Peninsula	SE	Kagloryuak River	SE	Prince Albert Peninsula	SE	Quunnguq Lake	SE	Tahiryuak Lake	SE	Tassijuak Lake	SE	Wollaston Peninsula	SE	Total	SE
Sandhill Crane	402	129	49	32	377	133	128	123	0	0	1,969	783	1,296	269	4,220	858
Pacific Loon	322	149	391	102	804	227	179	79	50	53	1,523	238	1,710	333	4,979	510
Red-throated Loon	362	198	98	53	251	83	204	102	25	26	446	143	181	86	1,568	296
Yellow-billed Loon	643	212	73	37	578	137	153	86	0	0	420	136	803	148	2,671	335
Sabine's Gull	121	88	147	64	75	38	0	0	75	78	1,155	526	78	56	1,651	547
Unidentified Large Gull	3,216	1,280	806	212	955	259	485	235	276	113	1,313	303	2,125	1,214	9,176	1,840
Unidentified Small Gull	0	0	24	25	0	0	0	0	0	0	53	35	0	0	77	43
Arctic Tern	80	56	708	211	276	113	306	108	578	366	972	266	518	187	3,439	559
Jaeger spp.	402	146	440	62	1,859	274	281	83	176	53	630	177	518	144	4,306	402
Ptarmigan spp.	80	56	513	166	352	142	26	26	50	47	551	105	389	121	1,961	282
Common Raven	322	170	73	52	25	26	0	0	0	0	26	26	104	57	550	190
Rough-legged Hawk	201	83	73	37	100	72	77	35	0	0	105	42	259	92	816	158
Bald Eagle	0	0	0	0	0	0	0	0	0	0	26	26	0	0	26	26
Golden Eagle	0	0	0	0	0	0	0	0	0	0	26	26	0	0	26	26
Gyrfalcon	0	0	0	0	0	0	0	0	0	0	53	52	26	25	78	58
Merlin	0	0	0	0	0	0	0	0	0	0	26	26	0	0	26	26
Peregrine Falcon	0	0	0	0	0	0	0	0	0	0	0	0	52	35	52	35
Short-eared Owl	80	56	98	38	201	66	0	0	0	0	79	40	52	36	510	109
Snowy Owl	0	0	0	0	50	34	0	0	25	24	0	0	0	0	75	42
Muskox Adult	5,508	1,267	1,906	643	3,819	911	1,174	702	0	0	3,676	675	2,954	736	19,037	2,083
Muskox Calf	563	228	122	122	427	159	102	69	0	0	210	101	130	54	1,554	332
Caribou Adult	362	140	1,417	519	75	53	1,455	276	251	84	1,733	276	3,809	556	9,103	872
Caribou Calf	0	0	147	64	0	0	485	133	50	47	79	55	518	137	1,279	215
Arctic Fox	0	0	0	0	25	25	0	0	0	0	26	26	26	27	77	45
Wolf	0	0	0	0	0	0	0	0	0	0	53	35	0	0	53	35

Project Status: 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 for 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 2005-2009 and, working with previous estimates from rotary-wing surveys 1992-2006, develop a final survey design to efficiently monitor priority species in these important portions of the Arctic.

Literature Cited:

U.S. Fish and Wildlife Service and Canadian Wildlife Service. 1987. Standard operating procedures for aerial waterfowl breeding ground population and habitat surveys in North America; revised. Unpublished report.

Project Funding Sources (US$) for Project 98/77 in 2009 (in-kind funds in italics).

SDJV (USFWS) Contribution	Other U.S. federal contributions	U.S. non-federal contributions	Canadian federal contributions	Canadian non-federal contributions	Source of funding (name of agency or organization)
15,000					
	15,000				Arctic Goose JV
	16,000				FWS Region 9
		15,000			Central Flyway Council
	12,000				

			3,000		CWS
Total					76,000

Total Expenditures by Category for Project 98/77 in 2009 (US$).

ACTIVITY	BREEDING	MOLTING	MIGRATION	WINTERING	TOTAL
Banding (include only if this was a major element of study)					
Surveys (include only if this was a major element of study)	**76,000**				
Research					