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AERIAL SURVEY DATA FROM THE SOUTHEAST BEAUFORT SEA, MACKENZIE RIVER ESTUARY AND WEST AMUNDSEN GULF, JULY 1992

by

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ABSTRACT

Harwood, L.A. and P. Norton. 1996. Aerial survey data from the southeast Beaufort Sea, Mackenzie River estuary and west Amundsen Gulf, July 1992. Can. Data Rep. Fish. Aquat. Sci. 965: iv + 25 p.

Beluga whales (Delphinapterus leucas) of the Mackenzie/Beaufort stock were counted during a systematic aerial survey on 23-25 July 1992 over the Mackenzie Estuary (using a strip transect with 15 - 29% coverage), southeast Beaufort Sea (using a line transect) and west Amundsen Gulf (using a line transect). The size of the study area was 77 990 km^2. A total of 56 transects were flown within a 55 h period during which survey conditions were generally favourable. Primary (experienced) observers counted 253 groups (404 beluga) in the Estuary, and secondary (relatively inexperienced) observers counted 37 groups (69 beluga). In the offshore, primary observers counted 247 beluga groups (422 whales), while secondary observers counted 108 beluga groups (232 whales). Most of the 38 beluga cow-calf pairs sighted by the primary observers were in the Offshore stratum. During the survey nine bowhead whales were seen in the Offshore stratum.

Key words: beluga; bowhead; Beaufort Sea; distribution; abundance; aerial survey.

RÉSUMÉ

Harwood, L.A. and P. Norton. 1996. Aerial survey data from the southeast Beaufort Sea, Mackenzie River estuary and west Amundsen Gulf, July 1992. Can. Data Rep. Fish. Aquat. Sci. 965: iv + 25 p.

Pendant un relevé aérien systématique effectué du 23 au 25 juillet 1992 au-dessus de l'estuaire du Mackenzie (en se servant d'une bande transversale couvrant de 15 à 29%), du sud-est de la mer de Beaufort (en utilisant une ligne transversale) et de l'ouest du golfe Amundsen (en se servant d'une ligne transversale), on a effectué un compte des bélugas (Delphinapterus leucas) de la population du Mackenzie et de la mer de Beaufort. La zone étudiée couvrait 77 990 km^2. Au total, on a survolé 56 bandes transversales pendant une période de 55 heures, dans des conditions généralement favorables pour le relevé. Des observateurs primaires (expérimentés) ont compté 253 groupes (404 bélugas) dans l'estuaire, et des observateurs secondaires (relativement inexpérimentés) ont dénombré 37 groupes (69 bélugas). Dans la zone extra-côtière, les observateurs primaires ont compté 247 groupes de bélugas (422 baleines), alors que les observateurs secondaires ont dénombré 108 groupes (232 baleines). La plupart des 38 couples <baleine-baleineau> repérés par les observateurs primaires se trouvaient dans la zone extra-côtière. Pendant le relevé, on a également observé neuf baleines boréales dans cette zone.

Mots-clés: béluga; baleine boréale; mer de Beaufort; distribution; abondance; relevé aérien.

INTRODUCTION

This report contains systematic aerial survey data collected in the Mackenzie River estuary, southeast Beaufort Sea and west Amundsen Gulf during 23-25 July 1992. The main objective of the survey was to count surfaced beluga whales (Delphinapterus leucas) of the Beaufort/Mackenzie stock, over as much of their summer range as practical within as short a time as possible.

Beluga of this stock winter in the Bering Sea and migrate to summering areas in the Beaufort Sea and Amundsen Gulf. From late June through to late July, many beluga aggregate in the warm estuarine waters of the Mackenzie River, while others are widely distributed offshore (Norton and Harwood 1985). Decades of observation by subsistence harvesters have indicated that beluga move between the estuary and offshore during this period (B. Day, Box 1365, Inuvik, Northwest Territories, Canada, X0E 0T0, pers. comms.). For this reason, the survey was designed to include coverage of the Mackenzie Estuary and the offshore Beaufort/Amundsen region on consecutive days.

STUDY AREA

The survey area was divided into two major strata on the basis of our previous knowledge of beluga distribution (Norton and Harwood 1985) and major oceanographic features, the "Estuary" and the "Offshore". The Estuary stratum was divided into four substrata, each characterized by warm (10-18° C), turbid, and shallow (<5 m) waters of the Mackenzie River during summer (Fraker et al. 1979), and included an approximate surface area of 3 500 km^2.

The Offshore stratum, covering an approximate surface area of 74 400 km^2, and also with four substrata, is characterized by deeper (5-300 m), colder (0-4° C), clearer, and in some areas, ice-covered waters. The boundary between the estuary and offshore strata was the 5 m isobath for all but the western side of the estuary, where the boundary was a diagonal along the 3 m isobath between Shingle Point and the southwest portion of West Mackenzie Bay (Fig. 1).

METHODS

The survey was conducted over the Mackenzie Estuary, the southeast Beaufort Sea, and west Amundsen Gulf on 23 - 25 July 1992. The raw data collected during the survey are presented in this report. The data analysis and discussion will be presented in a separate paper (Harwood et al. 1996). Table 1 lists the abbreviations and codes used throughout this report and Table 2 summarizes the overall survey effort.

In the Estuary stratum, a strip transect method was used (Caughley 1977). A total of 36 standard transect lines, established by Fraker (1977), were flown between 12:00 and 19:00 on 23 July 1992 in four substrata of the Mackenzie Estuary: Kugmallit Bay (KUG), West Mackenzie Bay (WM), East Mackenzie Bay (EM) and Shallow or Niakunak Bay (NIAK). The transects were spaced at intervals of 3.2 km in KUG, EM and NIAK, the three substrata used as concentration sites; in WM, which serves primarily as a migration corridor, the transects were spaced at 4.8 km (Table 2). The strip width was 0.8 km (0.4 km per side), reduced from the traditional 1.6 km (Fraker and Fraker 1981; Norton and Harwood 1986). The strips were defined by marks on the bubble windows that represented a 50-450 m swath next to the flight path (81° - 35° from horizontal, inclusive).

The four substrata of the Offshore stratum, west Beaufort (WB), middle Beaufort (MB), east Beaufort (EB), and west Amundsen Gulf (WA) were surveyed between 14:00 on 24 July and 19:00 on 25 July 1992. A total of 20 north-south transect lines were flown (Table 2), spaced at intervals of 30' or 60' west longitude. The southern endpoint for each offshore transect was shore, except for those north of the Mackenzie Estuary where the southern endpoint was the seaward limit of the Estuary stratum (Fig. 1). The northern endpoint for the offshore transects was set as the 9/10 ice edge, although it was not always possible to reach this due to fog and range of the aircraft.

In the Offshore stratum, the density of beluga whales was estimated using a line transect method (Burnham et al. 1980). To obtain the lateral sighting distance, wherever possible, observers measured the angle from horizontal of each sighting when it was perpendicular to the aircraft using a Suunto PM/360S clinometer.

de Havilland Twin Otter Series 300 aircraft, three planes carrying a total of 10 observers, were used to conduct the survey. Each aircraft was equipped with a GPS (Global Positioning System) for navigation and a radar altimeter for maintenance of the desired survey altitude of 305 m ASL. Surveys were not attempted if ceilings were below 152 m. Target ground speed for the survey was 200 $km \cdot h^{-1}$. All search positions in all aircraft were equipped with bubble windows. Surveying was attempted only when seastates were 0-3 on the Beaufort Scale of Wind Force. We attempted to conduct most of the survey while the sun was most directly overhead (11:00-17:00) to minimize the effects of glare.

Each aircraft had two primary observers, experienced in aerial survey techniques, who occupied the second left and second right seats behind the bulkhead. Each aircraft had at least one secondary observer, relatively inexperienced in aerial survey techniques, who occupied the rear left seat. One aircraft (KBG) had an extra secondary observer who occupied the right rear seat. During the survey, the left and right primary observers traded seats on alternating transects to allow a comparison of each with the secondary (rear) observer.

At the beginning of each transect, each observer recorded the start time using synchronized digital watches (minutes, seconds), transect number, direction of flight (compass points), their seat position, glare levels (nil, moderate, strong, forward or back), seastate (Beaufort Scale of Wind Force) and concentration of ice (0/10, 1/10 - 3/10, 4/10 - 6/10, 7/10 - 9/10, >9/10). Survey conditions, including presence of land, fog, low cloud, seastate, glare and other physical aspects, were recorded along each transect by the primary observers, as changes were encountered.

For each marine mammal sighted, observers recorded species, number in group, time of sighting, number of degrees from horizontal (for offshore only), relative size and colour of whale (e.g. white [adult], large gray [immature], small gray ["calf", either young of the year or one year old], behaviour (e.g. whale splashing tail, calf laying on mother's back), and

direction of whale movement. A group (=sighting) of beluga was defined as two or more individuals within an estimated five body lengths of each other. At the end of the transect, end time was recorded. Audio tapes were transcribed to standardized data sheets at the end of the survey.

RESULTS

Practice survey flights were conducted on 15 - 16 July 1992, and the survey was done within the next favourable weather window (23 - 25 July 1992) when a total of 56 transects were flown within a 55 h period. Survey coverage was approximately 15 - 29% in the Mackenzie Estuary, approximately 4.5 - 6.3% in the southeast Beaufort Sea and 2.9% in west Amundsen Gulf. The size of the study area was 77 990 km^2.

The Estuary was ice-free at the time of the survey. In the Offshore, the edge of the pack-ice was located 100-150 km north of the Mackenzie Estuary, 50-100 km north of the Tuktoyaktuk Peninsula, and 130 km north of Cape Bathurst (Fig. 1) . Amundsen Gulf and the area north of Cape Bathurst were essentially ice-free during the survey. Waters offshore of the Yukon Coast (seaward of Shingle Point and Herschel Island on Fig. 1) could not be surveyed at any time within the available time frame due to fog and low cloud.

Beluga were sighted on 25 of the 36 transect lines flown in the Estuary (Table 3). Primary observers made a total of 253 sightings (404 beluga) in the Estuary stratum, and secondary observers, functioning in two of the four subareas made a total of 37 sightings (69 beluga). In the Estuary, there were nine sightings of a cow/calf pair. All Estuary sightings received a data quality code of "1" (no known or identified shortcomings or limitations).

In the Offshore, beluga were sighted on each of the 20 transect lines (Table 4). A total of 381 sightings were made using the line transect technique; 15 of these were made on line extensions into the Estuary stratum and these are identified accordingly in Table 4. An additional 11 sightings had severe limitations and thus were not used in any data analysis, although these have been included in Table 4. Of the 381 sightings, 355 were useable (data quality rated 1-9; see Table 1). Primary observers made a total of 247 useable sightings (422 beluga), while secondary observers made 108 useable sightings (232 beluga). A total of 29 beluga cow-calf pairs were seen by the primary observers in the Offshore stratum.

Bowhead whales were seen in the Offshore stratum (Table 5), primarily in west Amundsen Gulf. All of the nine sightings were of solitary individuals.

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Table 1. List of abbreviations and codes

Abbreviation	Explanation
Trans. #	Transect Number
EM-"X"	Transects in East Mackenzie Bay
K-"X"	Transects in Kugmallit Bay
WM-"X"	Transects in West Mackenzie Bay
N-"X"	Transects in Niakunak Bay
#'s 7-38	Transects in the offshore
8-N and 8-S	Transect 8 flown in 2 parts, north half and south half
9-O and 15-O	Regular offshore transect #9 and #15
9-E and 15-E	Parts of "offshore" Lines 9 and 15 which were extended into the Estuary and were surveyed, therefore duplicate coverage
Date	Date of survey or sighting e.g. notation of 920723 means 92 (1992) 07 (7th month, July) 23 (23rd day)
Time	Time of sighting or start/stop e.g. notation of 124647 means 12:46:47 e.g. notation of 1223?? means 12:23:second not recorded
Trans. Length	number of linear km on that transect which were sampled
Km lost	number of km on that transect which could not be sampled due to fog, rough seas or glare
Range seastates	Range of seastates from Beaufort Scale of Windforce recorded by the primary observers for that particular transect line
Grd spd	Calculated Ground speed (km/h)
# obs	Number of observers functioning for that particular transect line
Aircraft	Column lists call sign of relevant aircraft (KBG, SJB and IOK)
Obs. code	Observers code (10 observers, each assigned an anonymous code, 1 through 10

Table 1. Continued

Seat Posn	Seat Postion (seat occupied by the observer)
R=	right side of aircraft
L=	left side of aircraft
1=	primary observer
2=	secondary observer
No. beluga	Number of beluga whales seen in the particular sighting
Trans. posn	Relative location of sighting on transect roughly estimated by observer
Inner=	Inner 1/3 of transect swath
Middle=	Middle 1/3 of transect swath
Outer=	Outer 1/3 of transect swath
Strata	
EST=	Estuary stratum
OFF=	Offshore stratum
Subarea	
EM=	East Mackenzie Bay subarea
KUG=	Kugmallit Bay subarea
WM=	West Mackenzie Bay subarea
NIAK=	Niakunak Bay (Shallow Bay) subarea
WB=	West Beaufort subarea
MB=	Middle Beaufort subarea
EB=	East Beaufort subarea
WA=	West Amundsen subarea
Degree Horiz.	Clinometer reading (degrees from horizontal) recorded by the observer for that sighting
Data qual. code	Each sighting assigned one or more codes from the following list (1 to 12) to identify data strengths and limitations.
1	Data collected according to a protocol with no known or identified shortcomings or limitations.
2	Observer read from the left scale and not the right scale on the clinometer. Values given are those from the right scale that correspond to readings given by the observer for the left scale.

Table 1 Continued

3	Observer recorded sighting times to the nearest minute, not the nearest second.
4	Observer's watch was reported to be 2 minutes slow; no correction has been applied.
5	Observer's watch was known to be 19 seconds fast; no correction has been applied.
6	Whale did not surface during survey pass.
7	Observer recording sighting information directly onto notepad and not onto audio cassette tape.
8	Observer did not have a clinometer and hence used the strip transect method in the offshore.
9	Seastates exceeded 4 on the Beaufort Scale of Windforce, however survey continued inbound for fuel or to get to other survey destinations.
10	This part of the transect flown previously using the strip transect method, so data not used in the basic data set.
11	Severe forward glare precluded conduct of a consistent search; data are unusable.
12	Seastate 6 on Beaufort Scale so survey was discontinued.

Table 2. Mackenzie Estuary, Beaufort Sea and Amundsen Gulf survey effort, 23-25 July 1992

Trans. #	Date	Start Time	Stop Time	Start N. Lat	Start W. Long	Stop N. Lat	Stop W. Long	Trans. Length Smpled (km)	Km lost **	Strata	Sub-area	Range Sea states	Grd spd (km/hr)	# obs
EM-A	920723	122919	123709	69287	135208	69287	136000	25.7	0	EST	EM	0,1	196.8	1
EM-1	920723	123927	125738	69304	136000	69304	134359	54.4	0	EST	EM	0,1	179.5	1
EM-2	920723	125916	131604	69321	134352	69321	136000	54.8	0	EST	EM	0,1	195.7	1
EM-3	920723	131828	133626	69338	136000	69338	134340	55.6	0	EST	EM	0,1	185.3	1
EM-4	920723	133818	135209	69356	134306	69356	135391	44.3	0	EST	EM	0,1	191.9	1
EM-5	920723	135509	140845	69373	135363	69373	134289	43.6	0	EST	EM	0,1,2	192.3	1
EM-6	920723	141141	142452	69390	134262	69390	135335	43.4	0	EST	EM	0,1	197.5	1
EM-7	920723	142649	143918	69407	135335	69407	134296	41.2	0	EST	EM	1	198.0	1
EM-8	920723	144115	144800	69423	134302	69423	135035	21.5	0	EST	EM	1	191.1	1
EM-9	920723	144958	145750	69440	135035	69440	134226	26.3	0	EST	EM	0,1	200.6	1
EM-10	920723	150034	150435	69457	134234	69457	134432	12.8	0	EST	EM	0,1	191.2	1
K-A	920723	184334	184721	69227	133356	69229	133550	12.5	0	EST	KUG	2,3	198.2	2
K-1	920723	182635	183549	69246	133525	69242	133095	28.0	0	EST	KUG	2,3	181.9	2
K-2	920723	181425	182414	69259	133035	69262	133504	30.4	0	EST	KUG	2,3	185.8	2
K-3	920723	180259	181222	69280	133479	69276	132592	31.5	0	EST	KUG	1,2	201.4	2
K-4	920723	175130	180057	69294	133000	69297	133465	30.1	0	EST	KUG	1,2	191.1	2
K-5	920723	172751	173716	69311	132588	69314	133408	29.5	0	EST	KUG	0,1	188.0	2
K-6	920723	173924	174824	69331	133400	69327	132583	29.3	0	EST	KUG	0,1	195.3	2
WM-1	920723	161343	162101	69148	135507	69148	136300	25.5	0	EST	WM	1,2,3	209.6	3
WM-2	920723	162406	163241	69173	136300	69173	135509	25.2	0	EST	WM	3	176.1	3
WM-3	920723	163810	164758	69199	135390	69199	136300	33.1	0	EST	WM	1,2,3	202.6	3
WM-4	920723	165120	170220	69224	136300	69224	135378	34.2	0	EST	WM	2,3	186.5	3
WM-5	920723	170615	172216	69250	135348	69250	136300	36.0	0	EST	WM	2,3,4	135.0	3
WM-6	920723	172845	173938	69276	136300	69276	135376	34.1	0	EST	WM	3,4	188.0	3
N-A	920723	121240	121550	68526	136145	68558	136007	10.6	0	EST	NIAK	1	200.8	3
N-B	920723	121847	122324	68580	136003	68530	136216	16.2	0	EST	NIAK	1	210.5	3
N-C	920723	122610	123137	68538	136266	68589	136051	16.2	0	EST	NIAK	1	178.3	3
N-1	920723	123407	124306	69004	136073	68517	136431	27.5	0	EST	NIAK	0,1	183.3	3
N-2	920723	124527	125606	68522	136492	69024	136071	32.1	0	EST	NIAK	0,1	180.8	3
N-3	920723	125816	130926	69042	136080	68533	136531	34.5	0	EST	NIAK	1,2	185.4	3
N-4	920723	131147	132253	68545	136565	69056	136111	34.6	0	EST	NIAK	0,1,2	187.0	3
N-5	920723	132509	133626	69070	136141	68559	136594	34.8	0	EST	NIAK	0,1,2	185.1	3
N-6	920723	133927	135129	68565	137053	69085	136165	37.5	0	EST	NIAK	1,2	187.0	3
N-7	920723	135500	140928	69109	136157	68563	137144	45.3	0	EST	NIAK	1,2	187.9	3
N-8	920723	141155	142640	68578	137164	69122	136183	44.7	0	EST	NIAK	2	181.8	3
N-9	920723	142927	144414	69135	136209	68584	137225	46.9	0	EST	NIAK	1,2	190.3	3
7	920724	140500	142632	70290	137300	69507	137300	70.9	0	OFF	WB	0,1,2,3	197.5	4
8-N	920724	143221	145137	69517	137000	70289	137000	68.9	0	OFF	WB	0,1,2	214.6	4
8-S	920724	170516	173347	69047	137000	69510	137000	85.7	0	OFF	WB	1,3	180.3	4
9-O	920724	145851	153542	70300	136300	69280	136300	114.8	0	OFF	WB	1,2,3	171.4	4
10	920724	175216	181700	69341	136000	70292	136000	102.0	0	OFF	WB	0,1,2,3	247.4	4
11	920724	182615	185543	70299	135300	69408	135300	90.9	right side	OFF	WB	1,2,3	185.1	4

Con't

Table 2. Continued

Trans. #	Date	Start Time	Stop Time	Start N. Lat	Start W. Long	Stop N. Lat	Stop W. Long	Trans. Length Smpled (km)	Km lost **	Strata	Sub-area	Range Sea states	Grd spd (km/hr)	# obs
13	920724	163532	170620	69348	134300	70300	134300	102.2	0	OFF	MB	1,2,3	199.1	3
15-0	920724	171719	175448	70350	133300	69340	133300	104.9	8.1	OFF	MB	1,2,3	169.8	3
17	920724	181839	184520	69446	132300	70350	132300	75.2	18.1	OFF	MB	1,3	169.1	3
18	920724	185314	192223	70341	132000	69451	132000	90.7	0	OFF	MB	0,1,2	186.7	3
21	920724	135330	142810	70067	130300	71100	130300	117.2	0	OFF	EB	1,2	202.8	3
23	920724	144115	151656	71100	129300	70089	129300	103.8	9.4	OFF	EB	2	174.5	3
25	920724	161453	170232	69540	128300	71200	128300	159.3	0	OFF	EB	1,2,3	200.6	3
26	920724	171134	173632	71200	128000	70337	128000	85.7	0	OFF	EB	1,2,3	205.7	3
27	920724	174607	181653	70243	127300	71200	127300	103.2	0	OFF	EB	2	201.2	3
28	920724	182400	190825	71200	127000	70056	127000	137.8	right side	OFF	EB	0,1	186.1	3
30	920725	125932	132820	69273	126000	70246	126000	99.6	6.5	OFF	WA	2,3,5	207.5	3
32	920725	134148	142149	70350	125000	71530	125000	144.5	0	OFF	WA	0-4	216.7	3
34	920725	180020	185000	71000	124000	69242	124000	119.6	57.8	OFF	WA	1-6	144.5	2
36	920725	170521	174455	69492	123000	71030	123000	136.7	0	OFF	WA	2,3,4	207.3	3
38	920725	161142	165132	71000	122000	69490	122000	131.5	right side	OFF	WA	0-3	198.1	3
Estuary Areas														
9-E	920724	153542	155555	69280	136300	68540	136300	48.2	0	EST	NIAK	0,1	171.4	4
15-E	920724	175448	180119	69340	133300	69234	133300	19.6	0	EST	KUG	1,2	169.8	3

Table 3. Beluga whale sightings made on 23 July 1992 in the Mackenzie River Estuary

Air Craft	Trans. #	Date	Obs. Code	Seat Posn	Time	N. Lat		W. Long		No. beluga	Trans. Posn	Strata	Sub-area	Data Code	Comments
KBG	EM-1	920723	5	R1	124439	69	30.4	135	35.9	1	INNER	EST	EM	1	
KBG	EM-1	920723	5	R1	124439	69	30.4	135	35.4	1	INNER	EST	EM	1	
KBG	EM-1	920723	5	R1	124453	69	30.4	135	34.9	4	MID	EST	EM	1	INDIVIDUAL
KBG	EM-1	920723	5	R1	124507	69	30.4	135	33.4	1		EST	EM	1	
KBG	EM-1	920723	5	R1	124507	69	30.4	135	33.1	1		EST	EM	1	
KBG	EM-1	920723	5	R1	124521	69	30.4	135	32.7	1	INNER	EST	EM	1	BIG GRAY
KBG	EM-1	920723	5	R1	124521	69	30.4	135	32.4	1	OUTER	EST	EM	1	
KBG	EM-1	920723	5	R1	124521	69	30.4	135	32.1	1	MID	EST	EM	1	
KBG	EM-1	920723	5	R1	124532	69	30.4	135	31.9	1	INNER	EST	EM	1	
KBG	EM-1	920723	5	R1	124532	69	30.4	135	31.5	1	MID	EST	EM	1	
KBG	EM-1	920723	5	R1	124542	69	30.4	135	31.1	1		EST	EM	1	DOVE
KBG	EM-1	920723	5	R1	124542	69	30.4	135	30.9	1		EST	EM	1	DOVE
KBG	EM-1	920723	5	R1	124542	69	30.4	135	30.6	1		EST	EM	1	DOVE
KBG	EM-1	920723	5	R1	124550	69	30.4	135	30.5	1		EST	EM	1	DOVE
KBG	EM-1	920723	5	R1	124615	69	30.4	135	28.5	1	OUTER	EST	EM	1	
KBG	EM-1	920723	5	R1	124702	69	30.4	135	24.9	1		EST	EM	1	DOVE
KBG	EM-1	920723	5	R1	124719	69	30.4	135	23.6	1	INNER	EST	EM	1	
KBG	EM-2	920723	5	R1	131204	69	32.1	135	39.8	1	MID	EST	EM	1	DOVE
KBG	EM-2	920723	5	R1	131430	69	32.1	135	52.1	1	OUTER	EST	EM	1	
KBG	EM-3	920723	5	R1		69	33.8	135	51.5	1	MID	EST	EM	1	DOVE
KBG	EM-3	920723	5	R1	132130	69	33.8	135	45.5	1	MID	EST	EM	1	
KBG	EM-4	920723	5	R1	134548	69	35.6	135	7.7	2	OUTER	EST	EM	1	COW/CALF
KBG	EM-4	920723	5	R1	134649	69	35.6	135	12.7	2	OUTER	EST	EM	1	DOVE
KBG	EM-4	920723	5	R1	135132	69	35.6	135	36.1	1		EST	EM	1	BIG GRAY
KBG	EM-6	920723	5	R1	141247	69	39.0	134	31.8	2	OUTER	EST	EM	1	COW/CALF
KBG	EM-6	920723	5	R1	141932	69	39.0	135	6.3	1	MID	EST	EM	1	DOVE
KBG	EM-6	920723	5	R1	142152	69	39.0	135	18.2	1	INNER	EST	EM	1	
KBG	EM-6	920723	5	R1	142212	69	39.0	135	19.9	1	OUTER	EST	EM	1	
KBG	EM-6	920723	5	R1	142221	69	39.0	135	20.7	1		EST	EM	1	
KBG	EM-7	920723	5	R1	143818	69	40.7	134	34.7	2	MID	EST	EM	1	COW/CALF
KBG	EM-7	920723	5	R1	143837	69	40.7	134	33.1	1	OUTER	EST	EM	1	
KBG	EM-7	920723	5	R1	143842	69	40.7	134	32.7	1	INNER	EST	EM	1	
KBG	EM-8	920723	5	R1	144525	69	42.3	134	50.8	1	MID	EST	EM	1	BIRDS
KBG	EM-8	920723	5	R1	144525	69	42.3	134	50.8	1	MID	EST	EM	1	BIRDS
KBG	EM-8	920723	5	R1	144614	69	42.3	134	54.8	1	OUTER	EST	EM	1	
KBG	EM-8	920723	5	R1	144716	69	42.3	134	59.9	1	INNER	EST	EM	1	
KBG	EM-8	920723	5	R1	144716	69	42.3	134	59.9	1	INNER	EST	EM	1	BIG GRAY
KBG	EM-8	920723	5	R1	144716	69	42.3	134	59.9	1	INNER	EST	EM	1	BIG GRAY
KBG	EM-9	920723	5	R1	145123	69	44.0	134	56.1	2	INNER	EST	EM	1	COW/NEONATE
KBG	EM-10	920723	5	R1	150103	69	45.7	134	25.8	1	OUTER	EST	EM	1	BIRDS/MUD
KBG	EM-10	920723	5	R1	150139	69	45.7	134	28.7	1	OUTER	EST	EM	1	MUD
KBG	K-1	920723	5	R1	182939	69	24.2	133	38.2	1	INNER	EST	KUG	1	DOVE
KBG	K-1	920723	6	L1	182945	69	24.2	133	37.8	1		EST	KUG	1	

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Table 3. Continued

Air Craft	Trans. #	Date	Obs. Code	Seat Posn	Time	N. Lat		W. Long		No. beluga	Trans. Posn	Strata	Sub-area	Data Code	Comments
KBG	K-1	920723	5	R1	183015	69	24.2	133	35.4	2	MID	EST	KUG	1	RUBBING
KBG	K-1	920723	5	R1	183019	69	24.2	133	35.1	1	OUTER	EST	KUG	1	
KBG	K-1	920723	6	L1	183035	69	24.2	133	33.9	1		EST	KUG	1	
KBG	K-1	920723	5	R1	183049	69	24.2	133	32.8	1	MID	EST	KUG	1	
KBG	K-1	920723	5	R1	183049	69	24.2	133	32.8	1	OUTER	EST	KUG	1	
KBG	K-1	920723	5	R1	183049	69	24.2	133	32.8	1	MID	EST	KUG	1	
KBG	K-1	920723	5	R1	183049	69	24.2	133	31.5	1	OUTER	EST	KUG	1	
KBG	K-1	920723	6	L1	183112	69	24.2	133	31.0	1		EST	KUG	1	
KBG	K-1	920723	6	L1	183407	69	24.2	133	17.4	1		EST	KUG	1	
KBG	K-1	920723	6	L1	183418	69	24.2	133	16.6	1		EST	KUG	1	
KBG	K-1	920723	6	L1	183450	69	24.2	133	14.1	1		EST	KUG	1	
KBG	K-2	920723	5	R1	181718	69	25.9	133	17.3	1	OUTER	EST	KUG	1	
KBG	K-2	920723	5	R1	181718	69	25.9	133	20.2	2	INNER	EST	KUG	1	COW/NEONATE
KBG	K-2	920723	5	R1	181718	69	25.9	133	22.6	2	OUTER	EST	KUG	1	
KBG	K-2	920723	6	L1	182102	69	25.9	133	35.1	1		EST	KUG	1	
KBG	K-2	920723	6	L1	182112	69	25.9	133	35.9	1		EST	KUG	1	
KBG	K-2	920723	6	L1	182125	69	25.9	133	36.9	1		EST	KUG	1	
KBG	K-2	920723	6	L1	182144	69	25.9	133	38.5	1		EST	KUG	1	
KBG	K-2	920723	6	L1	182150	69	25.9	133	38.9	1		EST	KUG	1	
KBG	K-2	920723	5	R1	182159	69	25.9	133	39.7	1	OUTER	EST	KUG	1	
KBG	K-2	920723	6	L1	182202	69	25.9	133	39.9	1		EST	KUG	1	
KBG	K-2	920723	6	L1	182203	69	25.9	133	40.0	1		EST	KUG	1	
KBG	K-2	920723	6	L1	182209	69	25.9	133	40.4	1		EST	KUG	1	GRAY
KBG	K-2	920723	5	R1	182209	69	25.9	133	40.4	1	OUTER	EST	KUG	1	
KBG	K-2	920723	5	R1	182209	69	25.9	133	40.4	1	OUTER	EST	KUG	1	
KBG	K-2	920723	5	R1	182209	69	25.9	133	40.8	1	OUTER	EST	KUG	1	
KBG	K-2	920723	5	R1	182209	69	25.9	133	41.1	1	OUTER	EST	KUG	1	
KBG	K-2	920723	5	R1	182222	69	25.9	133	41.5	1	MID	EST	KUG	1	
KBG	K-2	920723	5	R1	182227	69	25.9	133	41.9	1	INNER	EST	KUG	1	BIG GRAY
KBG	K-2	920723	5	R1	182227	69	25.9	133	42.1	1	INNER	EST	KUG	1	
KBG	K-2	920723	5	R1	182234	69	25.9	133	42.4	2	OUTER	EST	KUG	1	
KBG	K-2	920723	5	R1	182234	69	25.9	133	43.2	1	INNER	EST	KUG	1	
KBG	K-2	920723	6	L1	182244	69	25.9	133	43.2	1		EST	KUG	1	GRAY
KBG	K-2	920723	5	R1	182252	69	25.9	133	43.9	1	INNER	EST	KUG	1	
KBG	K-3	920723	5	R1	180312	69	27.6	133	46.8	1		EST	KUG	1	
KBG	K-3	920723	5	R1	180312	69	27.6	133	46.6	1	OUTER	EST	KUG	1	
KBG	K-3	920723	5	R1	180317	69	27.6	133	46.3	1	INNER	EST	KUG	1	
KBG	K-3	920723	5	R1	180317	69	27.6	133	46.2	3	INNER	EST	KUG	1	
KBG	K-3	920723	6	L1	180320	69	27.6	133	46.1	3		EST	KUG	1	
KBG	K-3	920723	5	R1	180317	69	27.6	133	46.0	1	INNER	EST	KUG	1	
KBG	K-3	920723	5	R1	180324	69	27.6	133	45.7	1	INNER	EST	KUG	1	
KBG	K-3	920723	6	L1	180325	69	27.6	133	45.7	5		EST	KUG	1	
KBG	K-3	920723	5	R1	180324	69	27.6	133	45.6	1	MID	EST	KUG	1	
KBG	K-3	920723	5	R1	180329	69	27.6	133	45.3	2	MID	EST	KUG	1	
KBG	K-3	920723	5	R1	180329	69	27.6	133	45.2	3	OUTER	EST	KUG	1	

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Table 3. Continued

Air Craft	Trans. #	Date	Obs. Code	Seat Posn	Time	N.	Lat	W.	Long	No. beluga	Trans. Posn	Strata	Sub-area	Data Code	Comments
KBG	K-3	920723	5	R1	180329	69	27.6	133	45.0	1	OUTER	EST	KUG	1	
KBG	K-3	920723	5	R1	180329	69	27.6	133	45.0	1	INNER	EST	KUG	1	
KBG	K-3	920723	6	L1	180335	69	27.6	133	44.8	3		EST	KUG	1	
KBG	K-3	920723	5	R1	180329	69	27.6	133	44.8	3	INNER	EST	KUG	1	
KBG	K-3	920723	5	R1	180329	69	27.6	133	44.7	1	INNER	EST	KUG	1	
KBG	K-3	920723	5	R1	180338	69	27.6	133	44.5	1	MID	EST	KUG	1	
KBG	K-3	920723	6	L1	180338	69	27.6	133	44.5	2		EST	KUG	1	
KBG	K-3	920723	5	R1	180338	69	27.6	133	43.9	1	INNER	EST	KUG	1	
KBG	K-3	920723	5	R1	180348	69	27.6	133	43.7	8		EST	KUG	1	
KBG	K-3	920723	6	L1	180350	69	27.6	133	43.5	10		EST	KUG	1	
KBG	K-3	920723	5	R1	180348	69	27.6	133	43.3	4		EST	KUG	1	
KBG	K-3	920723	5	R1	180356	69	27.6	133	43.0	1		EST	KUG	1	
KBG	K-3	920723	6	L1	180400	69	27.6	133	42.6	3		EST	KUG	1	
KBG	K-3	920723	5	R1	180400	69	27.6	133	42.6	1	INNER	EST	KUG	1	
KBG	K-3	920723	5	R1	180400	69	27.6	133	42.4	2	OUTER	EST	KUG	1	
KBG	K-3	920723	6	L1	180405	69	27.6	133	42.2	1		EST	KUG	1	
KBG	K-3	920723	5	R1	180407	69	27.6	133	42.0	1	MID	EST	KUG	1	
KBG	K-3	920723	6	L1	180410	69	27.6	133	41.8	1		EST	KUG	1	
KBG	K-3	920723	5	R1	180407	69	27.6	133	41.8	1	MID	EST	KUG	1	
KBG	K-3	920723	5	R1	180413	69	27.6	133	41.5	1	INNER	EST	KUG	1	
KBG	K-3	920723	6	L1	180414	69	27.6	133	41.4	1		EST	KUG	1	
KBG	K-3	920723	5	R1	180413	69	27.6	133	41.3	1	OUTER	EST	KUG	1	
KBG	K-3	920723	5	R1	180413	69	27.6	133	41.2	1	INNER	EST	KUG	1	
KBG	K-3	920723	6	L1	180418	69	27.6	133	41.1	2		EST	KUG	1	
KBG	K-3	920723	5	R1	180419	69	27.6	133	41.0	1	MID	EST	KUG	1	
KBG	K-3	920723	5	R1	180419	69	27.6	133	40.8	1	OUTER	EST	KUG	1	
KBG	K-3	920723	5	R1	180419	69	27.6	133	40.5	1	MID	EST	KUG	1	
KBG	K-3	920723	5	R1	180419	69	27.6	133	40.4	1	INNER	EST	KUG	1	
KBG	K-3	920723	6	L1	180428	69	27.6	133	40.2	5		EST	KUG	1	
KBG	K-3	920723	5	R1	180419	69	27.6	133	40.2	1	MID	EST	KUG	1	
KBG	K-3	920723	5	R1	180431	69	27.6	133	39.9	1	INNER	EST	KUG	1	
KBG	K-3	920723	6	L1	180434	69	27.6	133	39.7	2		EST	KUG	1	COW/CALF
KBG	K-3	920723	6	L1	180440	69	27.6	133	39.2	2		EST	KUG	1	
KBG	K-3	920723	5	R1	180450	69	27.6	133	38.3	1	OUTER	EST	KUG	1	
KBG	K-3	920723	5	R1	180530	69	27.6	133	34.8	1	OUTER	EST	KUG	1	
KBG	K-3	920723	5	R1	180550	69	27.6	133	33.1	2	MID	EST	KUG	1	
KBG	K-3	920723	5	R1	180600	69	27.6	133	32.2	1	MID	EST	KUG	1	
KBG	K-3	920723	5	R1	180605	69	27.6	133	31.8	1	OUTER	EST	KUG	1	
KBG	K-3	920723	5	R1	180737	69	27.6	133	23.9	1	MID	EST	KUG	1	
KBG	K-3	920723	5	R1	180757	69	27.6	133	22.1	1	OUTER	EST	KUG	1	
KBG	K-3	920723	6	L1	180801	69	27.6	133	21.8	1		EST	KUG	1	
KBG	K-3	920723	6	L1	180820	69	27.6	133	20.1	1		EST	KUG	1	
KBG	K-3	920723	6	L1	180825	69	27.6	133	19.7	3		EST	KUG	1	COW/CALF
KBG	K-3	920723	6	L1	180914	69	27.6	133	15.5	1		EST	KUG	1	
KBG	K-3	920723	6	L1	180924	69	27.6	133	14.6	1		EST	KUG	1	

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Table 3. Continued

Air Craft	Trans. #	Date	Obs. Code	Seat Posn	Time	N.	Lat	W.	Long	No. beluga	Trans. Posn	Strata	Sub-area	Data Code	Comments
KBG	K-3	920723	6	L1	181023	69	27.6	133	9.5	1		EST	KUG	1	
KBG	K-3	920723	6	L1	181025	69	27.6	133	9.3	1		EST	KUG	1	
KBG	K-4	920723	5	R1	175528	69	29.4	133	19.5	1	MID	EST	KUG	1	BIG GRAY
KBG	K-5	920723	5	R1	172912	69	31.3	133	4.8	2	OUTER	EST	KUG	1	
KBG	K-5	920723	5	R1	172923	69	31.3	133	5.6	1	INNER	EST	KUG	1	
KBG	K-5	920723	5	R1	172952	69	31.3	133	7.8	1	OUTER	EST	KUG	1	
KBG	K-5	920723	5	R1	172952	69	31.3	133	7.8	1		EST	KUG	1	
KBG	K-5	920723	5	R1	172958	69	31.3	133	8.2	1	MID	EST	KUG	1	
KBG	K-5	920723	5	R1	172958	69	31.3	133	8.2	1	MID	EST	KUG	1	
KBG	K-5	920723	5	R1	173028	69	31.3	133	10.5	1	OUTER	EST	KUG	1	
KBG	K-5	920723	5	R1	173051	69	31.3	133	12.2	1		EST	KUG	1	DOVE
KBG	K-5	920723	5	R1	173233	69	31.3	133	19.8	2		EST	KUG	1	COW/CALF
KBG	K-5	920723	5	R1	173233	69	31.3	133	19.8	1		EST	KUG	1	
KBG	K-5	920723	5	R1	173243	69	31.3	133	20.5	2	INNER	EST	KUG	1	COW/CALF
KBG	K-5	920723	5	R1	173254	69	31.3	133	21.3	1		EST	KUG	1	BIG GRAY
KBG	K-5	920723	5	R1	173304	69	31.3	133	22.1	1	INNER	EST	KUG	1	BIG GRAY
KBG	K-6	920723	6	L1	174218	69	32.7	133	26.6	1		EST	KUG	1	
KBG	K-6	920723	6	L1	174226	69	32.7	133	25.9	1		EST	KUG	1	
KBG	K-6	920723	5	R1	174234	69	32.7	133	25.3	1	OUTER	EST	KUG	1	
KBG	K-6	920723	6	L1	174405	69	32.7	133	18.3	2		EST	KUG	1	
KBG	K-6	920723	6	L1	174432	69	32.7	133	16.2	1		EST	KUG	1	
KBG	K-6	920723	6	L1	174454	69	32.7	133	14.5	1		EST	KUG	1	
KBG	K-6	920723	6	L1	174550	69	32.7	133	10.2	1		EST	KUG	1	
KBG	K-6	920723	6	L1	174553	69	32.7	133	10.0	1		EST	KUG	1	
KBG	K-6	920723	6	L1	174635	69	32.7	133	6.7	1		EST	KUG	1	
KBG	K-6	920723	5	R1	174717	69	32.7	133	3.5	1		EST	KUG	1	BIG GRAY
KBG	K-6	920723	6	L1	174719	69	32.7	133	3.3	1		EST	KUG	1	
KBG	K-6	920723	6	L1	174725	69	32.7	133	2.9	1		EST	KUG	1	
IOK	WM-1	920723	9	L1	162030	69	14.8	136	27.2	1	OUTER	EST	WM	1	
IOK	WM-1	920723	3	R1	162040	69	14.8	136	28.1	1	MID	EST	WM	1	NE, DARK
IOK	WM-2	920723	3	R1	162505	69	17.3	136	25.5	2	INNER	EST	WM	1	1 GRAY
IOK	WM-2	920723	3	R1	162506	69	17.3	136	25.4	1	MID	EST	WM	1	
IOK	WM-2	920723	3	R1	162520	69	17.3	136	24.4	1	MID	EST	WM	1	E
IOK	WM-2	920723	7	L2	162525	69	17.3	136	24.0	2	OUTER	EST	WM	1	
IOK	WM-2	920723	9	L1	162525	69	17.3	136	24.0	3	40	EST	WM	1	
IOK	WM-2	920723	3	R1	162531	69	17.3	136	23.5	1	MID	EST	WM	1	
IOK	WM-2	920723	7	L2	162605	69	17.3	136	21.0	1	OUTER	EST	WM	1	
IOK	WM-2	920723	9	L1	162614	69	17.3	136	20.3	1	MID	EST	WM	1	
IOK	WM-2	920723	9	L1	162615	69	17.3	136	20.2	5		EST	WM	1	
IOK	WM-2	920723	3	R1	162620	69	17.3	136	19.8	1	INNER	EST	WM	1	DIVING
IOK	WM-2	920723	7	L2	162625	69	17.3	136	19.4	1		EST	WM	1	
IOK	WM-2	920723	7	L2	162630	69	17.3	136	19.1	1		EST	WM	1	
IOK	WM-2	920723	7	L2	162650	69	17.3	136	17.5	3	OUTER	EST	WM	1	
IOK	WM-3	920723	3	L1	164425	69	19.9	136	11.5	1	MID	EST	WM	1	

Con't

Table 3. Continued

Air Craft	Trans. #	Date	Obs. Code	Seat Posn	Time	N.	Lat	W.	Long	No. beluga	Trans. Posn	Strata	Sub-area	Data Code	Comments
IOK	WM-3	920723	7	L2	164425	69	19.9	136	11.5	2		EST	WM	1	
IOK	WM-3	920723	3	L1	164425	69	19.9	136	11.5	2	MID	EST	WM	1	ONE AT SURF
IOK	WM-3	920723	9	R1	164434	69	19.9	136	12.3	10		EST	WM	1	
IOK	WM-3	920723	7	L2	164436	69	19.9	136	12.5	2		EST	WM	1	
IOK	WM-3	920723	3	L1	164445	69	19.9	136	13.3	1	INNER	EST	WM	1	
IOK	WM-3	920723	3	L1	164447	69	19.9	136	13.4	1	OUTER	EST	WM	1	
IOK	WM-3	920723	3	L1	164450	69	19.9	136	13.7	1	MID	EST	WM	1	
IOK	WM-3	920723	9	R1	164450	69	19.9	136	13.7	4		EST	WM	1	
IOK	WM-3	920723	3	L1	164454	69	19.9	136	14.0	1	INNER	EST	WM	1	
IOK	WM-3	920723	3	L1	164457	69	19.9	136	14.3	1	INNER	EST	WM	1	
IOK	WM-3	920723	7	L2	164458	69	19.9	136	14.4	3		EST	WM	1	
IOK	WM-3	920723	3	L1	164500	69	19.9	136	14.6	1	MID	EST	WM	1	
IOK	WM-3	920723	3	L1	164504	69	19.9	136	14.9	1	OUTER	EST	WM	1	
IOK	WM-3	920723	7	L2	164504	69	19.9	136	14.9	1		EST	WM	1	
IOK	WM-3	920723	9	R1	164504	69	19.9	136	14.9	1		EST	WM	1	
IOK	WM-4	920723	7	L2	165612	69	22.4	136	6.9	3		EST	WM	1	
IOK	WM-4	920723	3	L1	165613	69	22.4	136	6.8	3	MID	EST	WM	1	1 GRAY
IOK	WM-4	920723	3	L1	165614	69	22.4	136	6.7	1	OUTER	EST	WM	1	
IOK	WM-4	920723	9	R1	165630	69	22.4	136	5.5	3	81	EST	WM	1	
IOK	WM-4	920723	3	L1	165632	69	22.4	136	5.3	1	INNER	EST	WM	1	
IOK	WM-4	920723	7	L2	165632	69	22.4	136	5.3	1	OUTER	EST	WM	1	
IOK	WM-4	920723	3	L1	165633	69	22.4	136	5.2	1	MID	EST	WM	1	
IOK	WM-4	920723	3	L1	165638	69	22.4	136	4.8	1	OUTER	EST	WM	1	
IOK	WM-4	920723	7	L2	165656	69	22.4	136	3.4	2		EST	WM	1	
IOK	WM-4	920723	3	L1	165658	69	22.4	136	3.3	1	MID	EST	WM	1	
IOK	WM-4	920723	3	L1	165700	69	22.4	136	3.1	1	MID	EST	WM	1	
IOK	WM-4	920723	9	R1	165700	69	22.4	136	3.1	5		EST	WM	1	
IOK	WM-4	920723	7	L2	165710	69	22.4	136	2.3	1		EST	WM	1	
IOK	WM-5	920723	3	R1	171000	69	25.0	135	47.7	1	OUTER	EST	WM	1	NW
IOK	WM-5	920723	3	R1	171050	69	25.0	135	50.6	1	OUTER	EST	WM	1	
IOK	WM-5	920723	3	R1	171050	69	25.0	135	50.6	1	OUTER	EST	WM	1	
IOK	WM-5	920723	3	R1	171052	69	25.0	135	50.7	1	MID	EST	WM	1	W, DIVING
IOK	WM-5	920723	3	R1	171111	69	25.0	135	51.8	1	OUTER	EST	WM	1	
IOK	WM-5	920723	3	R1	171111	69	25.0	135	51.8	1	OUTER	EST	WM	1	
IOK	WM-5	920723	3	R1	171111	69	25.0	135	51.8	1	MID	EST	WM	1	
IOK	WM-5	920723	7	L2	171740	69	25.0	136	14.1	1		EST	WM	1	
IOK	WM-6	920723	3	R1	173520	69	27.6	135	58.3	1	OUTER	EST	WM	1	N
IOK	WM-6	920723	3	R1	173535	69	27.6	135	57.1	1	MID	EST	WM	1	N
IOK	WM-6	920723	9	L1	173625	69	27.6	135	53.1	14		EST	WM	1	
IOK	WM-6	920723	7	L2	173629	69	27.6	135	52.8	3		EST	WM	1	
IOK	WM-6	920723	3	R1	173632	69	27.6	135	52.5	1	MID	EST	WM	1	E
IOK	WM-6	920723	3	R1	173634	69	27.6	135	52.4	1	OUTER	EST	WM	1	W
IOK	WM-6	920723	3	R1	173635	69	27.6	135	52.3	1	OUTER	EST	WM	1	GRAY
IOK	WM-6	920723	7	L2	173636	69	27.6	135	52.2	2		EST	WM	1	
IOK	WM-6	920723	3	R1	173639	69	27.6	135	52.0	1	OUTER	EST	WM	1	

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Table 3. Continue

Air Craft	Trans. #	Date	Obs. Code	Seat Posn	Time	N.	Lat	W.	Long	No. beluga	Trans. Posn	Strata	Sub-area	Data Code	Comments
IOK	WM-6	920723	3	R1	173642	69	27.6	135	51.7	1	OUTER	EST	WM	1	
IOK	WM-6	920723	3	R1	173645	69	27.6	135	51.5	1	MID	EST	WM	1	
IOK	WM-6	920723	9	L1	173646	69	27.6	135	51.4	1		EST	WM	1	
IOK	WM-6	920723	7	L2	173647	69	27.6	135	51.3	2		EST	WM	1	
IOK	WM-6	920723	3	R1	173648	69	27.6	135	51.2	1	INNER	EST	WM	1	
IOK	WM-6	920723	3	R1	173653	69	27.6	135	50.8	1	MID	EST	WM	1	
IOK	WM-6	920723	3	R1	173653	69	27.6	135	50.8	1	MID	EST	WM	1	
IOK	WM-6	920723	3	R1	173659	69	27.6	135	50.4	2	OUTER	EST	WM	1	DIVING
IOK	WM-6	920723	7	L2	173701	69	27.6	135	50.2	1		EST	WM	1	
IOK	WM-6	920723	3	R1	173703	69	27.6	135	50.0	1	OUTER	EST	WM	1	
IOK	N-8	920723	3	R1	141700	69	3.0	136	55.0	1	OUTER	EST	NIAK	1	N
IOK	N-8	920723	7	L2						1	OUTER	EST	NIAK	1	
IOK	N-8	920723	9	L1	141719	69	3.0	136	55.0	3		EST	NIAK	1	
IOK	N-8	920723	7	L2	141739	69	3.4	136	54.0	1	OUTER	EST	NIAK	1	
IOK	N-8	920723	9	L1	141750	69	3.6	136	52.5	2		EST	NIAK	1	NE
IOK	N-8	920723	7	L2	141753	69	3.6	136	52.5	1		EST	NIAK	1	
IOK	N-8	920723	9	L1	141918	69	4.5	136	48.5	1		EST	NIAK	1	
IOK	N-8	920723	7	L2	141919	69	4.5	136	48.5	1	OUTER	EST	NIAK	1	
IOK	N-8	920723	9	L1	141930	69	5.0	136	47.0	1	81	EST	NIAK	1	
IOK	N-8	920723	7	L2	141933	69	5.0	136	47.0	1	INNER	EST	NIAK	1	
IOK	N-8	920723	3	R1	141952	69	5.0	136	47.0	2	MID	EST	NIAK	1	
IOK	N-8	920723	3	R1	141954	69	5.0	136	47.0	1	OUTER	EST	NIAK	1	
IOK	N-8	920723	3	R1	142007	69	5.2	136	45.8	1	OUTER	EST	NIAK	1	SE
IOK	N-8	920723	7	L2	142020	69	5.2	136	45.8	3	INNER	EST	NIAK	1	
IOK	N-8	920723	3	R1	142030	69	5.6	136	44.6	1	INNER	EST	NIAK	1	E
IOK	N-8	920723	9	L1	142030	69	5.6	136	44.6	1		EST	NIAK	1	NE
IOK	N-8	920723	7	L2	142039	69	5.6	136	44.6	1	OUTER	EST	NIAK	1	
IOK	N-8	920723	9	L1	142040	69	5.6	136	44.6	1	35	EST	NIAK	1	
IOK	N-8	920723	3	R1	142100	69	6.0	136	43.0	2	MID	EST	NIAK	1	ONE DOVE
IOK	N-8	920723	9	L1	142110	69	6.0	136	43.0	5	40	EST	NIAK	1	
IOK	N-8	920723	7	L2	142111	69	6.0	136	43.0	3	OUTER	EST	NIAK	1	
IOK	N-8	920723	3	R1	142120	69	6.0	136	43.0	1	INNER	EST	NIAK	1	
IOK	N-8	920723	9	L1	142130	69	6.2	136	41.6	3		EST	NIAK	1	
IOK	N-8	920723	7	L2	142134	69	6.2	136	41.6	1	INNER	EST	NIAK	1	
IOK	N-8	920723	7	L2	142134	69	6.2	136	41.6	1	OUTER	EST	NIAK	1	
IOK	N-8	920723	7	L2	142151	69	6.6	136	40.2	2	OUTER	EST	NIAK	1	
IOK	N-8	920723	3	R1	142159	69	6.6	136	40.2	10	INNER	EST	NIAK	1	AT SURF
IOK	N-8	920723	9	L1	142203	69	6.9	136	39.0	12	81	EST	NIAK	1	
IOK	N-8	920723	3	R1	142209	69	6.9	136	39.0	1	INNER	EST	NIAK	1	
IOK	N-8	920723	9	L1	142213	69	6.9	136	39.0	6	MID	EST	NIAK	1	
IOK	N-8	920723	7	L2	142214	69	6.9	136	39.0	11	INNER	EST	NIAK	1	
IOK	N-8	920723	3	R1	142217	69	6.9	136	39.0	1	OUTER	EST	NIAK	1	
IOK	N-8	920723	3	R1	142217	69	6.9	136	39.0	1	MID	EST	NIAK	1	
IOK	N-8	920723	9	L1	142220	69	7.2	136	37.6	2	OUTER	EST	NIAK	1	
IOK	N-8	920723	7	L2	142229	69	7.2	136	37.6	2	OUTER	EST	NIAK	1	

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Table 3. Continued

Air Craft	Trans. #	Date	Obs. Code	Seat Posn	Time	N.	Lat	W.	Long	No. beluga	Trans. Posn	Strata	Sub-area	Data Code	Comments
IOK	N-8	920723	9	L1	142420	69	9.1	136	31.0	2	35	EST	NIAK	1	
IOK	N-9	920723	7	L2	143103	69	11.5	136	29.0	1	INNER	EST	NIAK	1	
IOK	N-9	920723	3	L1	143142	69	11.0	136	31.2	1	INNER	EST	NIAK	1	DIVING
IOK	N-9	920723	9	R1	143207	69	10.7	136	33.0	1	35	EST	NIAK	1	
IOK	N-9	920723	7	L2	143211	69	10.3	136	34.0	1		EST	NIAK	1	
IOK	N-9	920723	9	R1	143220	69	10.1	136	35.0	3		EST	NIAK	1	
IOK	N-9	920723	9	R1	143250	69	9.8	136	37.0	3		EST	NIAK	1	
IOK	N-9	920723	3	L1	143254	69	9.8	136	37.0	1	MID	EST	NIAK	1	NE
IOK	N-9	920723	9	R1	143302	69	9.3	136	38.2	1		EST	NIAK	1	
IOK	N-9	920723	7	L2	143309	69	9.3	136	38.2	1	INNER	EST	NIAK	1	
IOK	N-9	920723	3	L1	143315	69	9.3	136	38.2	1	MID	EST	NIAK	1	
IOK	N-9	920723	3	L1	143340	69	9.0	136	39.5	1	MID	EST	NIAK	1	SE
IOK	N-9	920723	9	R1	143342	69	8.8	136	41.0	1		EST	NIAK	1	
IOK	N-9	920723	3	L1	143358	69	8.8	136	41.0	1	INNER	EST	NIAK	1	
IOK	N-9	920723	3	L1	143358	69	8.8	136	41.0	2	INNER	EST	NIAK	1	
IOK	N-9	920723	7	L2	143402	69	8.3	136	42.0	2	INNER	EST	NIAK	1	
IOK	N-9	920723	9	R1	143416	69	8.3	136	42.0	1	40	EST	NIAK	1	
IOK	N-9	920723	9	R1	143426	69	7.9	136	43.3	1	40	EST	NIAK	1	
IOK	N-9	920723	9	R1	143453	69	7.6	136	44.9	3		EST	NIAK	1	
IOK	N-9	920723	9	R1	143510	69	7.1	136	46.0	1		EST	NIAK	1	GRAY
IOK	N-9	920723	7	L2						1	INNER	EST	NIAK	1	
IOK	N-9	920723	7	L2	143718	69	5.4	136	54.5	2		EST	NIAK	1	
IOK	N-9	920723	9	R1	143734	69	5.1	136	56.0	1	MID	EST	NIAK	1	

Table 4. Beluga whale sightings made on 24-25 July 1992 in the Beaufort Sea and Amundsen Gulf

Air craft	Trans #	Date	Obs. Code	Seat Posn	Time	N. Lat.		W. Long.		No. beluga	Degree Horiz.	Strata	Sub-area	Data Code	Comments
KBG	7	920724	10	L2	141840	70	4.7	137	30	1	60	OFF	WB	7	
KBG	8	920724	1	R2	1434??	70	6.4	137	0	1		OFF	WB	3,7,8	
KBG	8	920724	5	R1	143457	70	7.0	137	0	1	21	OFF	WB	1	NW
KBG	8	920724	6	L1	143500	70	7.0	137	0	1	24	OFF	WB	1	
KBG	8	920724	6	L1	143500	70	7.0	137	0	1	32	OFF	WB	1	
KBG	8	920724	5	R1	143548	70	8.1	137	0	2	74	OFF	WB	1	COW/CALF
KBG	8	920724	6	L1	143930	70	13.0	137	0	1		OFF	WB	1	
KBG	8	920724	1	R2	1440??	70	14.3	137	0	1		OFF	WB	3,7,8	
KBG	8	920724	10	L2	170906	69	10.9	137	0	1	40	OFF	WB	7	
KBG	8	920724	6	L1	170909	69	11.0	137	0	1	23	OFF	WB	1	
KBG	8	920724	6	L1	171149	69	15.3	137	0	1	24	OFF	WB	1	
KBG	8	920724	10	L2	171230	69	16.4	137	0	1	20	OFF	WB	7	
KBG	8	920724	6	L1	171235	69	16.6	137	0	1	21	OFF	WB	1	
KBG	8	920724	6	L1	171240	69	16.7	137	0	1	30	OFF	WB	1	
KBG	8	920724	10	L2	171300	69	17.3	137	0	1	20	OFF	WB	7	
KBG	8	920724	6	L1	171330	69	18.1	137	0	1	30	OFF	WB	1	
KBG	8	920724	5	R1	171330	69	18.1	137	0	1	39	OFF	WB	1	S
KBG	8	920724	10	L2	171345	69	18.5	137	0	1	45	OFF	WB	7	
KBG	8	920724	6	L1	171408	69	19.1	137	0	1	45	OFF	WB	1	
KBG	8	920724	6	L1	171430	69	19.7	137	0	1	20	OFF	WB	1	
KBG	8	920724	10	L2	171430	69	19.7	137	0	1	80	OFF	WB	7	
KBG	8	920724	6	L1	172005	69	28.8	137	0	2	50	OFF	WB	1	COW/CALF
KBG	8	920724	10	L2	172308	69	33.7	137	0	1	40	OFF	WB	7	
KBG	8	920724	6	L1	172320	69	34.0	137	0	2	50	OFF	WB	1	COW/CALF
KBG	8	920724	10	L2	172320	69	34.0	137	0	1	27	OFF	WB	7	
KBG	8	920724	6	L1	172623	69	39.0	137	0	3	17	OFF	WB	1	
KBG	8	920724	5	R1	172724	69	40.6	137	0	2	75	OFF	WB	1	
KBG	8	920724	1	R2	1728??	69	42.4	137	0	1		OFF	WB	3,7,8	
KBG	8	920724	10	L2	172814	69	42.0	137	0	1	42	OFF	WB	7	
KBG	8	920724	6	L1	172825	69	42.3	137	0	1	60	OFF	WB	1	
KBG	8	920724	5	R1	172846	69	42.9	137	0	1	47	OFF	WB	1	
KBG	8	920724	5	R1	172846	69	42.9	137	0	1	47	OFF	WB	1	
KBG	8	920724	5	R1	172846	69	42.9	137	0	1	47	OFF	WB	1	
KBG	8	920724	1	R2	1729??	69	44.0	137	0	1		OFF	WB	3,7,8	
KBG	8	920724	5	R1	172903	69	43.3	137	0	1	71	OFF	WB	1	
KBG	8	920724	5	R1	172903	69	43.7	137	0	1	40	OFF	WB	1	
KBG	8	920724	5	R1	172903	69	43.5	137	0	1	40	OFF	WB	1	
KBG	8	920724	5	R1	172925	69	43.9	137	0	1	24	OFF	WB	1	
KBG	8	920724	6	L1	173122	69	47.1	137	0	1	28	OFF	WB	1	
KBG	9	920724	5	R1	151540	70	1.7	136	30	1	38	OFF	WB	1	
KBG	9	920724	6	L1	152045	69	53.2	136	30	1	22	OFF	WB	1	
KBG	9	920724	5	R1	152117	69	52.3	136	30	2	55	OFF	WB	1	COW/ NEONATE
KBG	9	920724	1	R2	1524??	69	46.9	136	30	1		OFF	WB	3,7,8	

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Table 4. Continued

Air Craft	Trans #	Date	Obs. Code	Seat Posn	Time	N.	Lat.	W.	Long	No. beluga	Degree Horiz.	Strata	Sub-area	Data Code	Comments
KBG	9	920724	5	R1	152414	69	47.3	136	30	1	32	OFF	WB	1	NE
KBG	9	920724	10	L2	152501	69	46.0	136	30	1	50	OFF	WB	7	
KBG	9	920724	6	L1	152520	69	45.4	136	30	1	33	OFF	WB	1	
KBG	9	920724	6	L1	152551	69	44.6	136	30	2	35	OFF	WB	1	
KBG	9	920724	6	L1	152610	69	44.0	136	30	1	26	OFF	WB	1	
KBG	9	920724	6	L1	152610	69	44.0	136	30	1	19	OFF	WB	1	
KBG	9	920724	10	L2	152614	69	43.9	136	30	1	50	OFF	WB	7	
KBG	9	920724	5	R1	152658	69	42.7	136	30	1	39	OFF	WB	1	S
KBG	9	920724	10	L2	152825	69	40.3	136	30	1	60	OFF	WB	7	
KBG	9	920724	1	R2	1529??	69	38.4	136	30	2		OFF	WB	3,7,8	
KBG	9	920724	6	L1	152918	69	38.8	136	30	1	30	OFF	WB	1	
KBG	9	920724	5	R1	152921	69	38.7	136	30	2	43	OFF	WB	1	
KBG	9	920724	10	L2	153020	69	37.0	136	30	1	70	OFF	WB	7	
KBG	9	920724	6	L1	153026	69	36.9	136	30	1	75	OFF	WB	1	
KBG	9	920724	5	R1	153039	69	36.5	136	30	1	80	OFF	WB	1	SPLASHING
KBG	9	920724	6	L1	153045	69	36.3	136	30	1	28	OFF	WB	1	
KBG	9	920724	10	L2	153050	69	36.2	136	30	1	27	OFF	WB	7	
KBG	9	920724	6	L1	153058	69	36.0	136	30	1	19	OFF	WB	1	
KBG	9	920724	1	R2	1531??	69	35.1	136	30	5		OFF	WB	3,7,8	
KBG	9	920724	6	L1	153108	69	35.7	136	30	1		OFF	WB	1	
KBG	9	920724	6	L1	153123	69	35.3	136	30	3	40	OFF	WB	1	
KBG	9	920724	10	L2	153125	69	35.2	136	30	2	37	OFF	WB	7	
KBG	9	920724	6	L1	153132	69	35.0	136	30	1	30	OFF	WB	1	
KBG	9	920724	5	R1	153139	69	34.7	136	30	1	48	OFF	WB	1	
KBG	9	920724	5	R1	153139	69	34.6	136	30	2	48	OFF	WB	1	COW/CALF
KBG	9	920724	5	R1	153139	69	34.8	136	30	2	48	OFF	WB	1	COW/CALF
KBG	9	920724	5	R1	153151	69	34.5	136	30	2	40	OFF	WB	1	COW/CALF
KBG	9	920724	6	L1	153207	69	34.0	136	30	2	37	OFF	WB	1	
KBG	9	920724	5	R1	153208	69	34.1	136	30	1	24	OFF	WB	1	
KBG	9	920724	5	R1	153208	69	34.1	136	30	1		OFF	WB	1	
KBG	9	920724	6	L1	153210	69	34.0	136	30	1	60	OFF	WB	1	
KBG	9	920724	6	L1	153229	69	33.4	136	30	1	65	OFF	WB	1	
KBG	9	920724	10	L2	153229	69	33.7	136	30	1	55	OFF	WB	7	
KBG	9	920724	10	L2	153229	69	33.4	136	30	1	55	OFF	WB	7	
KBG	9	920724	5	R1	153235	69	33.3	136	30	1	26	OFF	WB	1	
KBG	9	920724	6	L1	153250	69	32.8	136	30	1	19	OFF	WB	1	
KBG	9	920724	1	R2	1533??	69	31.6	136	30	1		OFF	WB	3,7,8	
KBG	9	920724	6	L1	153300	69	32.6	136	30	1	30	OFF	WB	1	
KBG	9	920724	10	L2	153319	69	31.0	136	30	1	27	OFF	WB	7	
KBG	9	920724	10	L2	153319	69	32.0	136	30	1	27	OFF	WB	7	
KBG	9	920724	6	L1	153328	69	31.8	136	30	1	19	OFF	WB	1	
KBG	9	920724	5	R1	153333	69	31.6	136	30	2		OFF	WB	1	
KBG	9	920724	5	R1	153333	69	31.6	136	30	1		OFF	WB	1	
KBG	9	920724	5	R1	153333	69	31.6	136	30	1		OFF	WB	1	

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Table 4. Continued

Air Craft	Trans #	Date	Obs. Code	Seat Posn	Time	N.	Lat.	W.	Long	No. beluga	Degree Horiz.	Strata	Sub-area	Data Code	Comments
KBG	9	920724	6	L1	153445	69	29.6	136	30	1	48	OFF	WB	1	GRAY
KBG	9	920724	1	R2	1535??	69	28.5	136	30	2		OFF	WB	3,7,8	
KBG	9	920724	5	R1	153535	69	28.5	136	30	2	52	OFF	WB	1	BOTH GRAY, S
KBG	10	920724	5	R1	175523	69	41.0	136	0	1	57	OFF	WB	1	
KBG	10	920724	6	L1	175650	69	44.3	136	0	2	17	OFF	WB	1	
KBG	10	920724	6	L1	180448	70	2.0	136	0	1	60	OFF	WB	1	GRAY
KBG	10	920724	5	R1	180455	70	2.3	136	0	1		OFF	WB	6	
KBG	10	920724	6	L1	181243	70	19.7	136	0	1	75	OFF	WB	1	
KBG	10	920724	6	L1	181445	70	24.2	136	0	1	70	OFF	WB	1	GRAY
KBG	11	920724	10	L2	183211	70	20.0	135	30	1	60	OFF	WB	7	
KBG	11	920724	5	L1	183224	70	19.7	135	30	1	47	OFF	WB	1	
KBG	11	920724	6	R1	183530	70	14.5	135	30	1	38	OFF	WB	11	GRAY
KBG	11	920724	5	L1	183544	70	14.1	135	30	2	40	OFF	WB	1	COW/CALF
KBG	11	920724	5	L1	183715	70	11.6	135	30	1	57	OFF	WB	1	
KBG	11	920724	6	R1	183716	70	11.5	135	30	1	75	OFF	WB	11	GRAY
KBG	11	920724	5	L1	183721	70	11.4	135	30	1	52	OFF	WB	1	
KBG	11	920724	10	L2	183735	70	11.0	135	30	1	52	OFF	WB	7	
KBG	11	920724	6	R1	184100	70	5.3	135	30	1	81	OFF	WB	11	
KBG	11	920724	5	L1	184108	70	5.1	135	30	1	83	OFF	WB	1	
KBG	11	920724	10	L2	184139	70	4.2	135	30	1	60	OFF	WB	7	
KBG	11	920724	5	L1	184201	70	3.6	135	30	1	47	OFF	WB	1	
KBG	11	920724	5	L1	184236	70	2.7	135	30	1	33	OFF	WB	1	
KBG	11	920724	5	L1	185152	69	47.2	135	30	1	34	OFF	WB	1	DOVE
IOK	13	920724	7	L2	??????	70	12.6	134	30	1		OFF	WB	5	
IOK	13	920724	9	L1	163900	69	41.0	134	30	1	21	OFF	MB	1	
IOK	13	920724	7	L2	163927	69	41.3	134	30	1	22	OFF	MB	5	
IOK	13	920724	7	L2	164618	69	53.5	134	30	7	75	OFF	MB	5	
IOK	13	920724	3	R1	165035	70	1.8	134	30	2	57	OFF	MB	1	E, COW/CALF
IOK	13	920724	3	R1	165340	70	7.3	134	30	1	65	OFF	MB	1	W
IOK	13	920724	3	R1	165416	70	8.4	134	30	1	42	OFF	MB	1	N
IOK	13	920724	9	L1	165650	70	13.0	134	30	1	56	OFF	MB	1	
IOK	15	920724	7	L2	172654	70	19.9	133	30	2	7	OFF	MB	5	GRAY
IOK	15	920724	7	L2	172929	70	15.7	133	30	1	70	OFF	MB	5	
IOK	15	920724	9	L1	173423	70	7.2	133	30	1	35	OFF	MB	1	
IOK	15	920724	3	R1	173839	70	0.3	133	30	1	39	OFF	MB	1	S
IOK	15	920724	3	R1	173910	69	59.4	133	30	1	61	OFF	MB	1	SW
IOK	15	920724	9	L1	174554	69	48.5	133	30	5	39	OFF	MB	1	TIGHT GROUP
IOK	15	920724	3	R1	175618	69	31.6	133	30	1	31	EST	KUG	10	
IOK	15	920724	3	R1	175730	69	29.6	133	30	2	28	EST	KUG	10	
IOK	15	920724	3	R1	175745	69	29.2	133	30	1	29	EST	KUG	10	
IOK	15	920724	3	R1	175748	69	29.1	133	30	1	30	EST	KUG	10	

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Table 4. Continued

Air Craft	Trans #	Date	Obs. Code	Seat Posn	Time	N.	Lat.	W.	Long	No. beluga	Degree Horiz.	Strata	Sub-area	Data Code	Comments
IOK	15	920724	3	R1	175753	69	29.0	133	30	1	24	EST	KUG	10	
IOK	15	920724	3	R1	175759	69	28.8	133	30	1	25	EST	KUG	10	
IOK	15	920724	3	R1	175804	69	28.7	133	30	1	31	EST	KUG	10	
IOK	15	920724	3	R1	175809	69	28.6	133	30	1	33	EST	KUG	10	
IOK	15	920724	3	R1	175814	69	28.4	133	30	1	28	EST	KUG	10	
IOK	15	920724	7	L2	175818	69	28.3	133	30	1	62	EST	KUG	5,10	
IOK	15	920724	3	R1	175820	69	28.3	133	30	1	31	EST	KUG	10	
IOK	15	920724	9	L1	175905	69	27.0	133	30	1	58	EST	KUG	10	
IOK	15	920724	3	R1	175910	69	26.9	133	30	1	59	EST	KUG	10	
IOK	15	920724	9	L1	175927	69	26.4	133	30	1	55	EST	KUG	10	
IOK	15	920724	9	L1	180105	69	23.8	133	30	7	47	EST	KUG	10	
IOK	17	920724	3	L1	181839	69	44.6	132	30	3	43	OFF	MB	1	
IOK	17	920724	9	R1	182511	69	56.9	132	30	3	45	OFF	MB	1	
IOK	17	920724	3	L1	182925	70	4.9	132	30	1	48	OFF	MB	1	S
IOK	17	920724	7	L2	182946	70	5.0	132	30	1	46	OFF	MB	5	S
IOK	18	920724	3	L1	185600	70	29.4	132	0	1	34	OFF	MB	1	NE
IOK	18	920724	7	L2	185619	70	29.4	132	0	1	35	OFF	MB	5	
IOK	18	920724	3	L1	185940	70	23.3	132	0	3	41	OFF	MB	1	SE
IOK	18	920724	7	L2	190003	70	23.1	132	0	5	43	OFF	MB	5	
IOK	18	920724	7	L2	191715	69	53.4	132	0	1	35	OFF	MB	5	S
IOK	18	920724	3	L1	191720	69	53.6	132	0	1	36	OFF	MB	1	SE
IOK	18	920724	9	R1	192115	69	47.0	132	0	7	71	OFF	MB	1	
SJB	21	920724	8	L2	1353??	70	10.4	130	30	8	53	OFF	EB	2,3,4	
SJB	21	920724	8	L2	1354??	70	12.2	130	30	2	39	OFF	EB	2,3,4	
SJB	21	920724	8	L2	1354??	70	12.2	130	30	5	55	OFF	EB	2,3,4	
SJB	21	920724	4	R1	1355??	70	10.4	130	30	1	33	OFF	EB	3	
SJB	21	920724	2	L1	135548	70	10.9	130	30	1	35	OFF	EB	1	W
SJB	21	920724	2	L1	135548	70	10.9	130	30	1	65	OFF	EB	1	W
SJB	21	920724	2	L1	135548	70	10.9	130	30	1	23	OFF	EB	1	W
SJB	21	920724	2	L1	135548	70	10.9	130	30	1	45	OFF	EB	1	W
SJB	21	920724	2	L1	135548	70	10.9	130	30	1	50	OFF	EB	1	W
SJB	21	920724	2	L1	135548	70	10.9	130	30	1	40	OFF	EB	1	W
SJB	21	920724	2	L1	135548	70	10.9	130	30	1	50	OFF	EB	1	W
SJB	21	920724	2	L1	135548	70	10.9	130	30	12	70	OFF	EB	1	W
SJB	21	920724	2	L1	135548	70	10.9	130	30	4	35	OFF	EB	1	W
SJB	21	920724	4	R1	1357??	70	14.0	130	30	1	26	OFF	EB	3	SW
SJB	21	920724	4	R1	1408??	70	34.1	130	30	2	66	OFF	EB	3	S, COW/CALF
SJB	21	920724	4	R1	1408??	70	34.1	130	30	1	72	OFF	EB	3	S
SJB	21	920724	8	L2	1413??	70	46.9	130	30	3	56	OFF	EB	2,3,4	1 GRAY
SJB	21	920724	8	L2	1413??	70	46.9	130	30	1	45	OFF	EB	2,3,4	
SJB	21	920724	8	L2	1413??	70	46.9	130	30	1	27	OFF	EB	2,3,4	
SJB	21	920724	8	L2	1414??	70	48.7	130	30	2	42	OFF	EB	2,3,4	
SJB	21	920724	8	L2	1414??	70	48.7	130	30	3	31	OFF	EB	2,3,4	1 GRAY

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Table 4. Continued

Air Craft	Trans #	Date	Obs. Code	Seat Posn	Time	N.	Lat.	W.	Long	No. beluga	Degree Horiz.	Strata	Sub-area	Data Code	Comments
SJB	21	920724	4	R1	1415??	70	46.9	130	30	2		OFF	EB	3	
SJB	21	920724	2	L1	141550	70	47.5	130	30	1	50	OFF	EB	1	E
SJB	21	920724	2	L1	141550	70	47.5	130	30	1	80	OFF	EB	1	E
SJB	21	920724	2	L1	141604	70	47.9	130	30	1	50	OFF	EB	1	NE
SJB	21	920724	2	L1	141604	70	47.9	130	30	1	28	OFF	EB	1	NE
SJB	21	920724	2	L1	141604	70	47.9	130	30	1	42	OFF	EB	1	NE
SJB	21	920724	2	L1	141635	70	48.8	130	30	1	30	OFF	EB	1	NE
SJB	21	920724	2	L1	141635	70	48.8	130	30	1	47	OFF	EB	1	NE
SJB	21	920724	8	L2	1417??	70	54.2	130	30	1	39	OFF	EB	2,3,4	
SJB	21	920724	4	R1	1417??	70	50.5	130	30	1	46	OFF	EB	3	NE, SMALL
SJB	21	920724	4	R1	1418??	70	52.3	130	30	1	58	OFF	EB	3	NE
SJB	21	920724	4	R1	1427??	71	8.8	130	30	1	60	OFF	EB	3	
SJB	23	920724	8	L2	1445??	70	59.3	129	30	3	31	OFF	EB	2,3,4	1 GRAY
SJB	23	920724	8	L2	1446??	70	57.6	129	30	5	17	OFF	EB	2,3,4	1 GRAY
SJB	23	920724	4	R1	1447??	70	59.3	129	30	3	64	OFF	EB	3	NE, COW/CALF
SJB	23	920724	2	L1	144750	70	58.7	129	30	2	22	OFF	EB	1	NE, 1 BIG GRAY
SJB	23	920724	2	L1	144750	70	58.7	129	30	1	45	OFF	EB	1	NE
SJB	23	920724	2	L1	144750	70	58.7	129	30	1	50	OFF	EB	1	NE
SJB	23	920724	2	L1	144750	70	58.7	129	30	1	33	OFF	EB	1	NE
SJB	23	920724	2	L1	144750	70	58.7	129	30	1	52	OFF	EB	1	NE
SJB	23	920724	8	L2	1451??	70	49.0	129	30	8	17	OFF	EB	2,3,4	
SJB	23	920724	8	L2	1451??	70	49.0	129	30	3	39	OFF	EB	2,3,4	1 GRAY
SJB	23	920724	8	L2	1452??	70	47.3	129	30	2	22	OFF	EB	2,3,4	1 GRAY
SJB	23	920724	8	L2	1453??	70	45.6	129	30	2	55	OFF	EB	2,3,4	
SJB	23	920724	2	L1	145315	70	49.5	129	30	1	58	OFF	EB	1	NE
SJB	23	920724	2	L1	145315	70	49.5	129	30	2	70	OFF	EB	1	1 BIG GRAY
SJB	23	920724	2	L1	145315	70	49.5	129	30	2		OFF	EB	1	
SJB	23	920724	2	L1	145315	70	49.5	129	30	1	32	OFF	EB	1	
SJB	23	920724	8	L2	1454??	70	43.9	129	30	1	35	OFF	EB	2,3,4	
SJB	23	920724	4	R1	1454??	70	47.3	129	30	2		OFF	EB	3	
SJB	23	920724	4	R1	1456??	70	43.9	129	30	2	74	OFF	EB	3	COW/CALF
SJB	23	920724	4	R1	1457??	70	42.2	129	30	1	38	OFF	EB	3	NE
SJB	23	920724	4	R1	1500??	70	37.0	129	30	6	42	OFF	EB	3	NE
SJB	25	920724	2	R1	162445	70	11.8	128	30	3	75	OFF	EB	1	S
SJB	25	920724	2	R1	162445	70	11.8	128	30	1	17	OFF	EB	1	S
SJB	25	920724	4	L1	1629??	70	20.4	128	30	1	25	OFF	EB	3	E
SJB	25	920724	8	L2	1630??	70	25.8	128	30	6	45	OFF	EB	2,3,4	2 GRAY
SJB	25	920724	8	L2	1630??	70	25.8	128	30	2	49	OFF	EB	2,3,4	1 GRAY
SJB	25	920724	8	L2	1631??	70	27.6	128	30	6	31	OFF	EB	2,3,4	2 GRAY
SJB	25	920724	8	L2	1631??	70	27.6	128	30	3	35	OFF	EB	2,3,4	1 GRAY

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Table 4. Continued

Air Craft	Trans #	Date	Obs. Code	Seat Posn	Time	N.	Lat.	W.	Long	No. beluga	Degree Horiz.	Strata	Sub-area	Data Code	Comments
SJB	25	920724	8	L2	1631??	70	27.6	128	30	3	56	OFF	EB	2,3,4	1 GRAY
SJB	25	920724	4	L1	1632??	70	25.8	128	30	2	51	OFF	EB	3	S, COW/CALF
SJB	25	920724	4	L1	1632??	70	25.8	128	30	2	69	OFF	EB	3	S, COW/CALF
SJB	25	920724	4	L1	1632??	70	25.8	128	30	1	47	OFF	EB	3	S, SMALL
SJB	25	920724	4	L1	1632??	70	25.8	128	30	2	83	OFF	EB	3	COW/CALF
SJB	25	920724	4	L1	1633??	70	27.6	128	30	6	39	OFF	EB	3	S, 2 SMALL
SJB	25	920724	2	R1	163600	70	32.1	128	30	2	70	OFF	EB	1	SW
SJB	25	920724	2	R1	163600	70	32.1	128	30	1	50	OFF	EB	1	SW
SJB	25	920724	2	R1	163600	70	32.1	128	30	7	20	OFF	EB	1	SW
SJB	25	920724	2	R1	163608	70	32.4	128	30	7	20	OFF	EB	1	
SJB	25	920724	2	R1	163637	70	33.2	128	30	2		OFF	EB	1	
SJB	25	920724	2	R1	163637	70	33.2	128	30	2		OFF	EB	1	
SJB	25	920724	2	R1	163637	70	33.2	128	30	2		OFF	EB	1	
SJB	25	920724	2	R1	163637	70	33.2	128	30	1		OFF	EB	1	
SJB	25	920724	2	R1	163637	70	33.2	128	30	1		OFF	EB	1	
SJB	25	920724	8	L2	1639??	70	42.0	128	30	3	50	OFF	EB	2,3,4	1 GRAY
SJB	25	920724	4	L1	1641??	70	42.0	128	30	2	43	OFF	EB	3	E
SJB	25	920724	4	L1	1641??	70	42.0	128	30	1	38	OFF	EB	3	E
SJB	25	920724	8	L2	1647??	70	56.5	128	30	7	56	OFF	EB	2,3,4	
SJB	25	920724	8	L2	1647??	70	56.5	128	30	1	31	OFF	EB	2,3,4	
SJB	25	920724	4	L1	1649??	70	56.5	128	30	7	87	OFF	EB	3	E
SJB	25	920724	2	R1	164905	70	55.7	128	30	4	33	OFF	EB	1	NE, COW/CALF
SJB	25	920724	8	L2	1653??	71	7.3	128	30	1	45	OFF	EB	2,3,4	
SJB	25	920724	8	L2	1653??	71	7.3	128	30	1	42	OFF	EB	2,3,4	
SJB	25	920724	2	R1	165309	71	3.1	128	30	9	35	OFF	EB	1	COW/CALF
SJB	25	920724	4	L1	1655??	71	7.3	128	30	1	42	OFF	EB	3	E
SJB	25	920724	4	L1	1655??	71	7.3	128	30	1	40	OFF	EB	3	E
SJB	25	920724	8	L2	1655??	71	10.9	128	30	2	45	OFF	EB	2,3,4	
SJB	25	920724	8	L2	1655??	71	10.9	128	30	1	31	OFF	EB	2,3,4	
SJB	25	920724	4	L1	1656??	71	9.1	128	30	1	50	OFF	EB	3	E
SJB	25	920724	2	R1	165656	71	9.9	128	30	1	35	OFF	EB	1	
SJB	25	920724	2	R1	165656	71	9.9	128	30	1	20	OFF	EB	1	E
SJB	25	920724	2	R1	165656	71	9.9	128	30	1	30	OFF	EB	1	
SJB	25	920724	2	R1	165656	71	9.9	128	30	1	25	OFF	EB	1	E
SJB	25	920724	2	R1	165656	71	9.9	128	30	1	75	OFF	EB	1	E
SJB	25	920724	2	R1	165656	71	9.9	128	30	1	45	OFF	EB	1	
SJB	25	920724	4	L1	1657??	71	10.9	128	30	1	34	OFF	EB	3	NE
SJB	25	920724	8	L2	1657??	71	14.5	128	30	6	55	OFF	EB	2,3,4	2 GRAY
SJB	25	920724	4	L1	1658??	71	12.7	128	30	2	46	OFF	EB	3	E
SJB	25	920724	4	L1	165856	71	13.5	128	30	8	60	OFF	EB	1	E, 3 COW/CALF Con't

Table 4. Continued

Air Craft	Trans #	Date	Obs. Code	Seat Posn	Time	N.	Lat.	W.	Long	No. beluga	Degree Horiz.	Strata	Sub-area	Data Code	Comments
SJB	25	920724	4	L1	1659??	71	14.5	128	30	1	54	OFF	EB	3	E
SJB	25	920724	4	L1	1701??	71	18.1	128	30	1	65	OFF	EB	3	E
SJB	25	920724	8	L2	1701??	71	14.5	128	30	1	42	OFF	EB	2,3,4	
SJB	25	920724	8	L2	1702??	71	16.3	128	30	2	45	OFF	EB	2,3,4	1 GRAY
SJB	25	920724	8	L2	1702??	71	16.3	128	30	3	56	OFF	EB	2,3,4	
SJB	26	920724	8	L2	1713??	71	12.7	128	0	1	55	OFF	EB	2,3,4	
SJB	26	920724	2	R1	171317	71	16.8	128	0	3	30	OFF	EB	1	
SJB	26	920724	8	L2	1714??	71	10.9	128	0	1	56	OFF	EB	2,3,4	
SJB	26	920724	2	R1	171409	71	15.2	128	0	1	23	OFF	EB	1	E
SJB	26	920724	2	R1	171409	71	15.2	128	0	2	40	OFF	EB	1	E, 1 BIG GRAY
SJB	26	920724	4	L1	1715??	71	12.7	128	0	1	54	OFF	EB	3	NE
SJB	26	920724	4	L1	1716??	71	10.9	128	0	1	60	OFF	EB	3	E
SJB	26	920724	2	R1	171655	71	10.1	128	0	12		OFF	EB	1	
SJB	26	920724	8	L2	1717??	71	5.3	128	0	1	50	OFF	EB	2,3,4	W
SJB	26	920724	2	R1	171718	71	9.4	128	0	1	33	OFF	EB	1	E
SJB	26	920724	8	L2	1718??	71	3.4	128	0	2	42	OFF	EB	2,3,4	
SJB	26	920724	4	L1	1719??	71	5.3	128	0	1	61	OFF	EB	3	NE
SJB	26	920724	8	L2	1719??	71	1.6	128	0	1	42	OFF	EB	2,3,4	
SJB	26	920724	4	L1	1720??	71	3.4	128	0	1	71	OFF	EB	3	BELOW SURF
SJB	26	920724	4	L1	1721??	71	1.6	128	0	1	43	OFF	EB	3	SMALL
SJB	26	920724	2	R1	172415	70	56.5	128	0	1	48	OFF	EB	1	E
SJB	26	920724	2	R1	172415	70	56.5	128	0	1	45	OFF	EB	1	NE
SJB	26	920724	8	L2	1730??	70	41.2	128	0	1	37	OFF	EB	2,3,4	
SJB	26	920724	2	R1	173050	70	44.3	128	0	2	25	OFF	EB	1	E
SJB	26	920724	4	L1	1732??	70	41.2	128	0	1	39	OFF	EB	3	SW
SJB	27	920724	4	R1	1746??	70	25.0	127	30	1	40	OFF	EB	3	
SJB	27	920724	4	R1	1746??	70	25.0	127	30	1	53	OFF	EB	3	
SJB	27	920724	2	L1	174607	70	24.3	127	30	1	80	OFF	EB	1	
SJB	27	920724	2	L1	174607	70	24.3	127	30	1	70	OFF	EB	1	
SJB	27	920724	2	L1	174657	70	25.8	127	30	1	72	OFF	EB	1	
SJB	27	920724	2	L1	174657	70	25.8	127	30	1	58	OFF	EB	1	
SJB	27	920724	4	R1	1757??	70	44.9	127	30	1	53	OFF	EB	3	E
SJB	27	920724	4	R1	1757??	70	44.9	127	30	1	63	OFF	EB	3	E
SJB	27	920724	4	R1	1757??	70	44.9	127	30	1	69	OFF	EB	3	E
SJB	27	920724	8	L2	1800??	70	54.0	127	30	2	42	OFF	EB	2,3,4	
SJB	27	920724	8	L2	1801?	70	55.8	127	30	2	56	OFF	EB	2,3,4	
SJB	27	920724	8	L2	1801??	70	55.8	127	30	1	42	OFF	EB	2,3,4	
SJB	27	920724	8	L2	1801??	70	55.8	127	30	1	35	OFF	EB	2,3,4	
SJB	27	920724	4	R1	1803??	70	55.8	127	30	1	58	OFF	EB	3	E
SJB	27	920724	4	R1	1803??	70	55.8	127	30	1	41	OFF	EB	3	E
SJB	27	920724	2	L1	180332	70	55.8	127	30	1	74	OFF	EB	1	
SJB	27	920724	2	L1	180332	70	55.8	127	30	1	35	OFF	EB	1	
SJB	27	920724	2	L1	180332	70	55.8	127	30	1	90	OFF	EB	1	

Con't

Table 4. Continued

Air Craft	Trans #	Date	Obs. Code	Seat Posn	Time	N.	Lat.	W.	Long	No. beluga	Degree Horiz.	Strata	Sub-area	Data Code	Comments
SJB	27	920724	4	R1	1804??	70	57.6	127	30	2	40	OFF	EB	3	E
SJB	27	920724	4	R1	1804??	70	57.6	127	30	1	30	OFF	EB	3	E
SJB	27	920724	4	R1	1804??	70	57.6	127	30	3	45	OFF	EB	3	E
SJB	27	920724	4	R1	1804??	70	57.6	127	30	1	22	OFF	EB	3	E
SJB	27	920724	4	R1	1804??	70	57.6	127	30	1	48	OFF	EB	3	E
SJB	27	920724	2	L1	180444	70	58.0	127	30	1	38	OFF	EB	1	
SJB	27	920724	8	L2	1812??	71	15.7	127	30	2	56	OFF	EB	2,3,4	
SJB	27	920724	8	L2	1812??	71	15.7	127	30	1	19	OFF	EB	2,3,4	
SJB	27	920724	4	R1	1813??	71	13.9	127	30	1	18	OFF	EB	3	E
SJB	27	920724	4	R1	1813??	71	13.9	127	30	1	58	OFF	EB	3	SW
SJB	27	920724	2	L1	181400	71	14.8	127	30	1	72	OFF	EB	1	S
SJB	27	920724	2	L1	181400	71	14.8	127	30	1	43	OFF	EB	1	S
SJB	27	920724	2	L1	181400	71	14.8	127	30	3	32	OFF	EB	1	S
SJB	28	920724	8	L2	1824??	71	15.8	127	0	1	35	OFF	EB	2,3,4	
SJB	28	920724	4	R1	1824??	71	19.2	127	0	1	30	OFF	EB	3,11	E
SJB	28	920724	8	L2	1825??	71	14.1	127	0	1	39	OFF	EB	2,3,4	
SJB	28	920724	2	L1	182633	71	15.7	127	0	1	72	OFF	EB	1	E
SJB	28	920724	4	R1	1827??	71	14.1	127	0	1	33	OFF	EB	3,11	E
SJB	28	920724	2	L1	182705	71	14.8	127	0	1	40	OFF	EB	1	E
SJB	28	920724	2	L1	182746	71	13.7	127	0	1	62	OFF	EB	1	SW
SJB	28	920724	4	R1	1841??	70	50.7	127	0	1	39	OFF	EB	3,11	SW
SJB	28	920724	8	L2	1845??	70	40.6	127	0	1	50	OFF	EB	2,3,4	
SJB	28	920724	8	L2	1850??	70	32.3	127	0	1	55	OFF	EB	2,3,4	
SJB	28	920724	2	L1	185212	70	32.8	127	0	1	63	OFF	EB	1	S
SJB	28	920724	8	L2	1854??	70	25.6	127	0	4	17	OFF	EB	2,3,4	1 GRAY
SJB	28	920724	8	L2	1855??	70	23.9	127	0	1	29	OFF	EB	2,3,4	
SJB	28	920724	8	L2	1856??	70	22.2	127	0	4	35	OFF	EB	2,3,4	
SJB	28	920724	2	L1	185735	70	23.7	127	0	1	42	OFF	EB	1	
SJB	28	920724	2	L1	185735	70	23.7	127	0	3	20	OFF	EB	1	COW/CALF
SJB	28	920724	8	L2	1858??	70	18.9	127	0	5	42	OFF	EB	2,3,4	2 GRAY
SJB	28	920724	2	L1	185854	70	21.5	127	0	4	35	OFF	EB	1	
SJB	28	920724	2	L1	190055	70	18.2	127	0	3	50	OFF	EB	1	COW/CALF
SJB	28	920724	2	L1	190055	70	18.2	127	0	1	60	OFF	EB	1	W
SJB	28	920724	2	L1	190809	70	6.0	127	0	6	42	OFF	EB	1	W
IOK	30	920725	7	R1	131220	69	52.7	126	0	1	50	OFF	WA	9	E
IOK	32	920725	7	R1	135117	70	54.4	125	0	1	45	OFF	WA	9	
IOK	32	920725	7	R1	135117	70	54.4	125	0	1	35	OFF	WA	9	
IOK	32	920725	7	R1	135117	70	54.4	125	0	1	51	OFF	WA	9	
IOK	32	920725	8	L2	1344??	70	40.3	125	0	2	80	OFF	WA	3,9	
IOK	32	920725	8	L2	1345??	70	42.2	125	0	1	80	OFF	WA	3,9	
IOK	32	920725	5	L1	134559	70	43.2	125	0	1	35	OFF	WA	9	
IOK	32	920725	8	L2	1350??	70	52.0	125	0	3	60	OFF	WA	3,9	1 GRAY
IOK	32	920725	8	L2	1350??	70	52.0	125	0	1	80	OFF	WA	3,9	
IOK	32	920725	8	L2	1351??	70	53.9	125	0	4	70	OFF	WA	3,9	2 GRAY
IOK	32	920725	5	L1	135127	70	53.8	125	0	2	60	OFF	WA	9	COW/CALF

Con't

Table 4. Continued

Air Craft	Trans #	Date	Obs. Code	Seat Posn	Time	N.	Lat.	W.	Long	No. beluga	Degree Horiz.	Strata	Sub-area	Data Code	Comments
IOK	32	920725	7	R1	135136	70	54.1	125	0	1	65	OFF	WA	9	
IOK	32	920725	7	R1	135149	70	54.5	125	0	3	60	OFF	WA	9	E
IOK	32	920725	7	R1	135648	71	4.2	125	0	1	23	OFF	WA	1	E
IOK	34	920725	7	L2	180432	70	51.9	124	0	1	31	OFF	WA	9	
IOK	34	920725	7	L2	181034	70	40.3	124	0	2	75	OFF	WA	9	E
IOK	34	920725	5	L1	181039	70	40.1	124	0	2	74	OFF	WA	9	SE, 1 BIG GRAY
IOK	34	920725	5	L1	182329	70	15.3	124	0	3	84	OFF	WA	12	NW
IOK	34	920725	7	L2	182458	70	12.5	124	0	2	25	OFF	WA	12	E
IOK	34	920725	5	L1	183534	69	52.0	124	0	16	29	OFF	WA	12	SW
IOK	34	920725	7	L2	183534	69	52.0	124	0	22		OFF	WA	12	
IOK	36	920725	7	R1	171304	70	3.6	123	0	1	70	OFF	WA	1	
IOK	36	920725	7	R1	171304	70	4.5	123	0	2		OFF	WA	1	
IOK	36	920725	8	L2	1714??	70	6.3	123	0	1	40	OFF	WA	3	
IOK	36	920725	7	R1	171403	70	5.4	123	0	4	20	OFF	WA	1	
IOK	36	920725	7	R1	171411	70	5.7	123	0	2	20	OFF	WA	1	
IOK	36	920725	5	L1	171434	70	6.4	123	0	1	44	OFF	WA	1	S
IOK	36	920725	7	R1	172053	70	18.2	123	0	1	41	OFF	WA	1	E
IOK	36	920725	7	R1	172109	70	18.7	123	0	1	49	OFF	WA	1	E
IOK	36	920725	7	R1	172132	70	19.4	123	0	1	25	OFF	WA	1	S
IOK	36	920725	8	L2	1722??	70	21.2	123	0	3	30	OFF	WA	3	1 GRAY
IOK	36	920725	5	L1	172222	70	20.9	123	0	4	70	OFF	WA	1	SE, COW/ CALVES
IOK	36	920725	8	L2	1724??	70	24.9	123	0	2	40	OFF	WA	3	
IOK	36	920725	7	R1	172408	70	24.2	123	0	1	63	OFF	WA	1	STILL
IOK	36	920725	8	L2	1730??	70	36.1	123	0	1	65	OFF	WA	3	
IOK	36	920725	5	L1	173003	70	35.3	123	0	1	30	OFF	WA	1	E
IOK	36	920725	5	L1	174240	70	58.8	123	0	2	52	OFF	WA	1	COW/CALF
IOK	36	920725	5	L1	174316	70	59.9	123	0	1	85	OFF	WA	1	AT SURF
IOK	38	920725	5	L1	161142	71	0.0	122	0	2		OFF	WA	1	
IOK	38	920725	7	R1	161240	70	58.3	122	0	1	18	OFF	WA	11	
IOK	38	920725	8	L2	1620??	70	44.3	122	0	3	50	OFF	WA	3	1 GRAY
IOK	38	920725	8	L2	1620??	70	44.3	122	0	4	45	OFF	WA	3	
IOK	38	920725	8	L2	1621??	70	42.5	122	0	8	40	OFF	WA	3	2 GRAY
IOK	38	920725	5	L1	162136	70	42.4	122	0	4		OFF	WA	1	
IOK	38	920725	5	L1	162144	70	42.1	122	0	3	28	OFF	WA	1	E
IOK	38	920725	5	L1	162211	70	41.3	122	0	5	32	OFF	WA	1	E, COW/CALF
IOK	38	920725	5	L1	162211	70	41.3	122	0	1		OFF	WA	1	
IOK	38	920725	5	L1	162300	70	39.9	122	0	1	16	OFF	WA	1	
IOK	38	920725	8	L2	1632??	70	22.9	122	0	4	30	OFF	WA	3	1 GRAY
IOK	38	920725	5	L1	163204	70	23.7	122	0	1		OFF	WA	1	
IOK	38	920725	5	L1	163228	70	23.0	122	0	4		OFF	WA	1	
IOK	38	920725	8	L2	1644??	70	1.5	122	0	2	42	OFF	WA	3	1 GRAY
IOK	38	920725	5	L1	164422	70	1.8	122	0	2	54	OFF	WA	1	COW/CALF

Table 5. Bowhead whale sightings made on 24-25 July 1992 in the Beaufort Sea and Amundsen Gulf

Air craft	Trans. #	Date	Obs. Code	Seat Posn	Time	N. Lat		W. Long		No. bowhd	Degree Horiz.	Strata	Sub-area	Data Code	Comments
KBG	9	920724	6	L1	154107	69	19.6	136	30	1	30	OFF	WB	1	
SJB	25	920724	4	L1	1643??	70	46.6	128	30	1		OFF	EB	3	
SJB	26	920724	2	R1	173416	70	38.3	128	0	1	15	OFF	EB	1	
IOK	30	920725	5	L1	132142	70	21.6	126	0	1	70	OFF	WA	9	
IOK	32	920725	8	L2	1344??	70	40.3	125	0	1	80	OFF	WA	9	
IOK	36	920725	5	L1	171257	70	6.5	123	0	1		OFF	WA	1	
IOK	36	920725	7	R1	171826	70	12.0	123	0	1	20	OFF	WA	1	E
IOK	36	920725	7	R1	172825	70	33.1	123	0	1	45	OFF	WA	1	STILL
IOK	38	920725	5	L1	164403	70	2.2	122	0	1	20	OFF	WA	1	

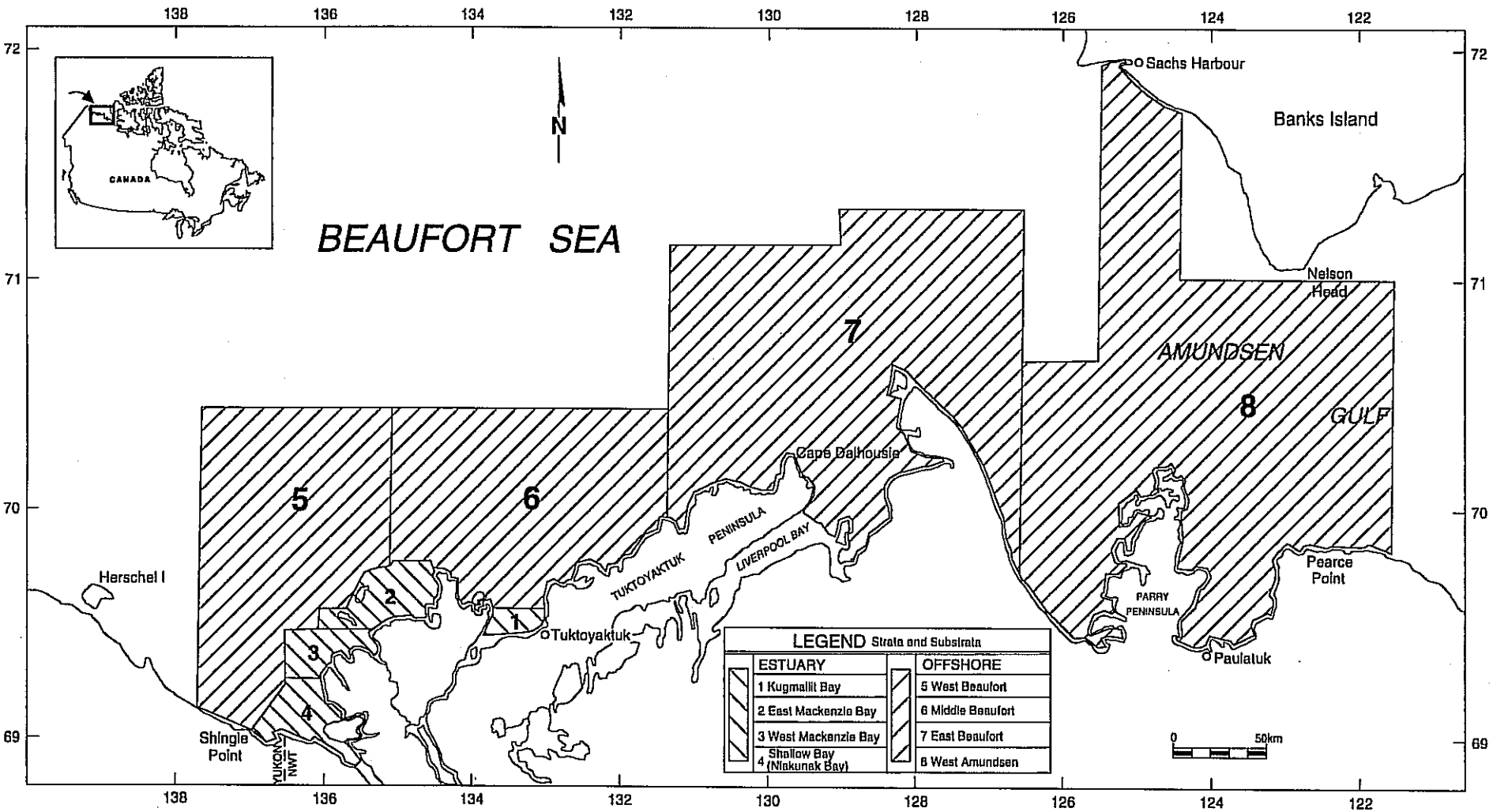

Fig. 1. Strata and subarea boundaries for Beaufort Sea, Mackenzie Estuary, and Amundsen Gulf aerial survey 23-25 July 1992