

Figure 17. Summary of density for long-tailed ducks by 30-s time period segments in the barrier island-lagoon system between West Dock and Pole Island, Alaska, 30 July to 26 August 1999.

Beaufort Sea Waterfowl, 2001

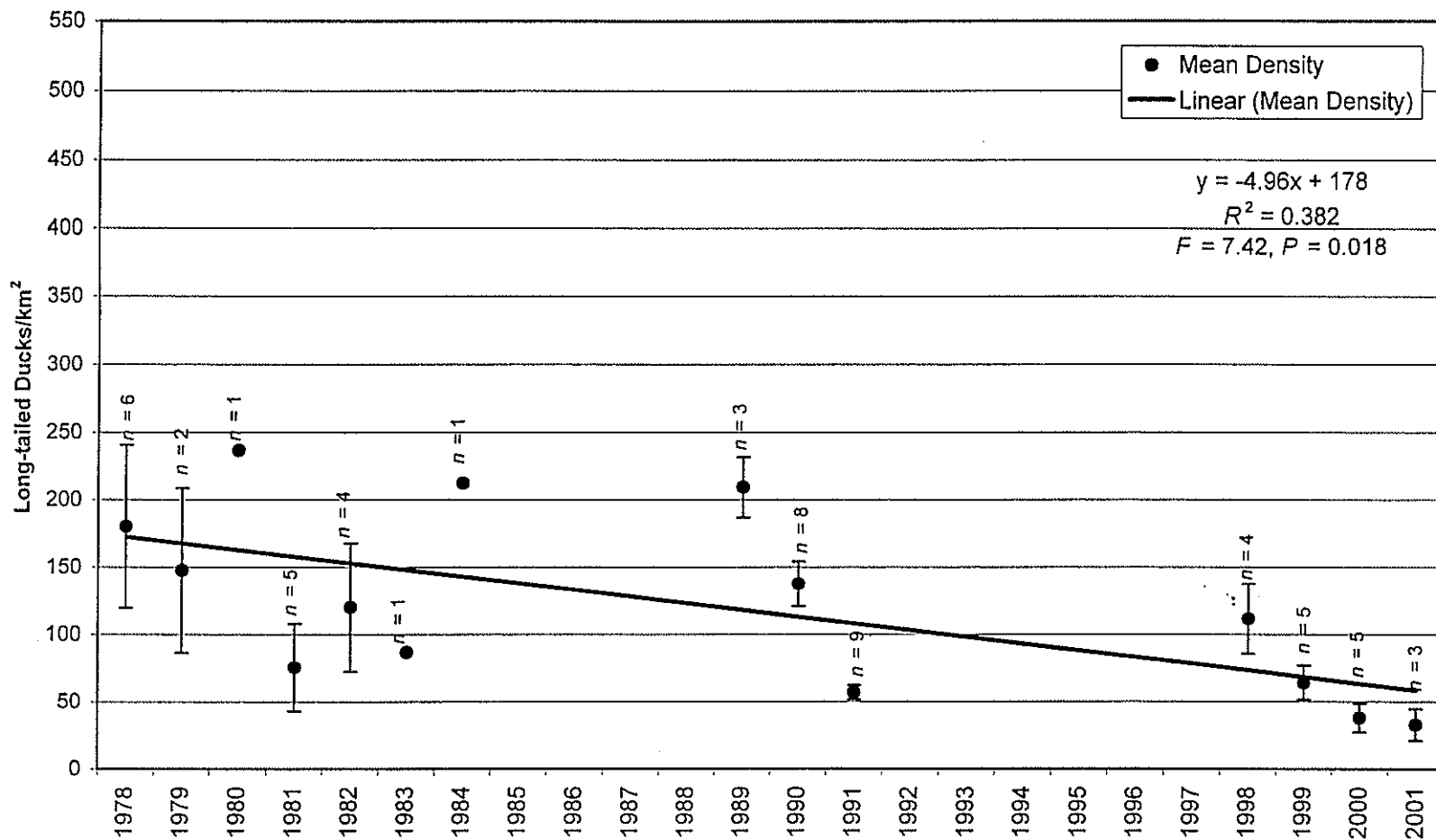


Figure 18. Mean areal long-tailed duck density with standard error by year for aerial surveys in the lagoon systems between Spy Island and Brownlow Point, Alaska, during July and August 1978-2001 (Table A2). Number of surveys is noted above bars. Data includes the western lagoon from Spy Island to West Dock, and the eastern lagoon from Pole Island to Brownlow Point, Alaska. Some surveys did not include all transects.

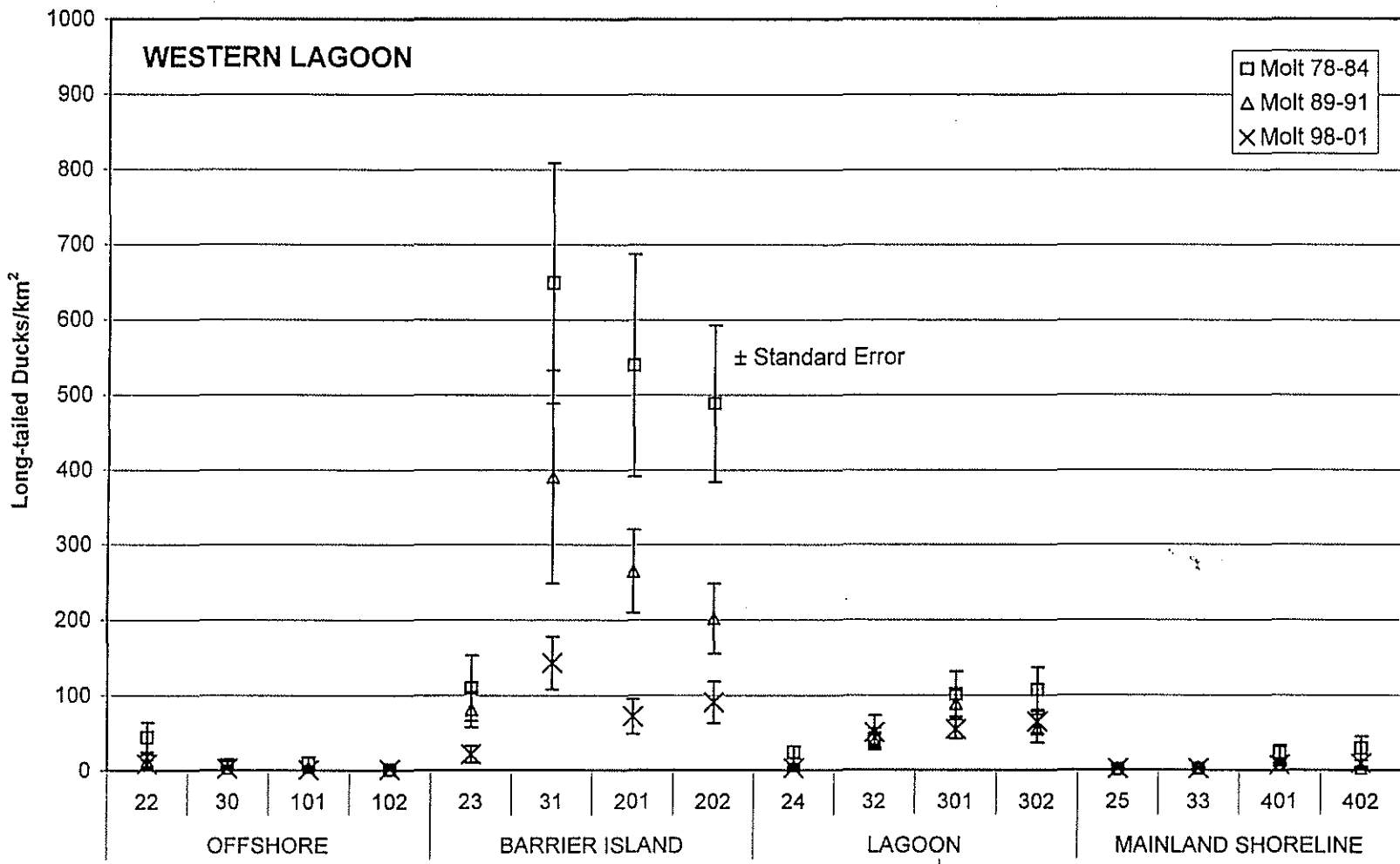


Figure 19. Mean areal long-tailed duck density with standard error by transect for aerial surveys between Spy Island and West Dock, Alaska, during male long-tailed duck molt period from 15 July to 21 August 1978-1984, 1989-1991, and 1998-2001 (Table A2).

Beaufort Sea Waterfowl, 2001

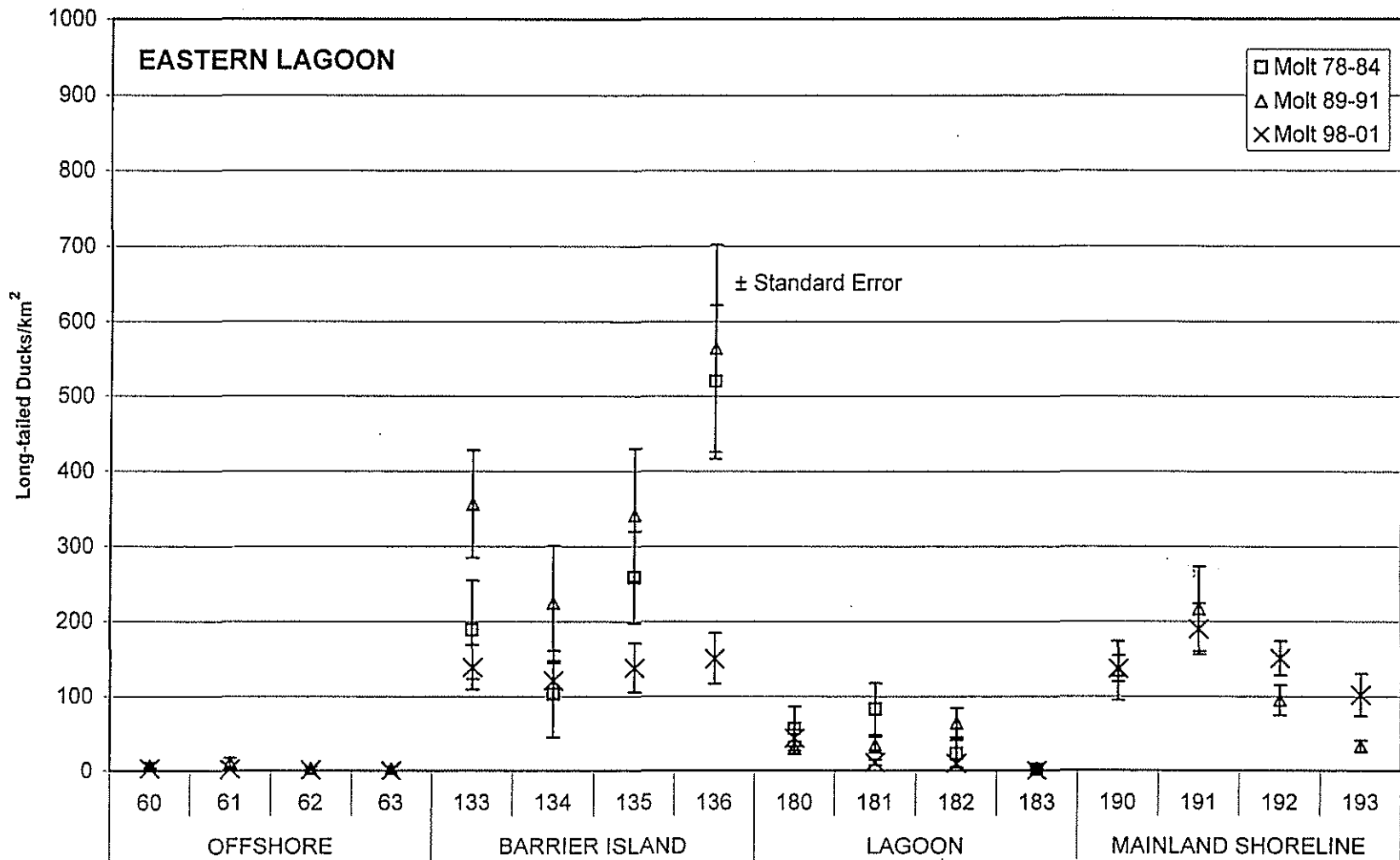
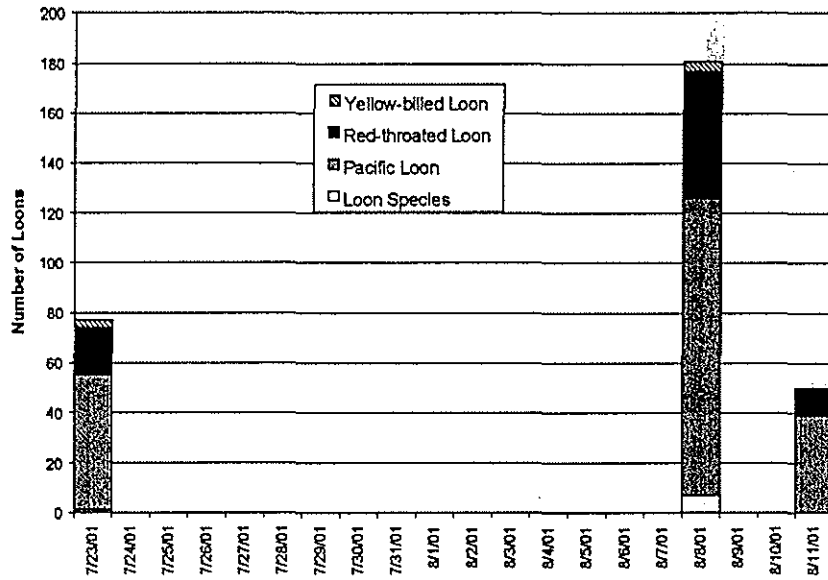
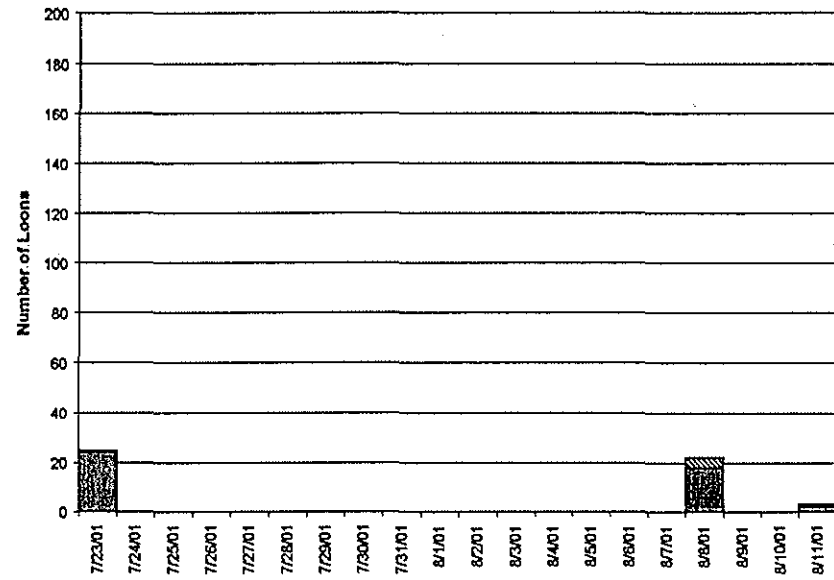


Figure 20. Mean areal long-tailed duck density with standard error by transect for aerial surveys between Pole Island and Brownlow Point, Alaska, during male long-tailed duck molt period from 15 July to 21 August 1978-1984, 1989-1991, and 1998-2001 (Table A2). No offshore or mainland shoreline transects were flown during 1978-1984.

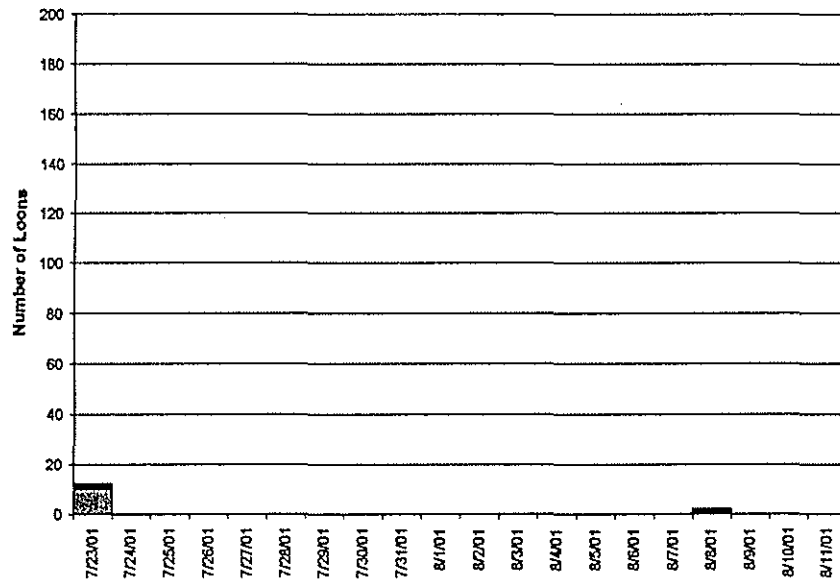
WESTERN LAGOON (Spy Island to West Dock)



EASTERN LAGOON (Pole Island to Brownlow Point)



STEFANSSON SOUND (West Dock to Pole Island)



TUNDRA (Brownlow Point to Shavirovik River)

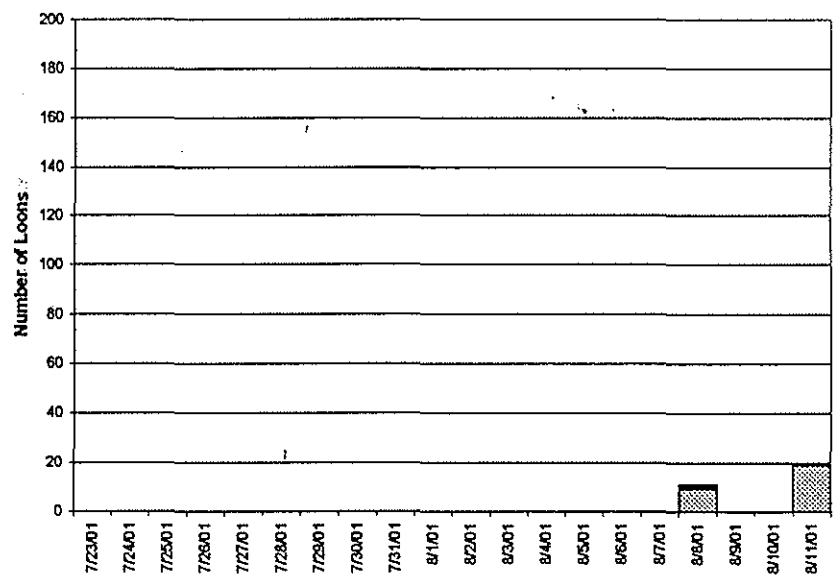


Figure 21. Total number of loons on- and off-transect during aerial surveys in the barrier island-lagoon systems between Spy Island and Brownlow Point, Alaska, 23 July – 11 August 2001. Surveys were flown on 23 July, 8 August, and 11 August 2001.

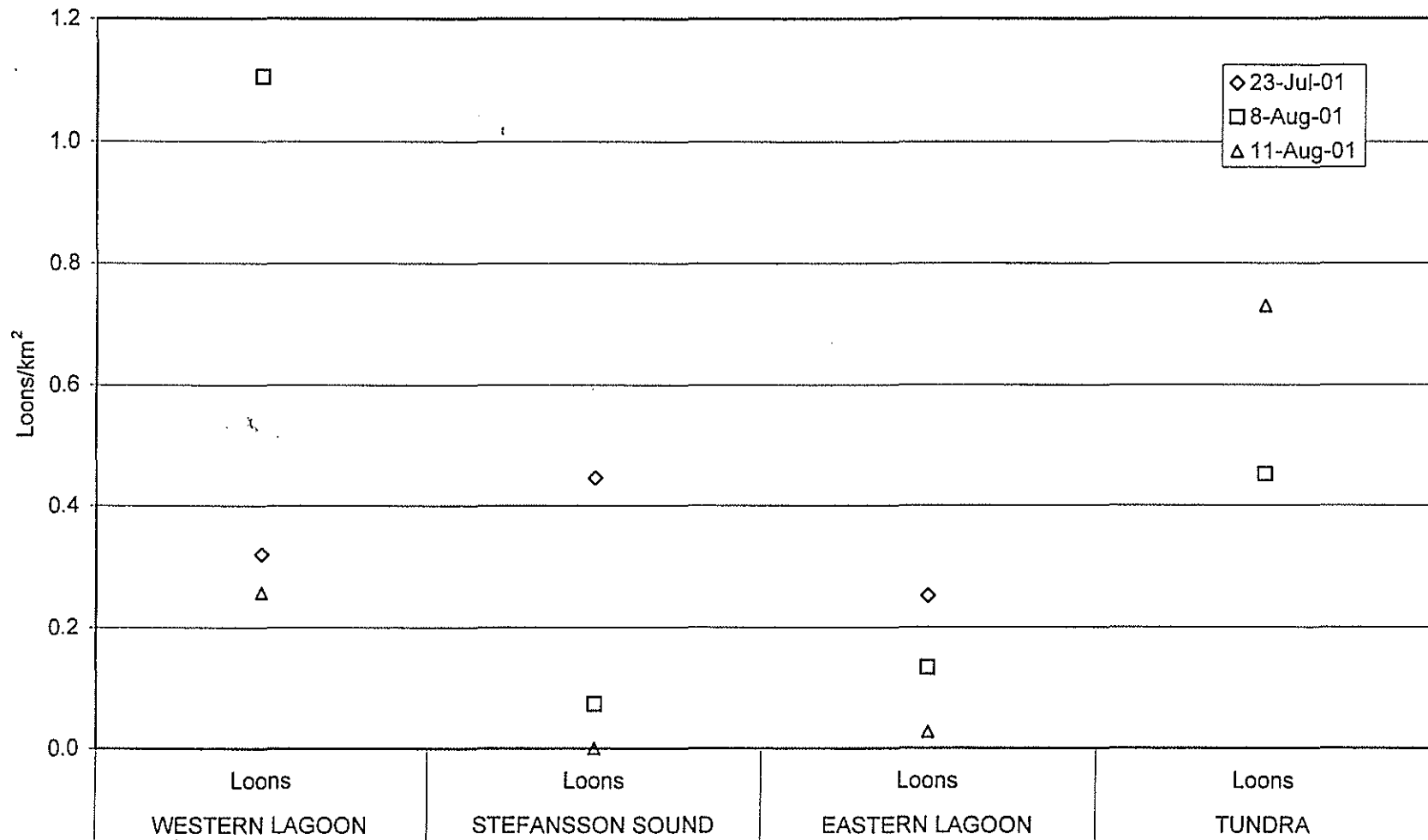


Figure 22. Areal density of loons for 3 aerial surveys by region between Spy Island and Brownlow Point, Alaska, 23 July-11 August 2001. On 23 July 2001, two mainland transects in the eastern lagoon and all tundra transects were not flown because of fog.

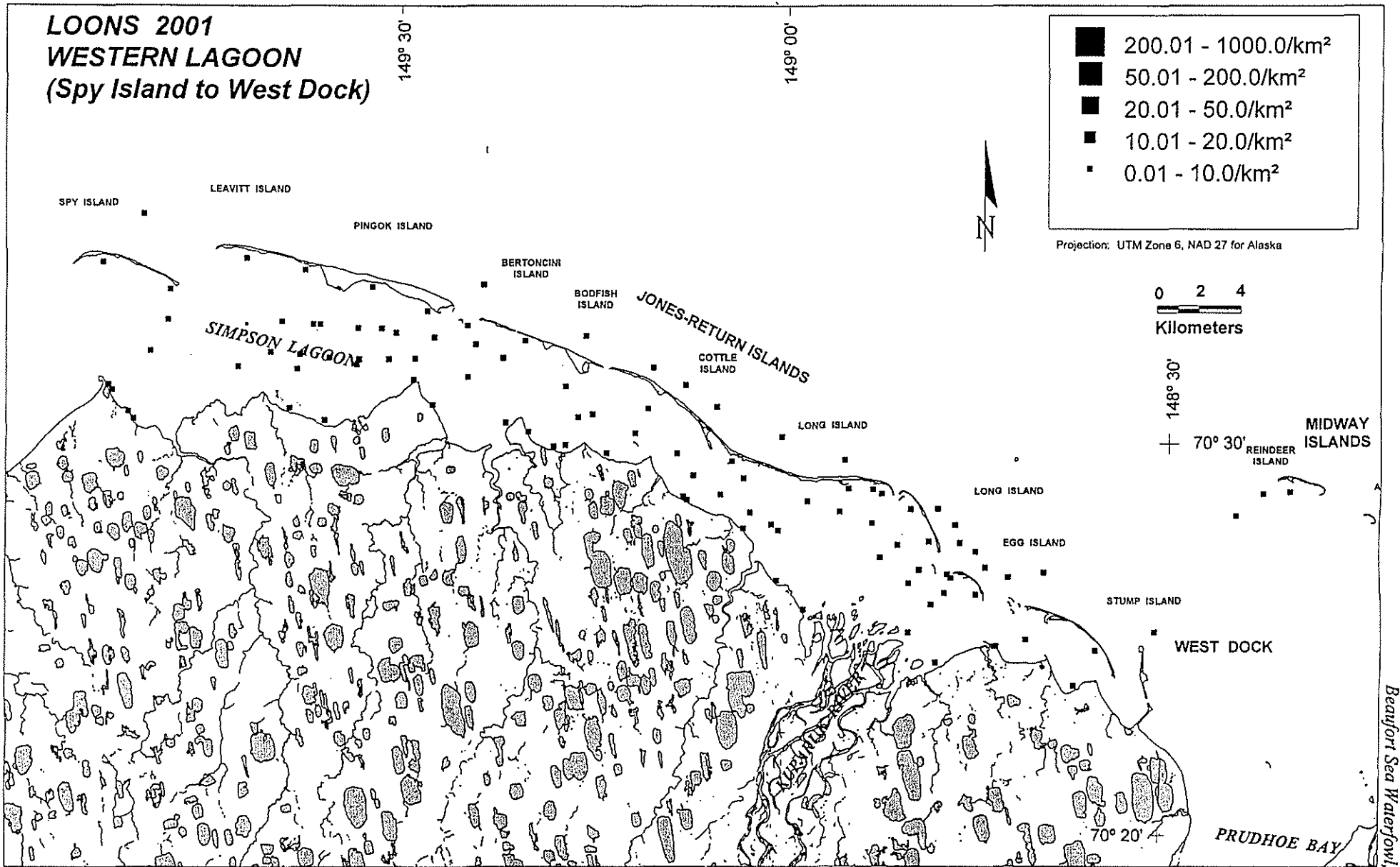


Figure 23. Summary of density for loons by 30-s time period segments in the barrier island-lagoon system between Spy Island and West Dock, Alaska, 23 July-11 August 2001.

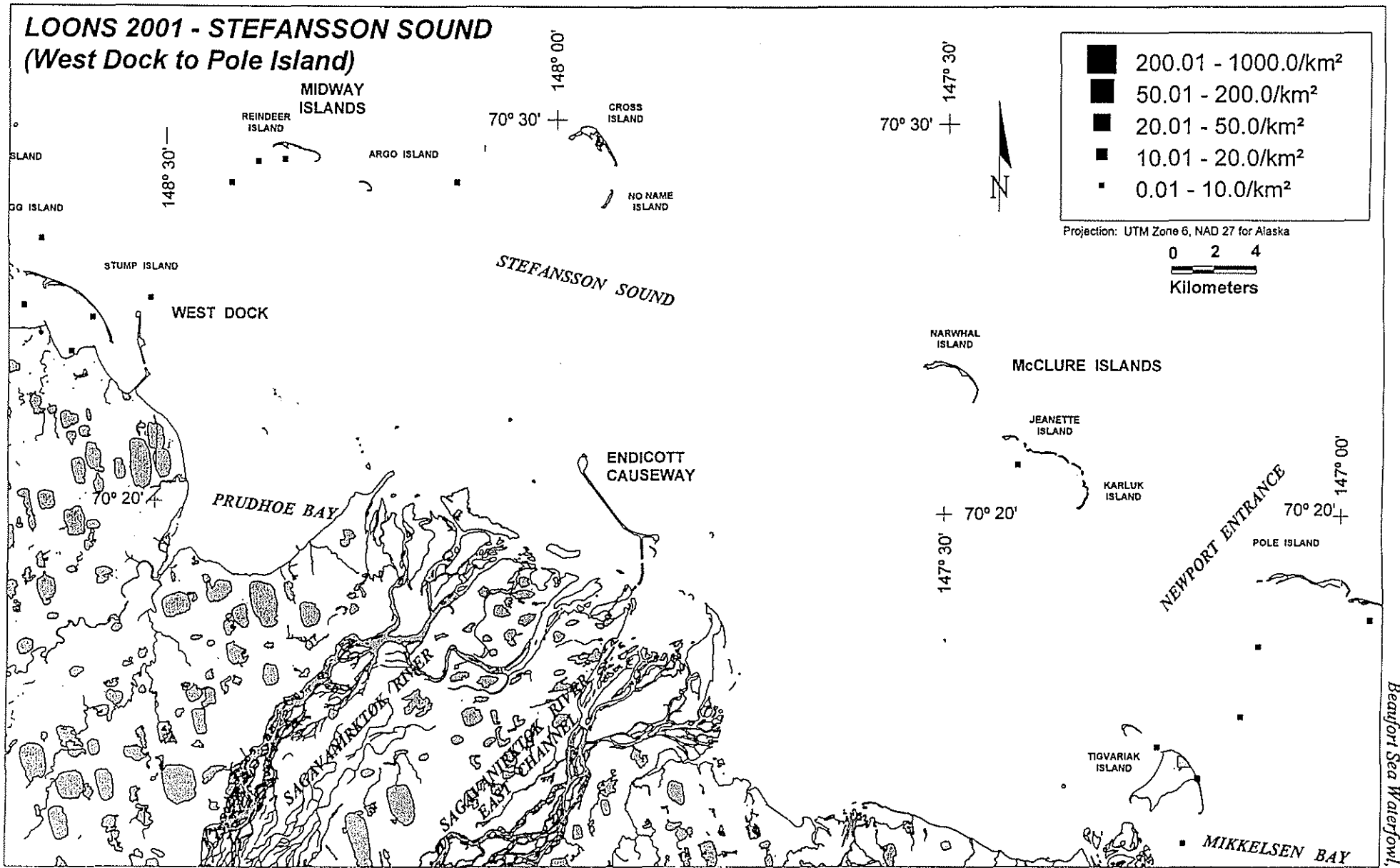


Figure 24. Summary of density for loons by 30-s time period segments in the barrier island-lagoon system between West Dock and Pole Island, Alaska, 23 July-11 August 2001.

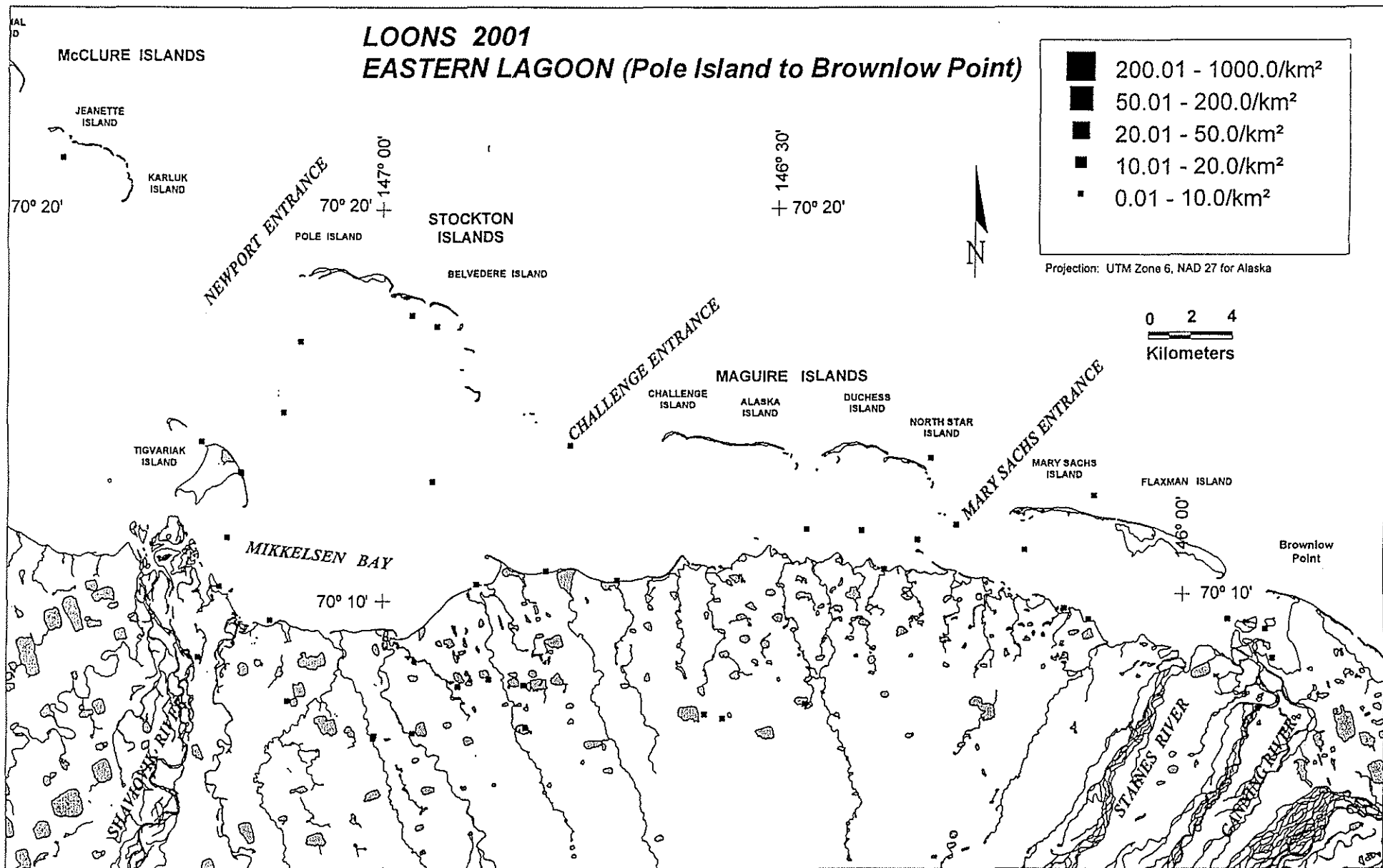


Figure 25. Summary of density for loons by 30-s time period segments in the barrier island-lagoon system between Pole Island and Brownlow Point, Alaska, 23 July-11 August 2001.

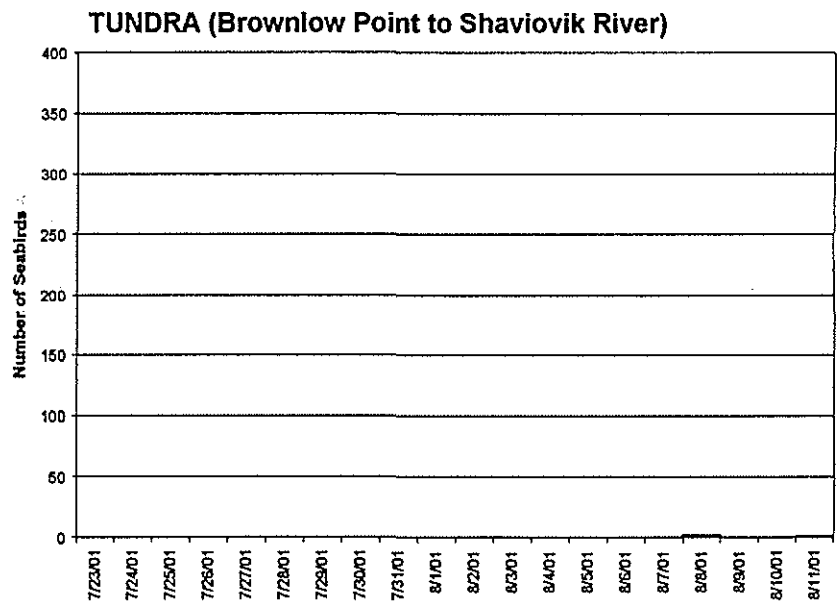
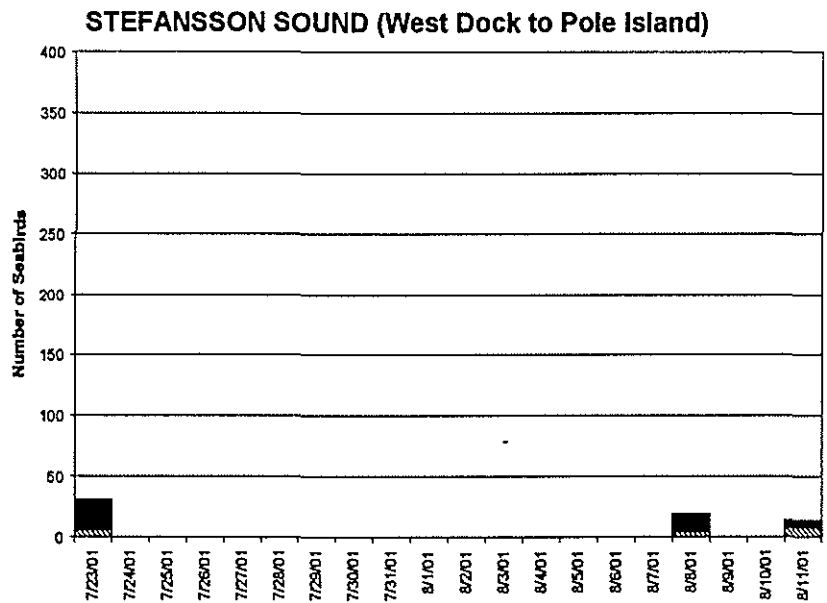
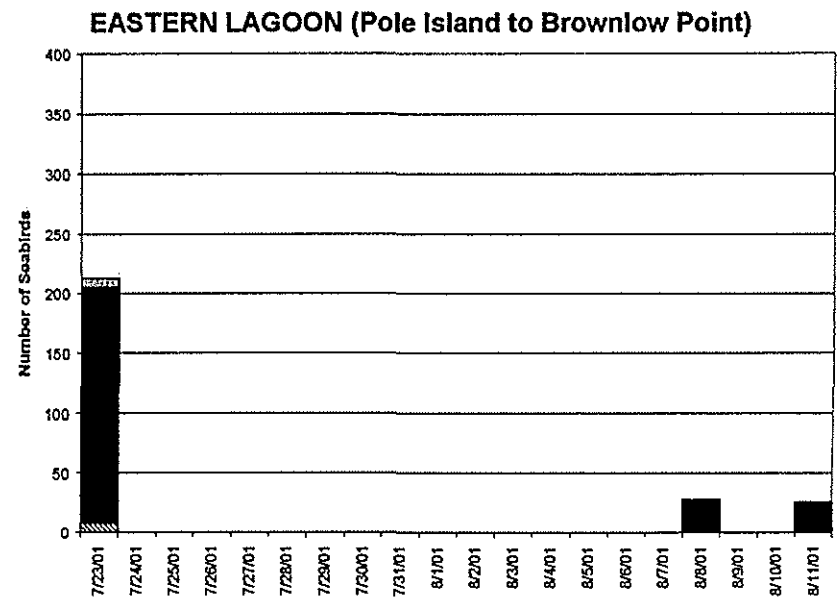
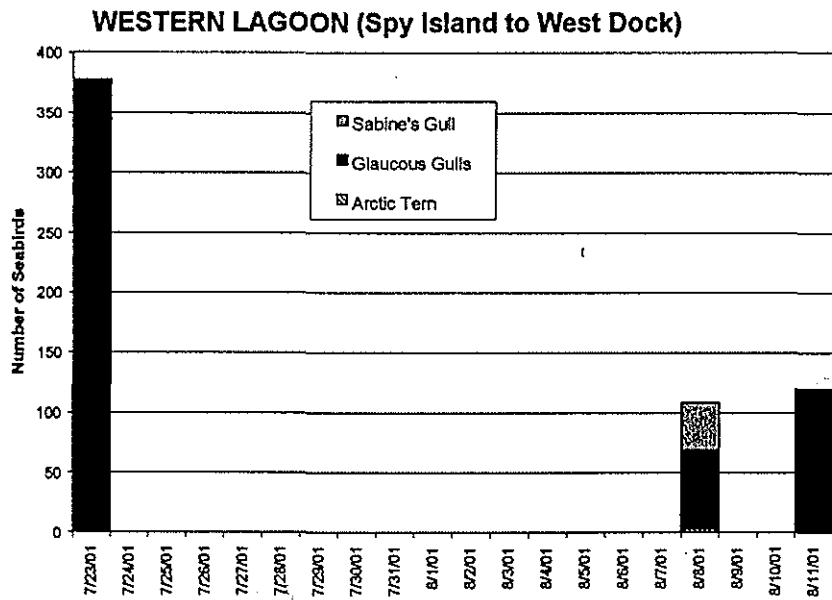


Figure 26. Total number of seabirds on- and off-transect during aerial surveys in the barrier island-lagoon systems between Spy Island and Brownlow Point, Alaska, 23 July–11 August 2001. Surveys were flown on 23 July, 8 August and 11 August 2001.

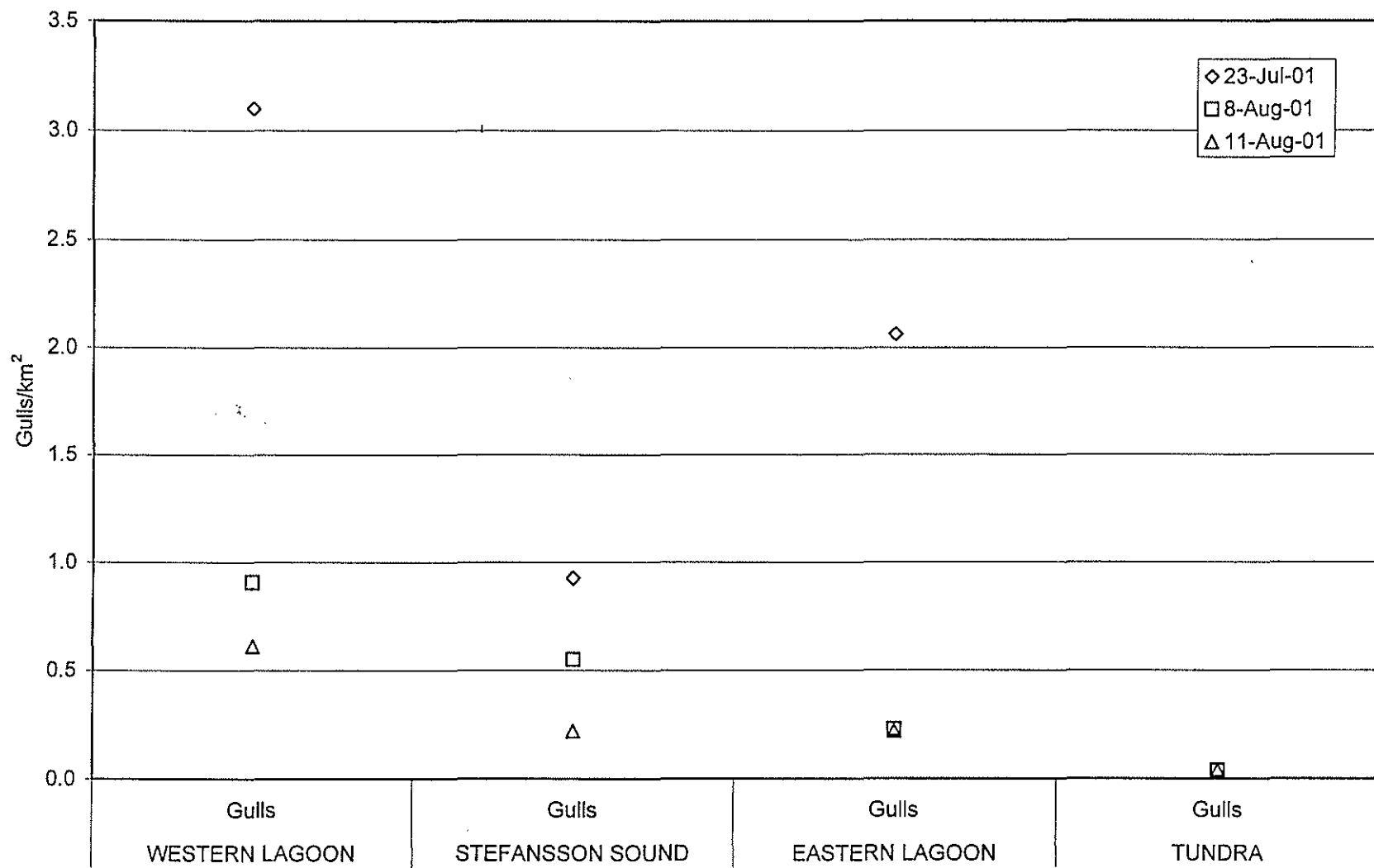


Figure 27. Areal density of gulls for 3 aerial surveys by region between Spy Island and Brownlow Point, Alaska, 23 July-11 August 2001. On 23 July 2001, two mainland transects in the eastern lagoon and all tundra transects were not flown because of fog.

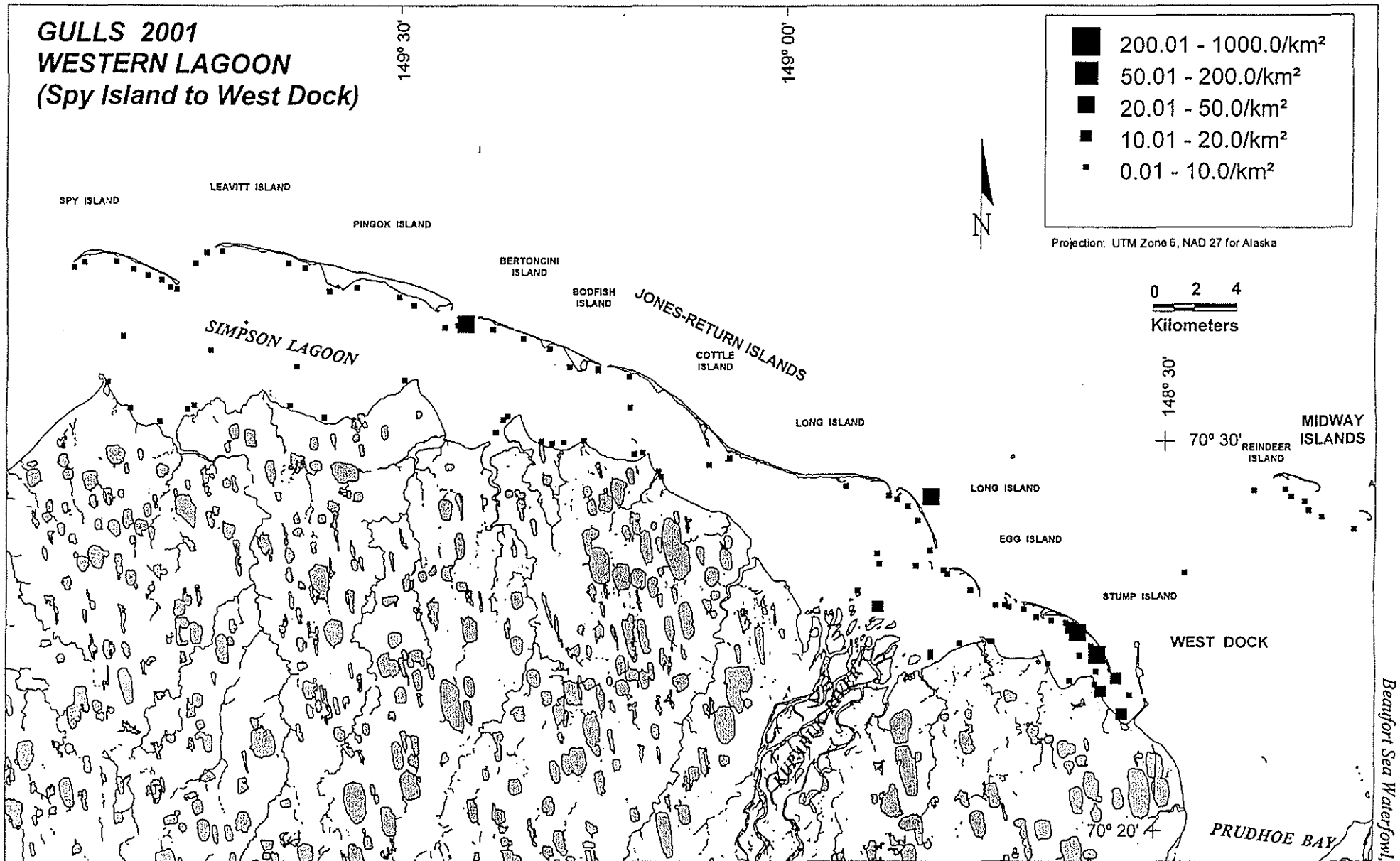


Figure 28. Summary of density for gulls by 30-s time period segments in the barrier island-lagoon system between Spy Island and West Dock, Alaska, 23 July-11 August 2001.

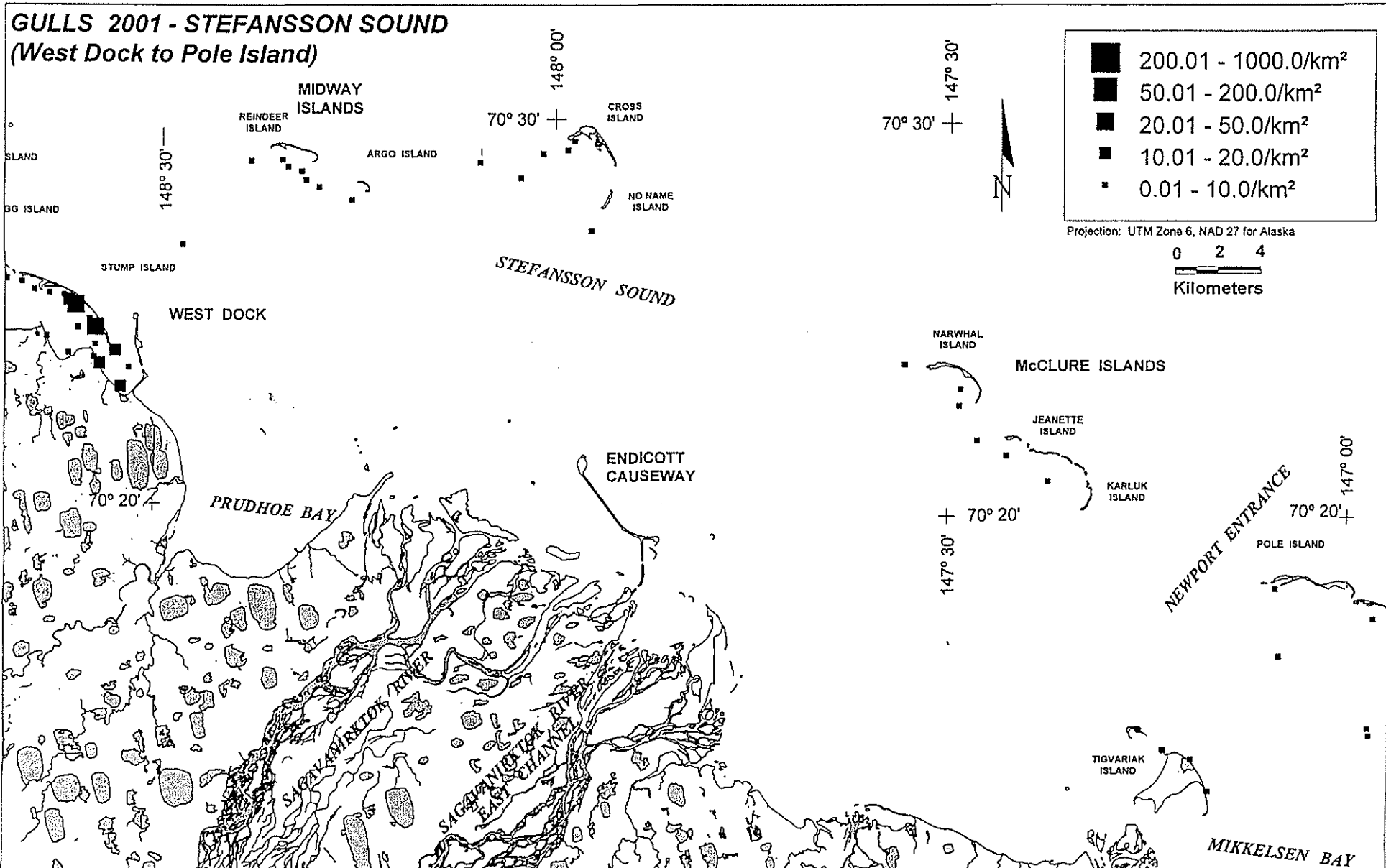


Figure 29. Summary of density for gulls by 30-s time period segments in the barrier island-lagoon system between West Dock and Pole Island, Alaska, 23 July-11 August 2001.

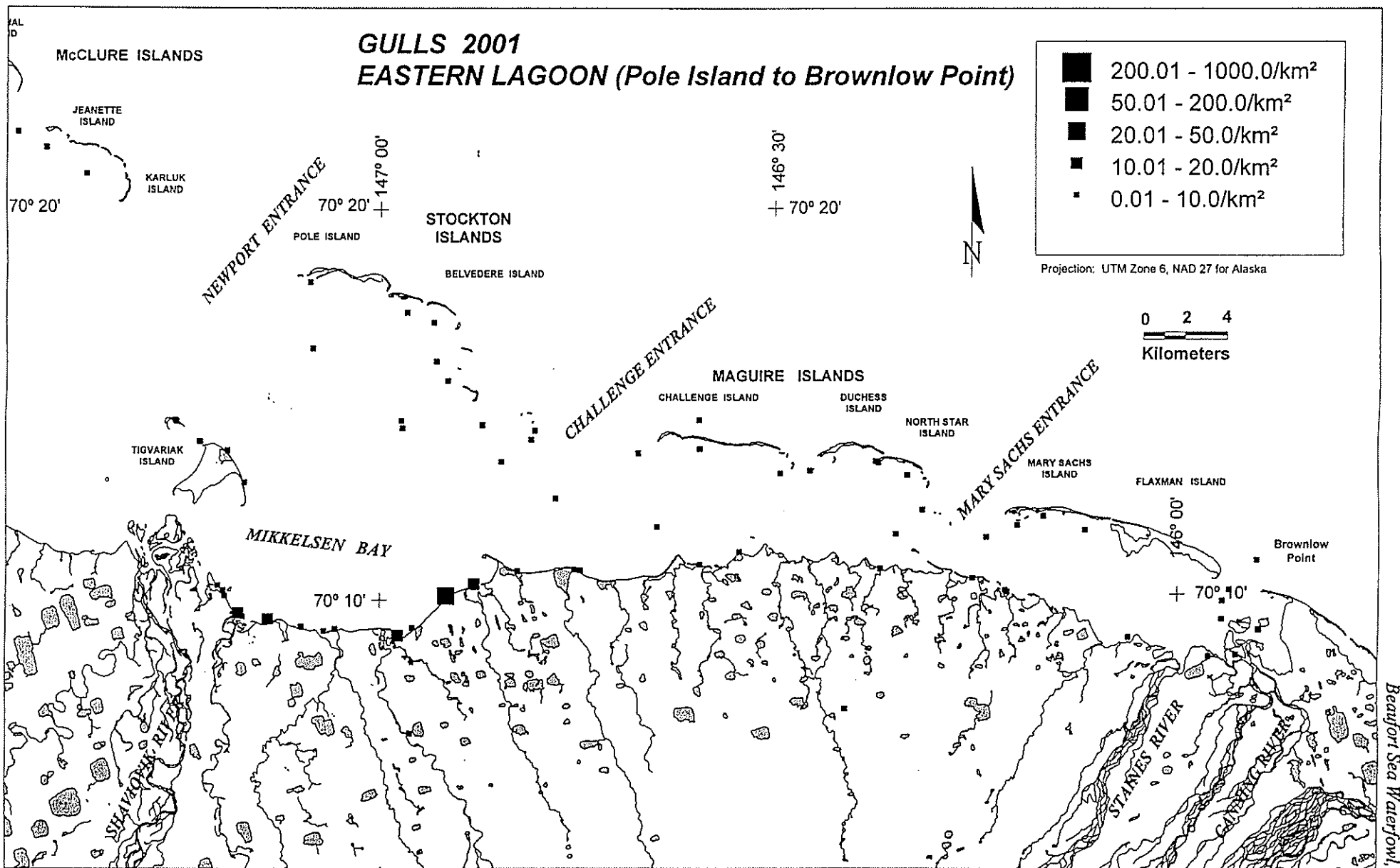


Figure 30. Summary of density for gulls by 30-s time period segments in the barrier island-lagoon system between Pole Island and Brownlow Point, Alaska, 23 July-11 August 2001.

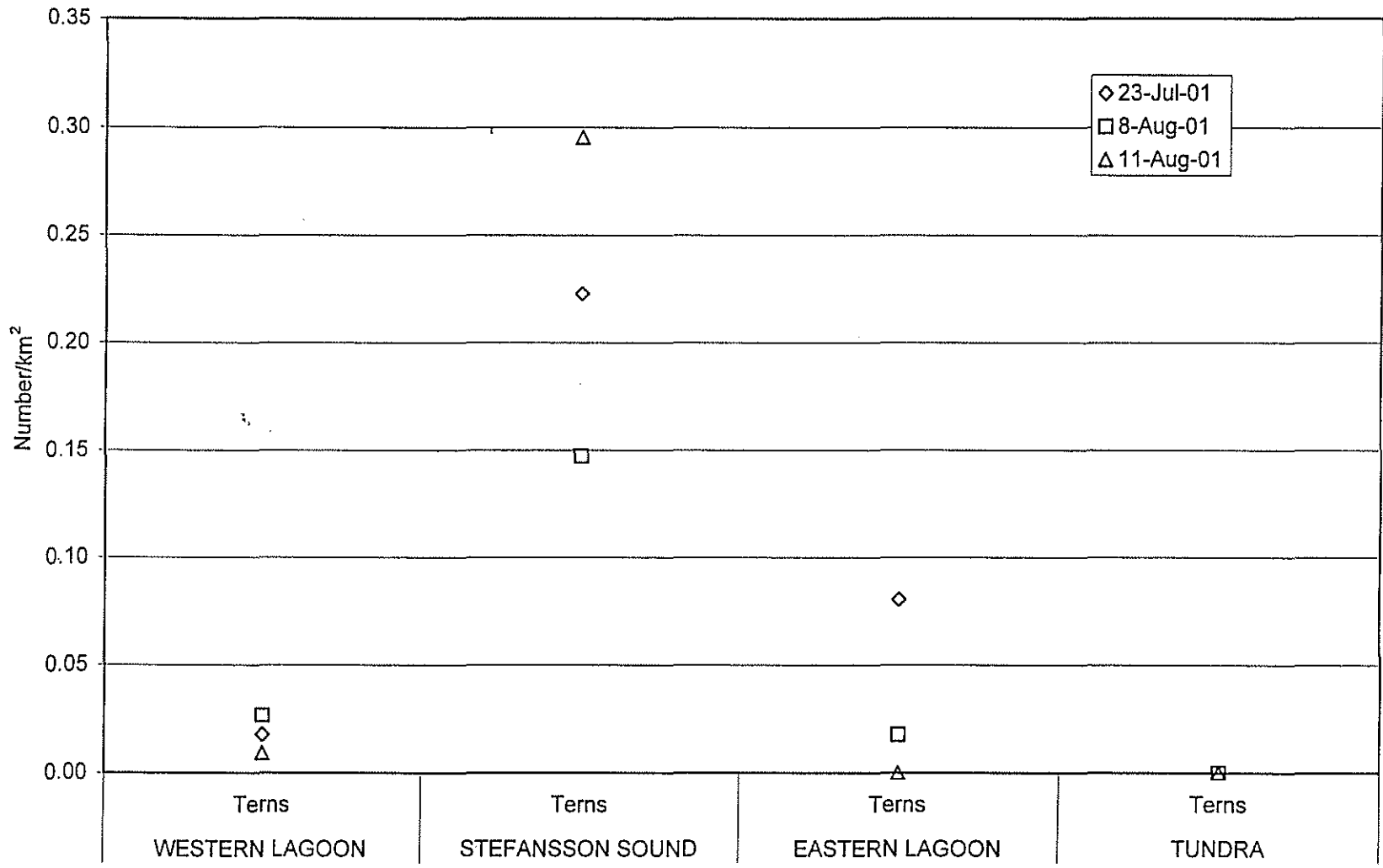


Figure 31. Areal density of terns for 3 aerial surveys by region between Spy Island and Brownlow Point, Alaska, 23 July-11 August 2001. On 23 July 2001, two mainland transects in the eastern lagoon and all tundra transects were not flown because of fog.

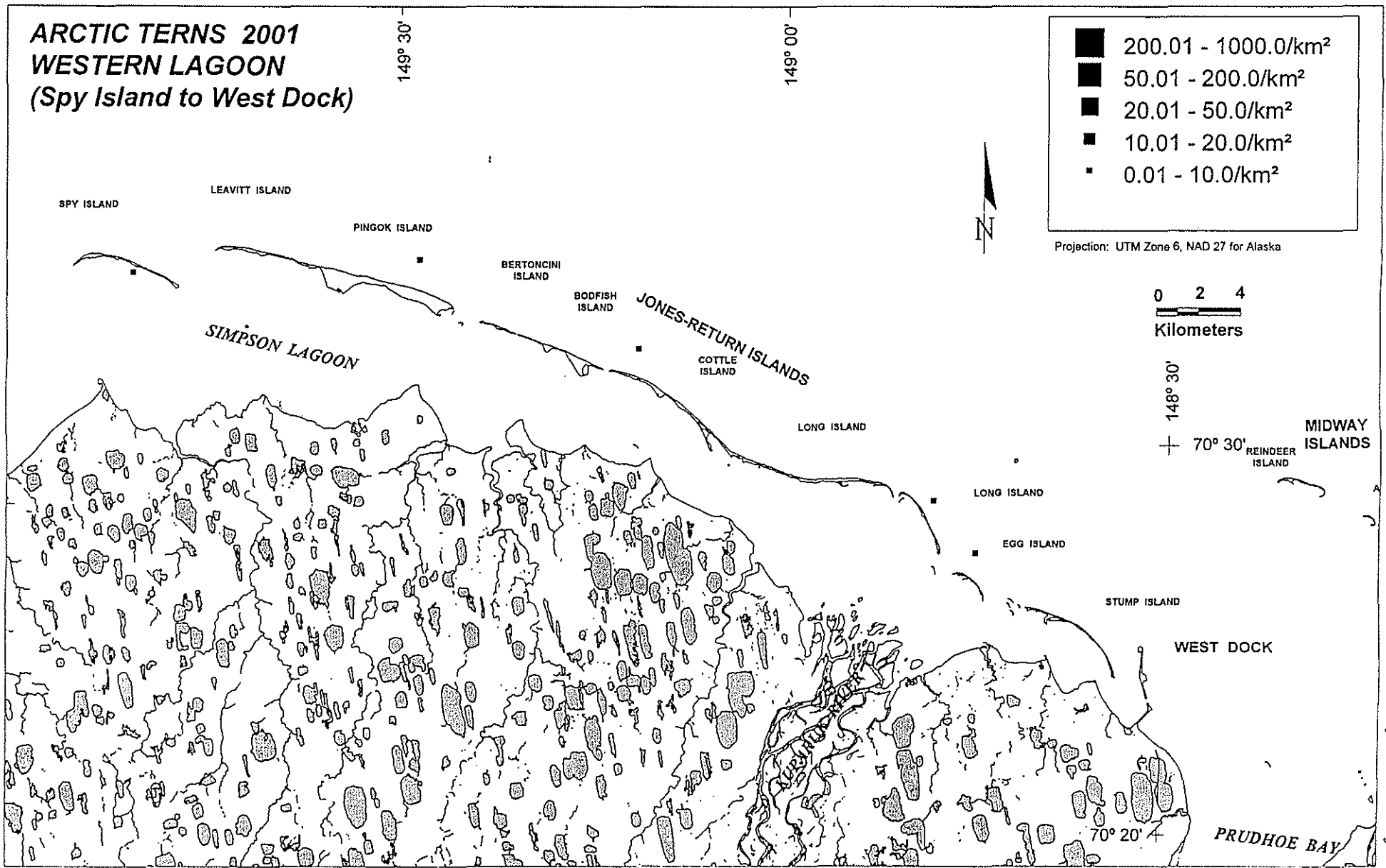


Figure 32. Summary of density for Arctic terns by 30-s time period segments in the barrier island-lagoon system between Spy Island and West Dock, Alaska, 23 July-11 August 2001.

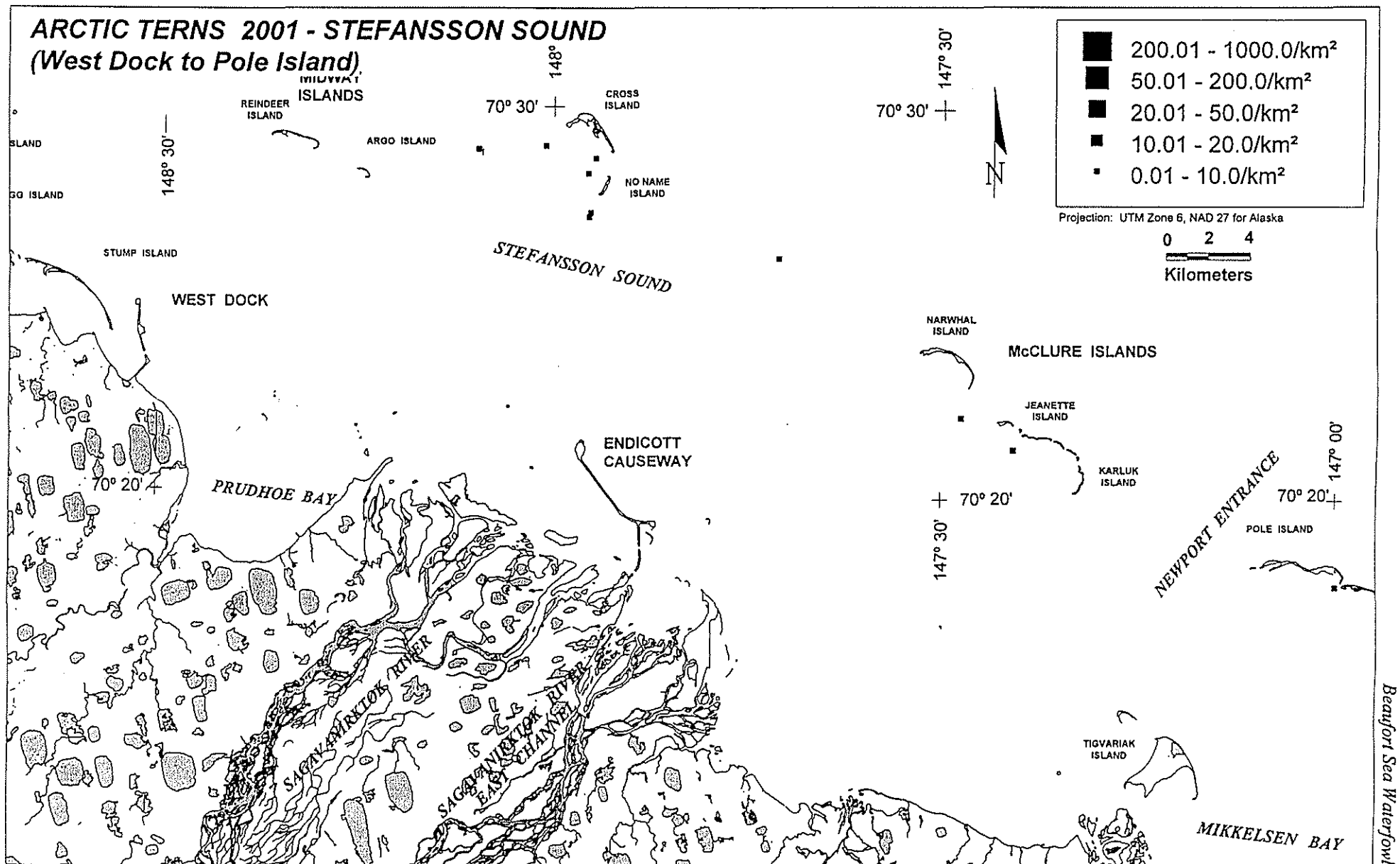


Figure 33. Summary of density for Arctic terns by 30-s time period segments in the barrier island-lagoon system between West Dock and Pole Island, Alaska, 23 July-11 August 2001.

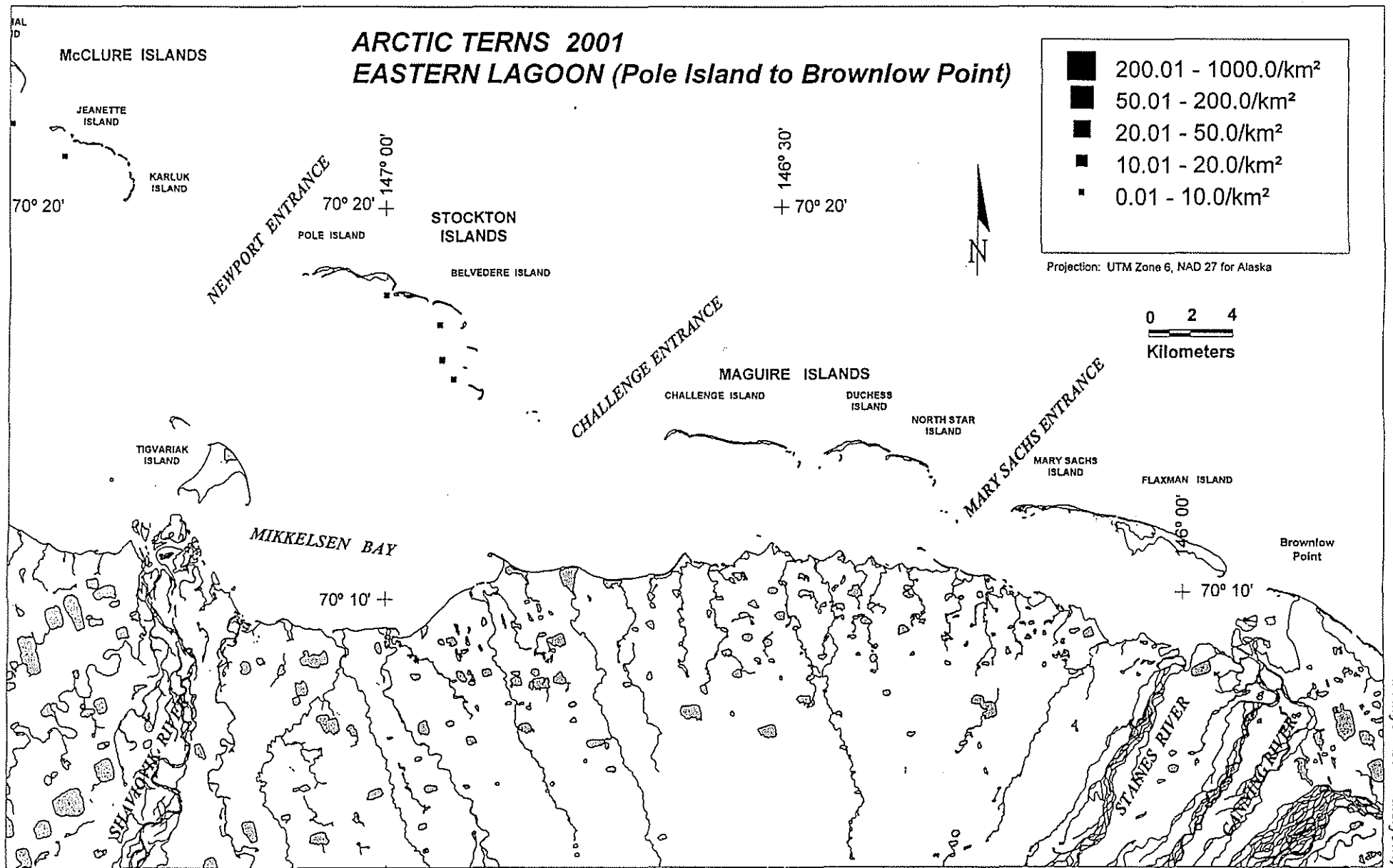


Figure 34. Summary of density for Arctic terns by 30-s time period segments in the barrier island-lagoon system between Pole Island and Brownlow Point, Alaska, 23 July-11 August 2001.

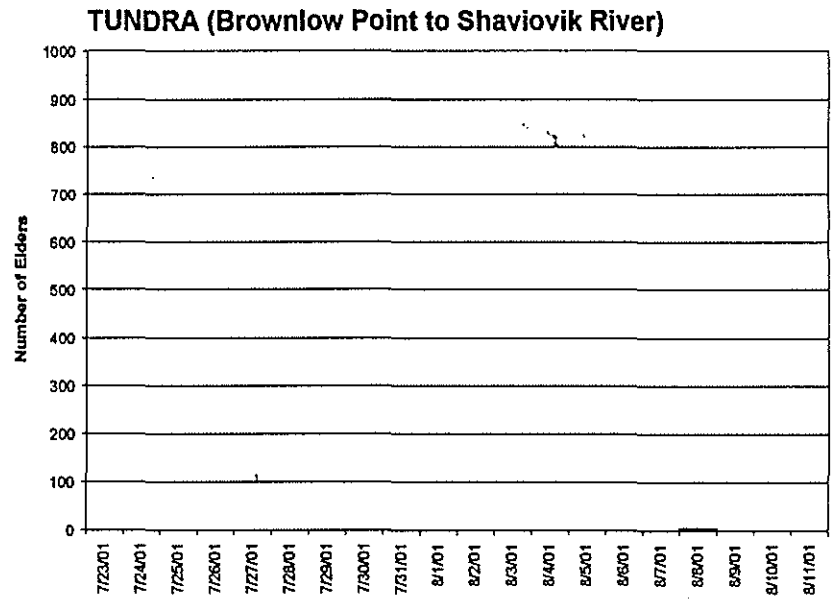
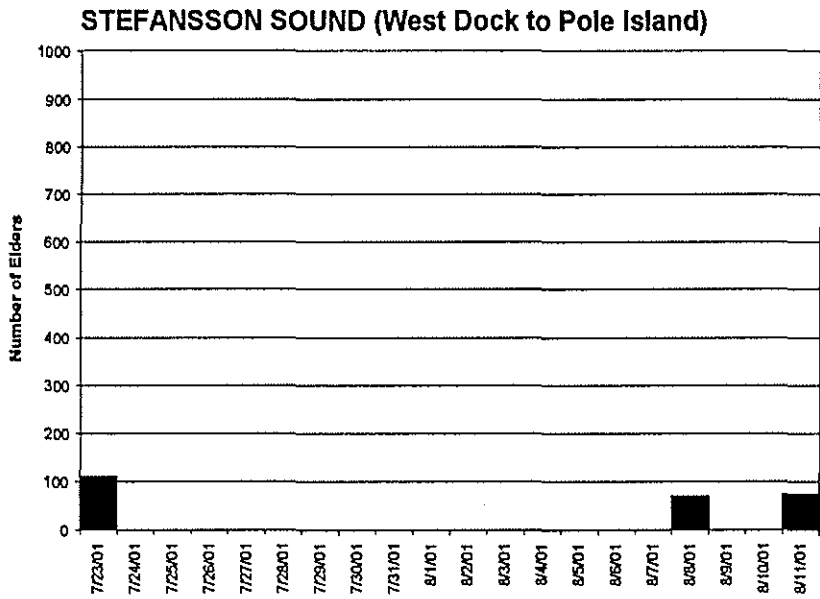
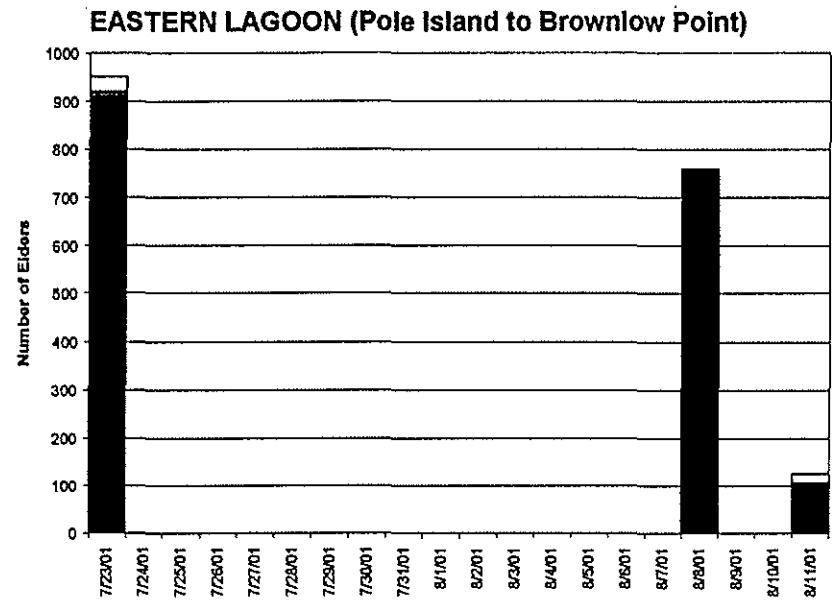
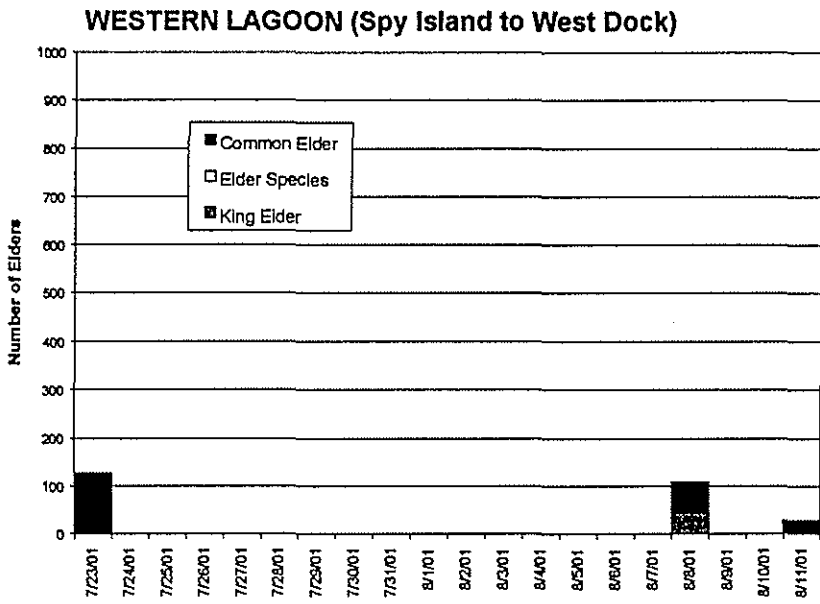


Figure 35. Total number of eiders on- and off-transect during aerial surveys in the barrier island-lagoon systems between Spy Island and Brownlow Point, Alaska, 23 July–11 August 2001. Surveys were flown on 23 July, 8 August and 11 August 2001.

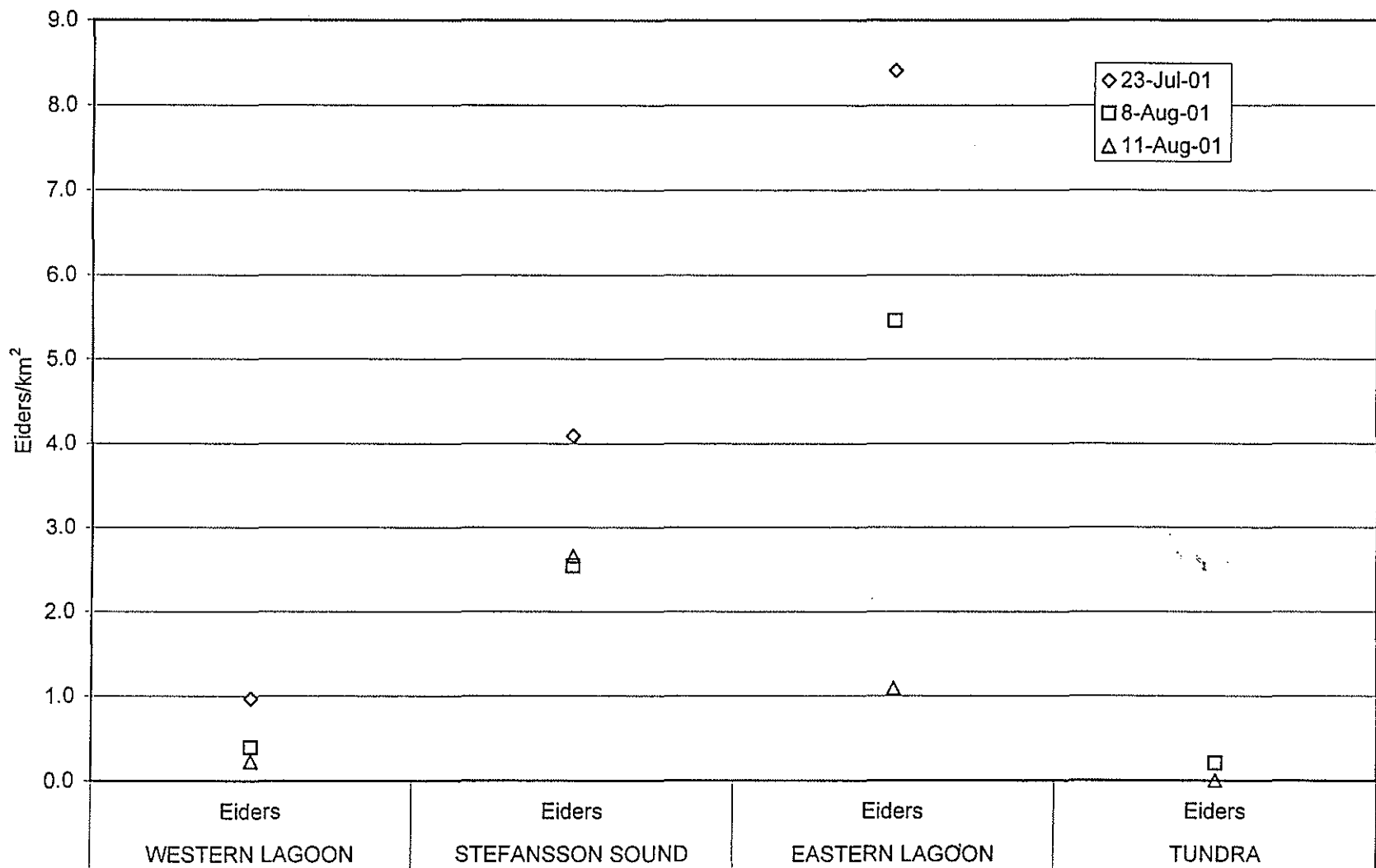


Figure 36. Areal density of eiders for 3 aerial surveys by region between Spy Island and Brownlow Point, Alaska, 23 July-11 August 2001. On 23 July 2001, two mainland transects in the eastern lagoon and all tundra transects were not flown because of fog.

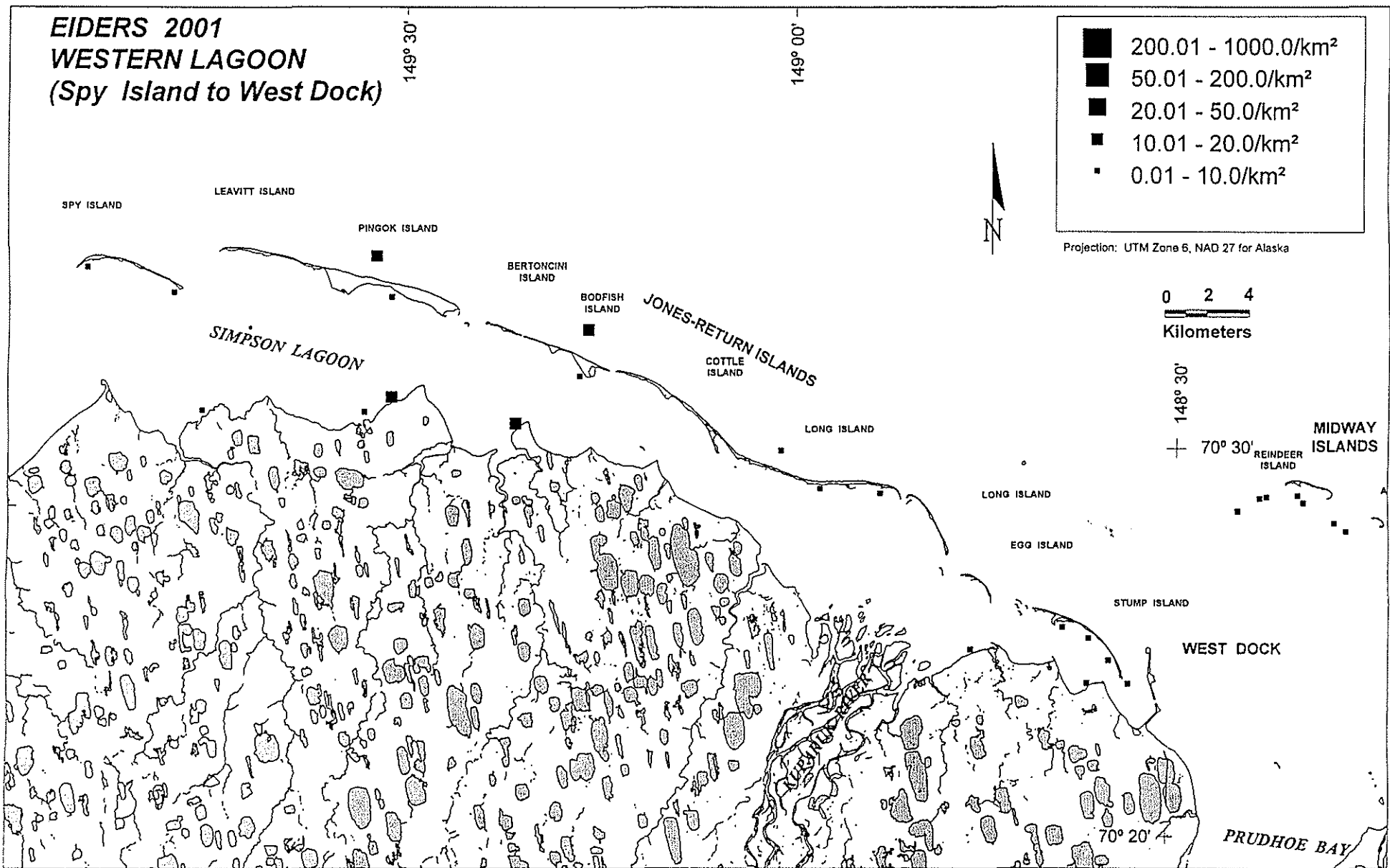


Figure 37. Summary of density for eiders by 30-s time period segments in the barrier island-lagoon system between Spy Island and West Dock, Alaska, 23 July-11 August 2001.

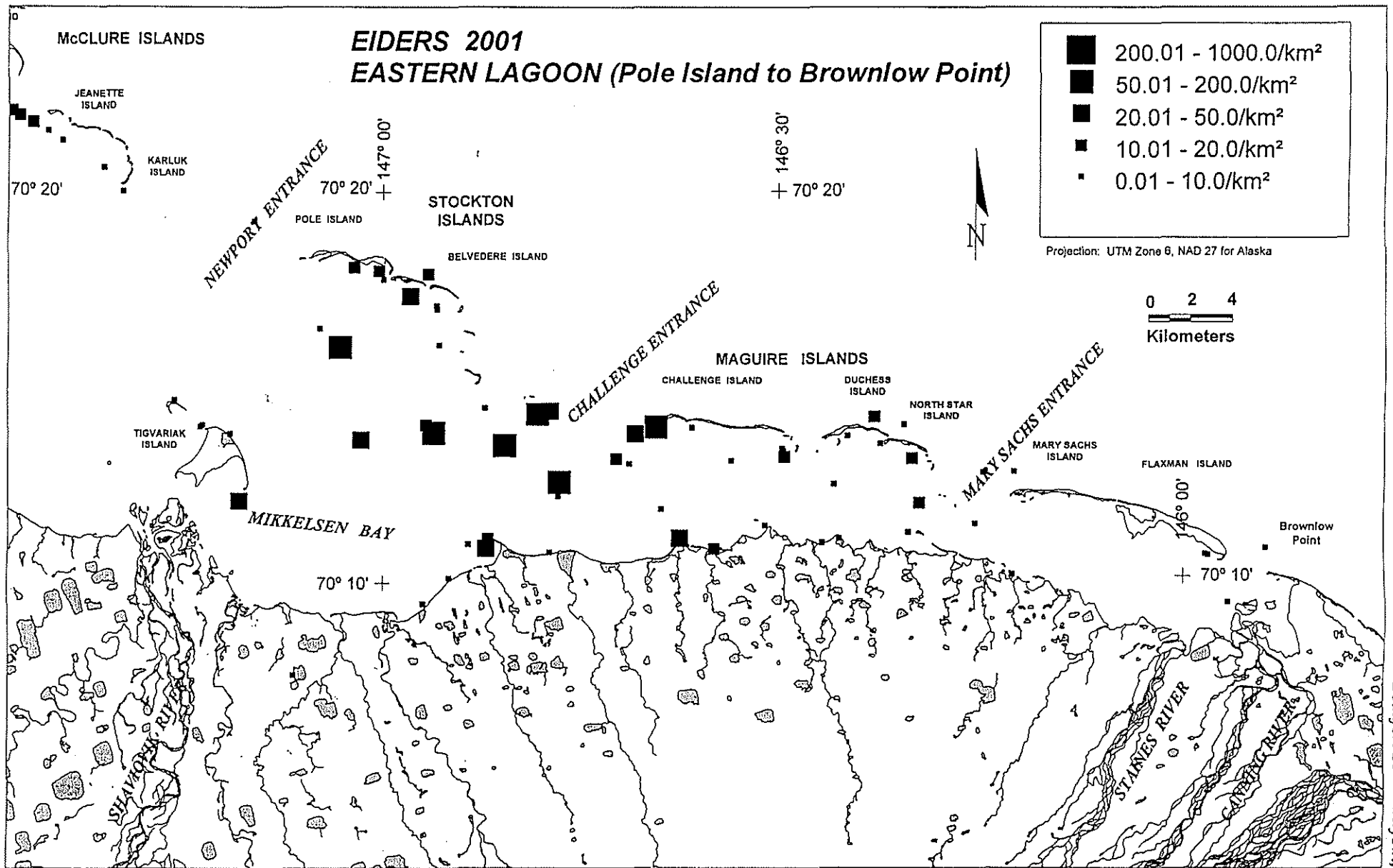


Figure 39. Summary of density for eiders by 30-s time period segments in the barrier island-lagoon system between Pole Island and Brownlow Point, Alaska, 23 July-11 August 2001.

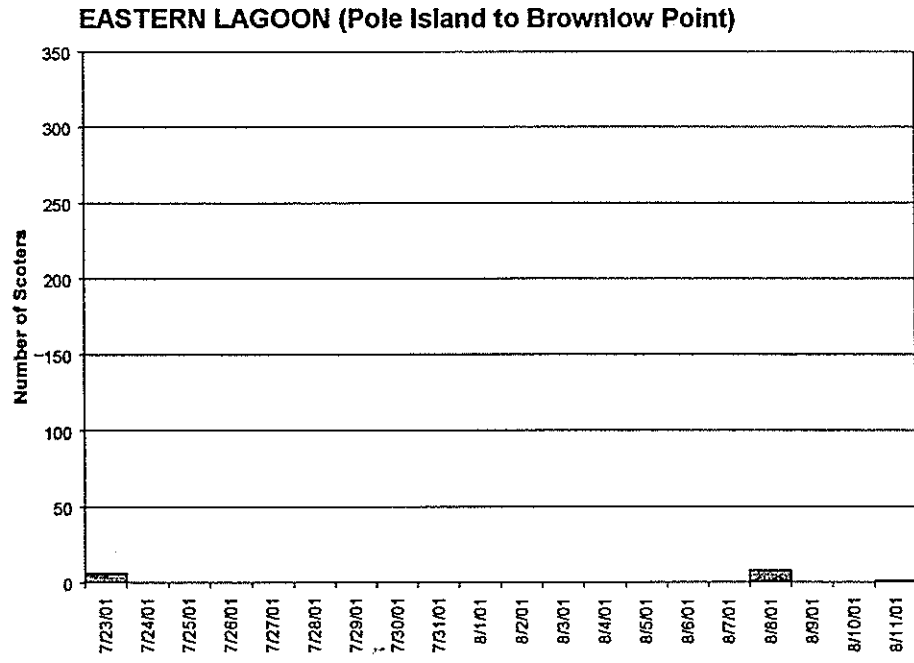
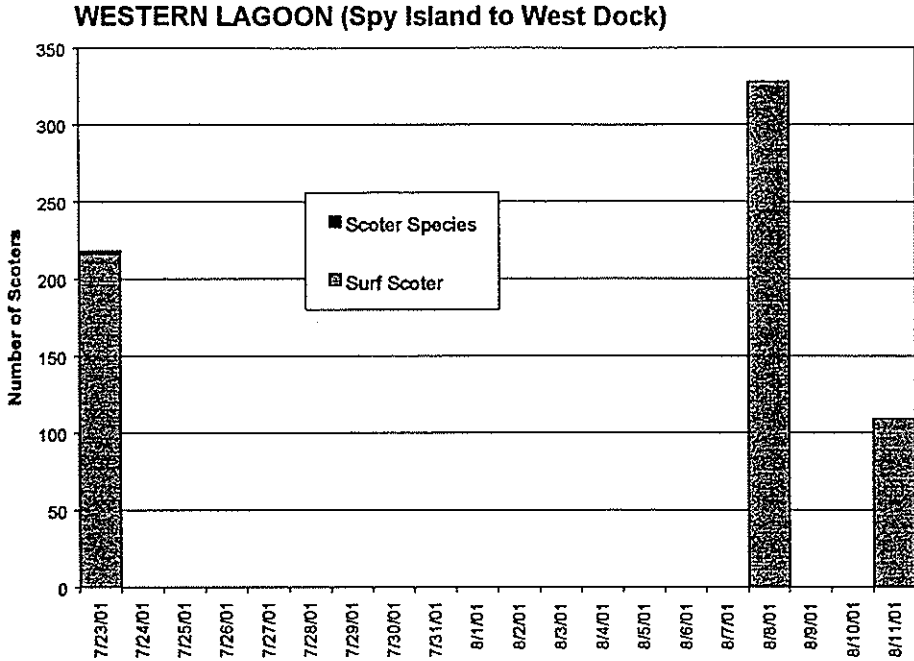


Figure 40. Total number of scoters on- and off-transect during aerial surveys in the barrier island-lagoon systems between Spy Island and Brownlow Point, Alaska, 23 July–11 August 2001. Surveys were flown on 23 July, 8 August and 11 August 2001.

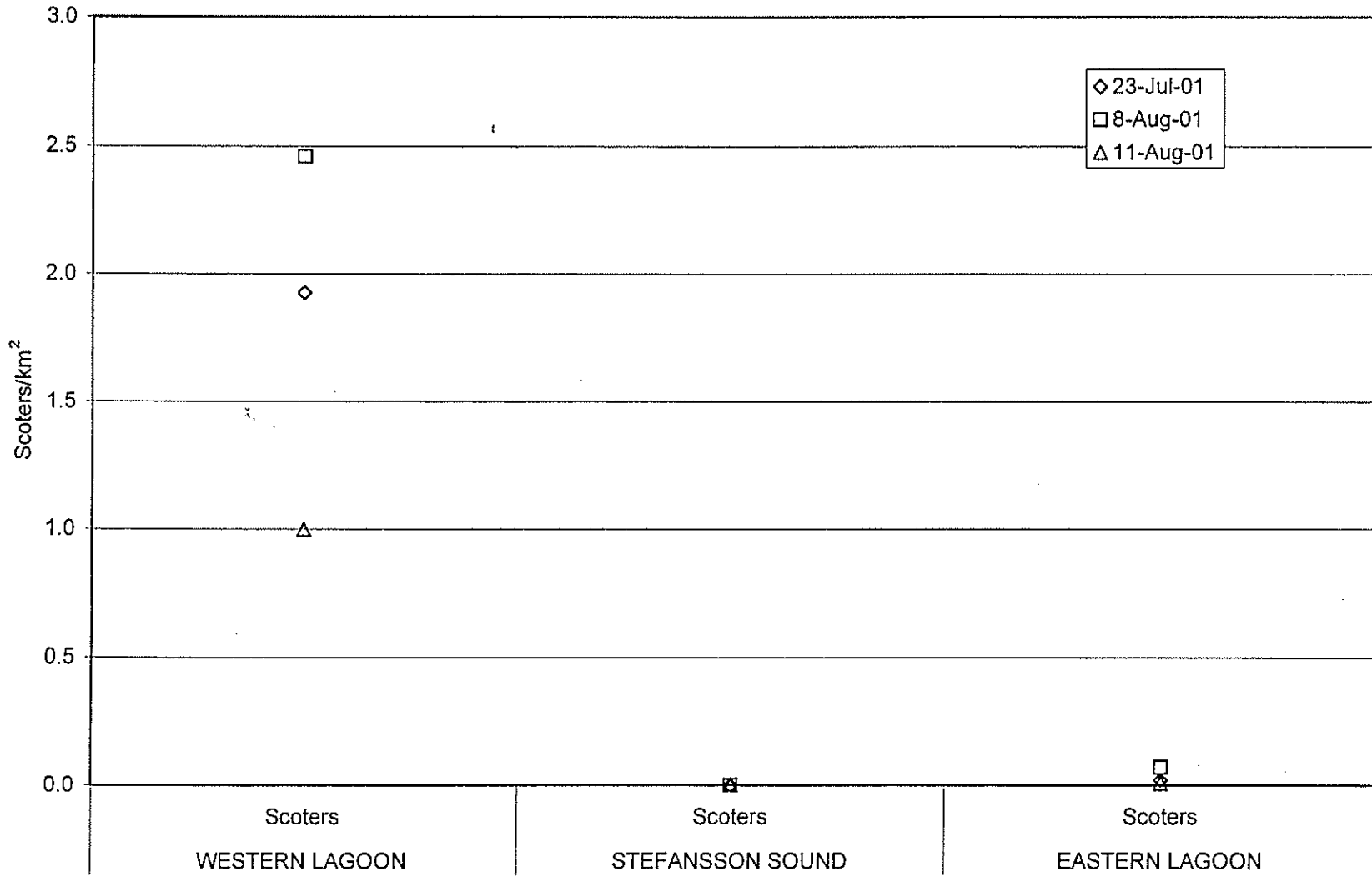


Figure 41. Areal density of scoters for 3 aerial surveys by region between Spy Island and Brownlow Point, Alaska, 23 July-11 August 2001. On 23 July 2001, two mainland transects in the eastern lagoon and all tundra transects were not flown because of fog.

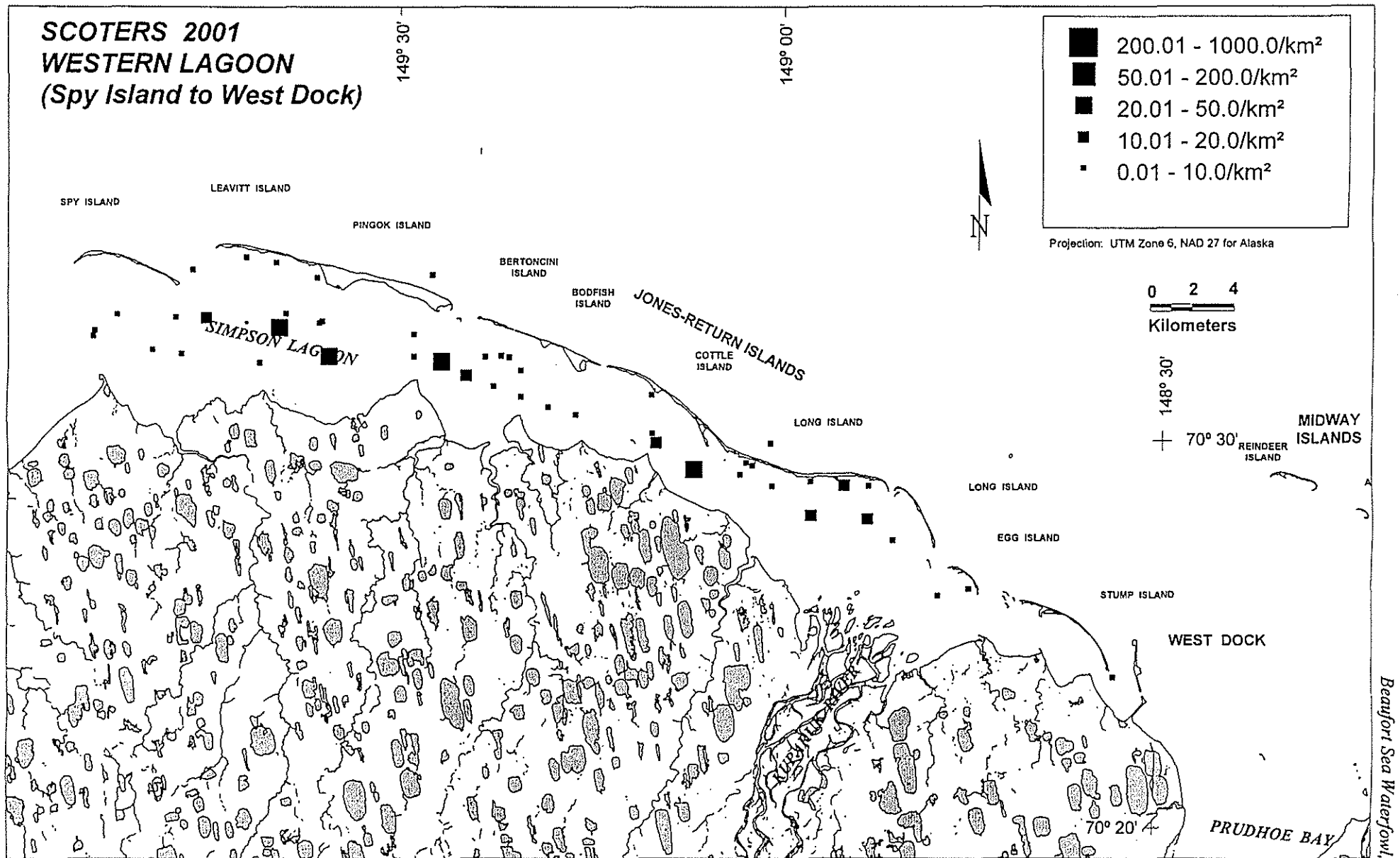


Figure 42. Summary of density for scoters by 30-s time period segments in the barrier island-lagoon system between Spy Island and West Dock, Alaska, 23 July-11 August 2001.

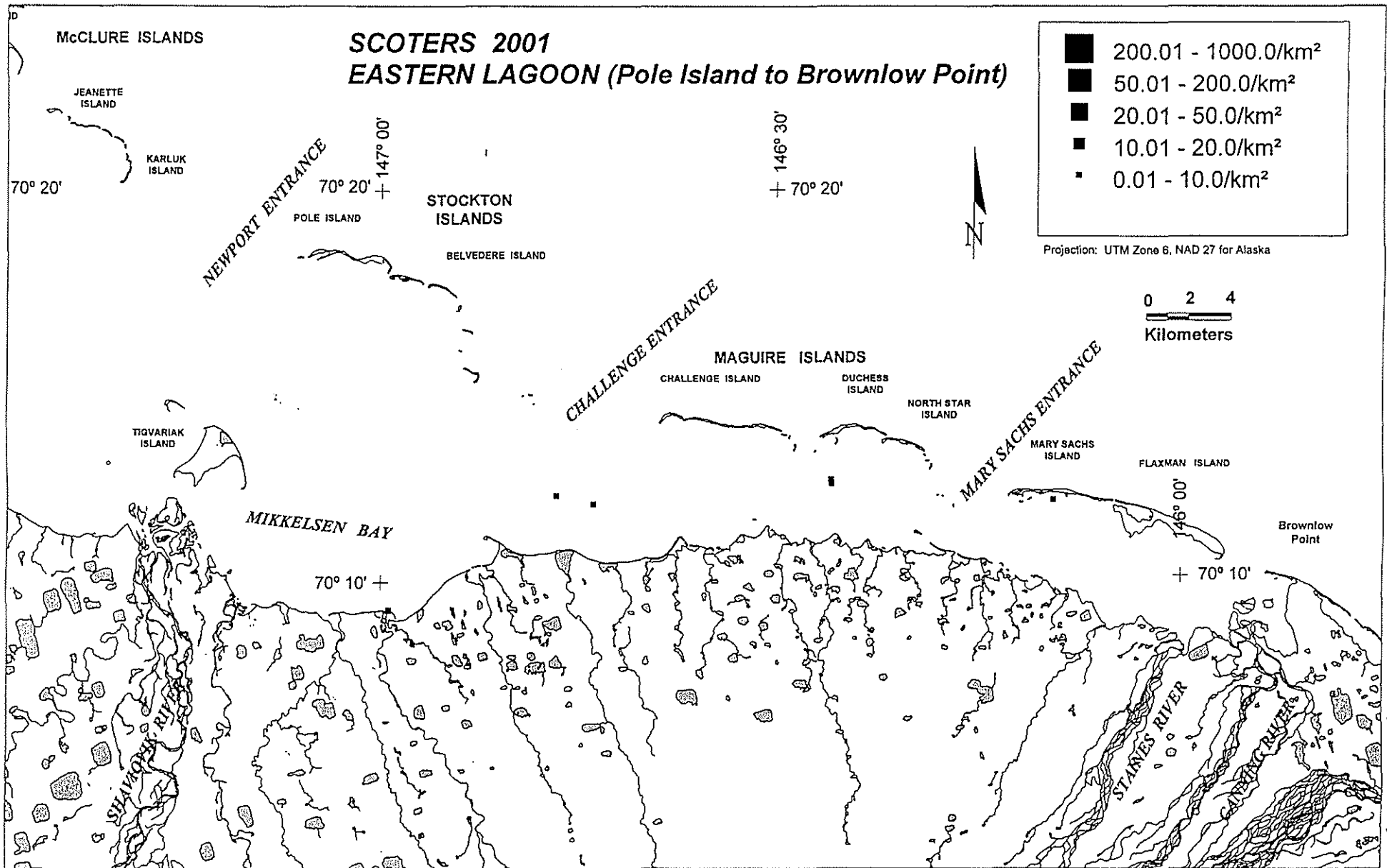


Figure 43. Summary of density for scoters by 30-s time period segments in the barrier island-lagoon system between Pole Island and Brownlow Point, Alaska, 23 July-11 August 2001.

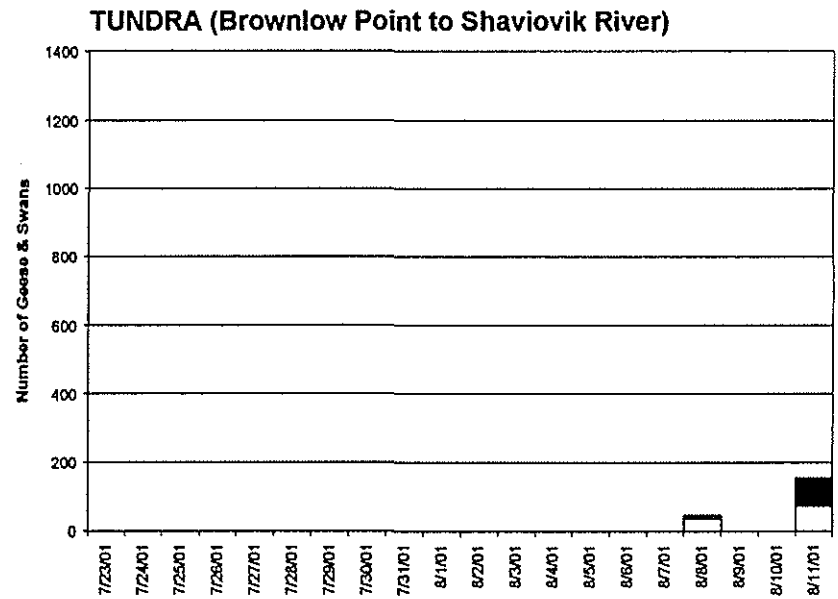
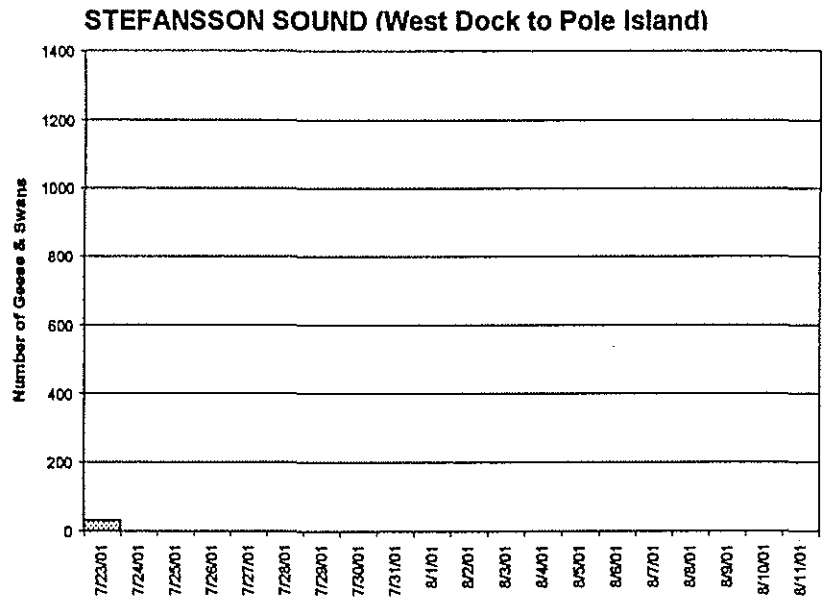
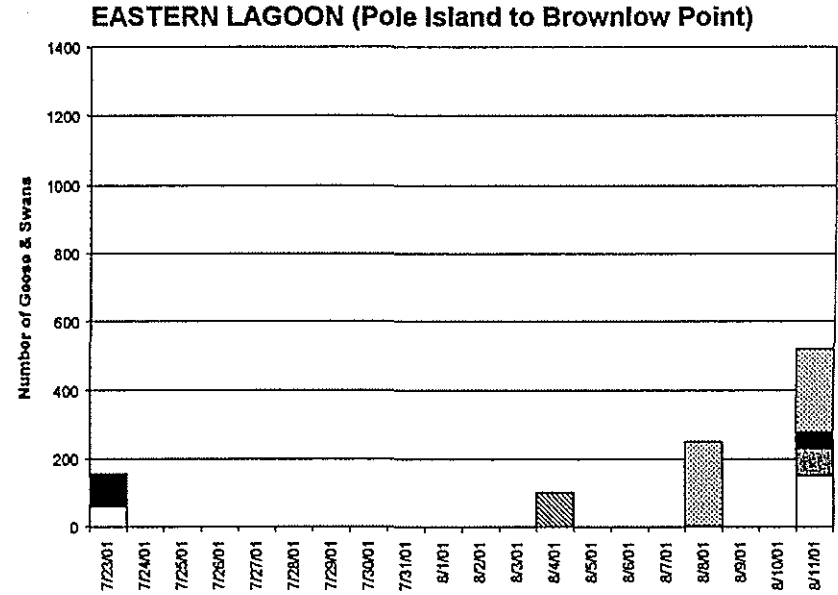
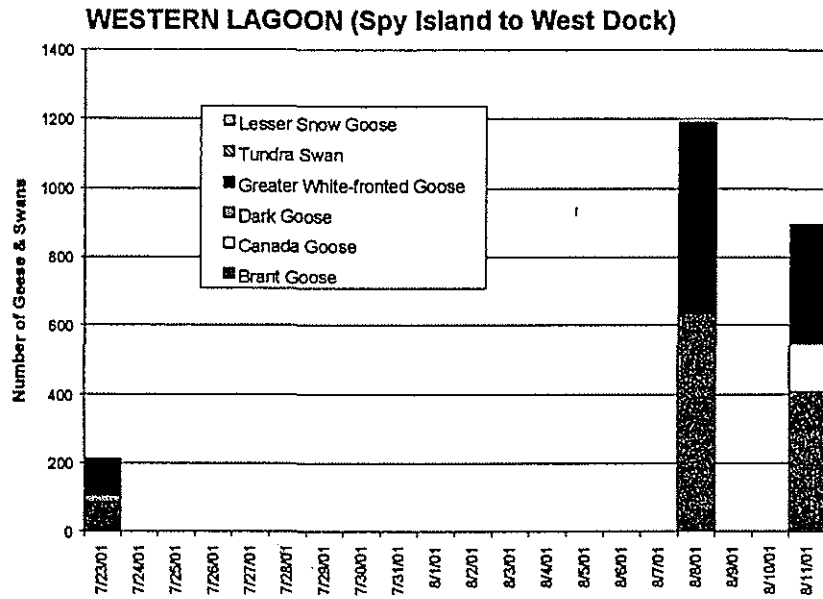


Figure 44. Total number of geese and swans observed both on- and off-transect during aerial surveys in the barrier island-lagoon systems between Spy Island and Brownlow Point, Alaska, 23 July–11 August 2001. Surveys were flown on 23 July, 8 August and 11 August 2001.

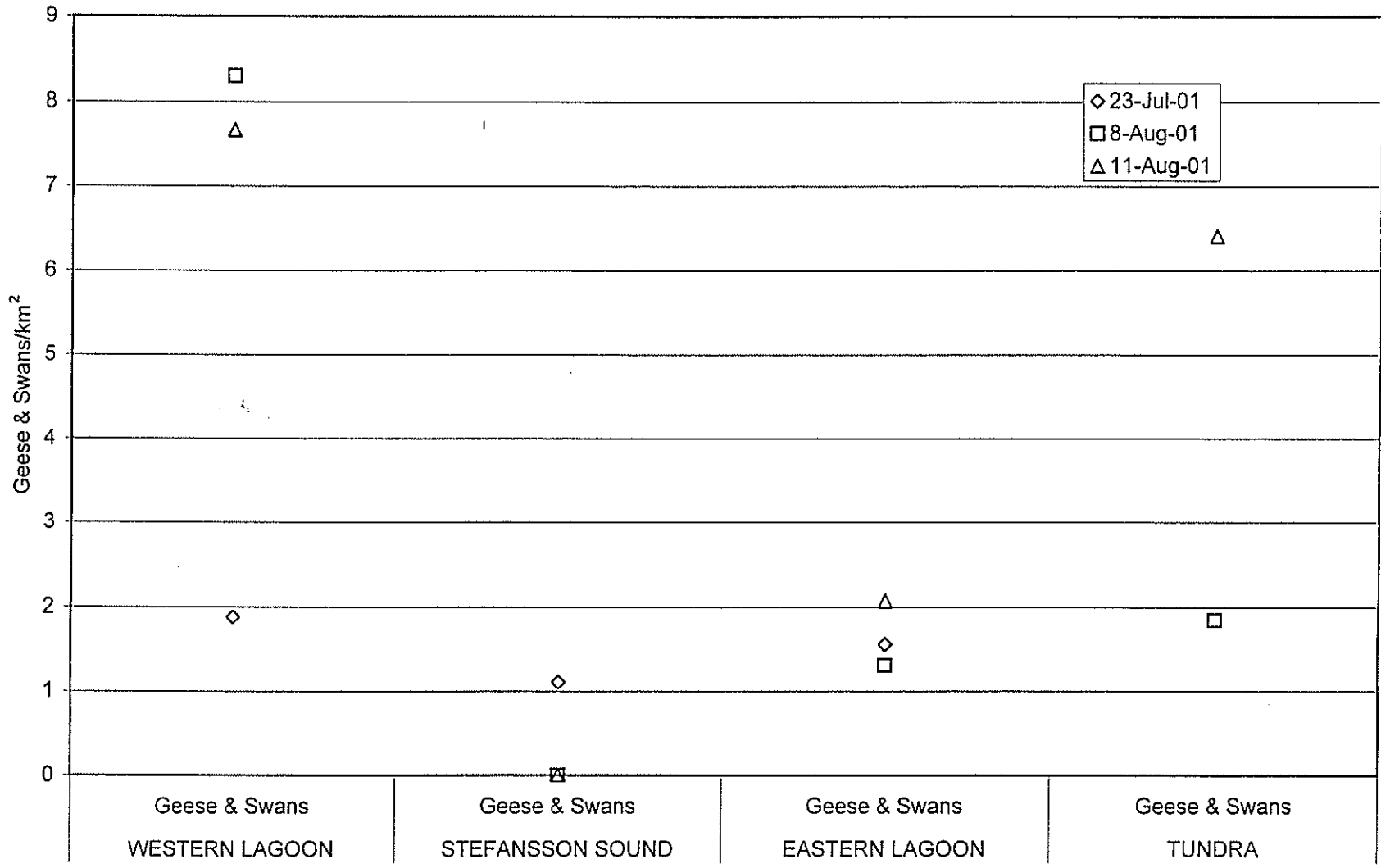


Figure 45. Areal density of geese and swans for 3 aerial surveys by region between Spy Island and Brownlow Point, Alaska, 23 July-11 August 2001. On 23 July 2001, two mainland transects in the eastern lagoon and all tundra transects were not flown because of fog.

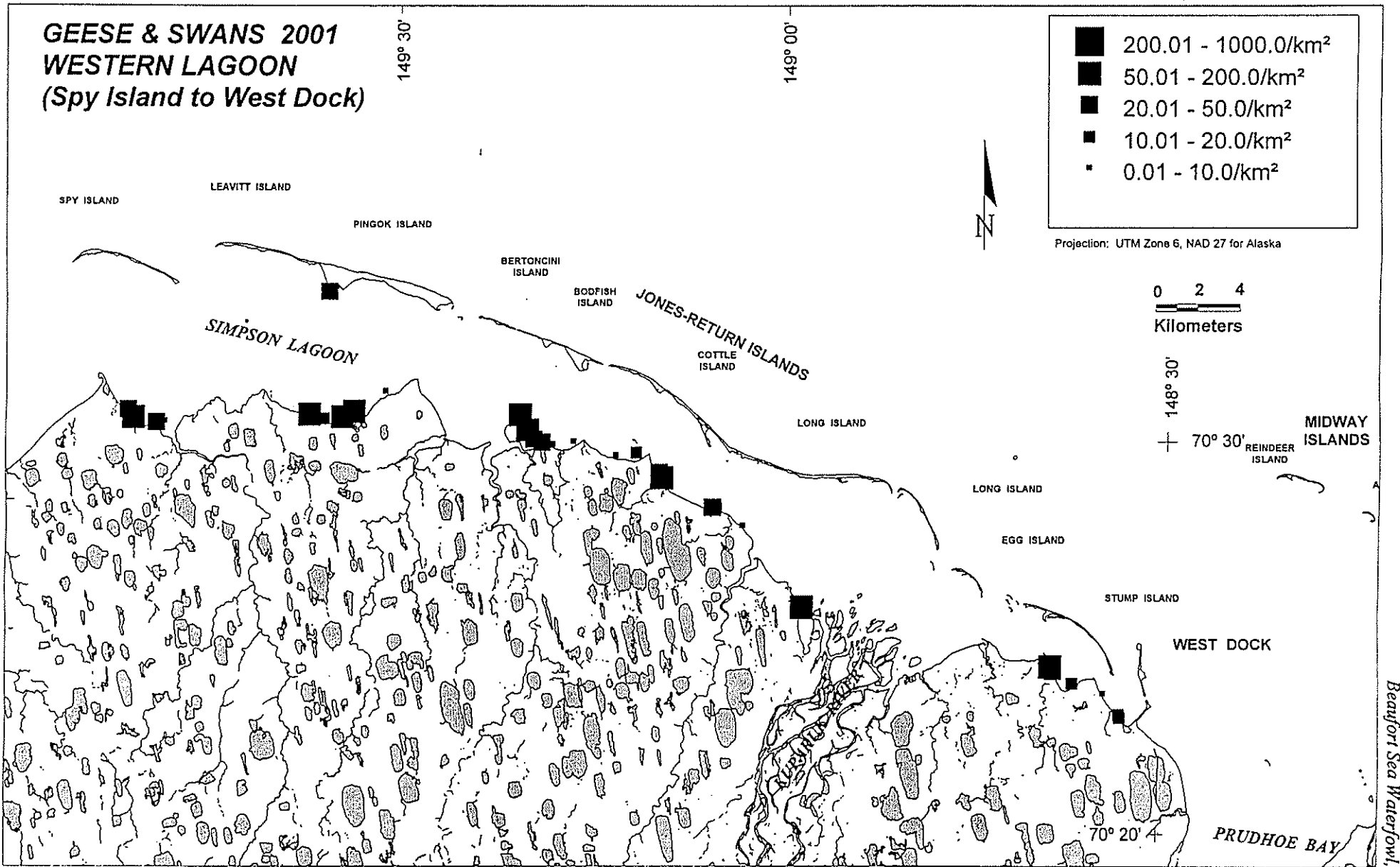


Figure 46. Summary of density for geese and swans by 30-s time period segments in the barrier island-lagoon system between Spy Island and West Dock, Alaska, 23 July-11 August 2001.

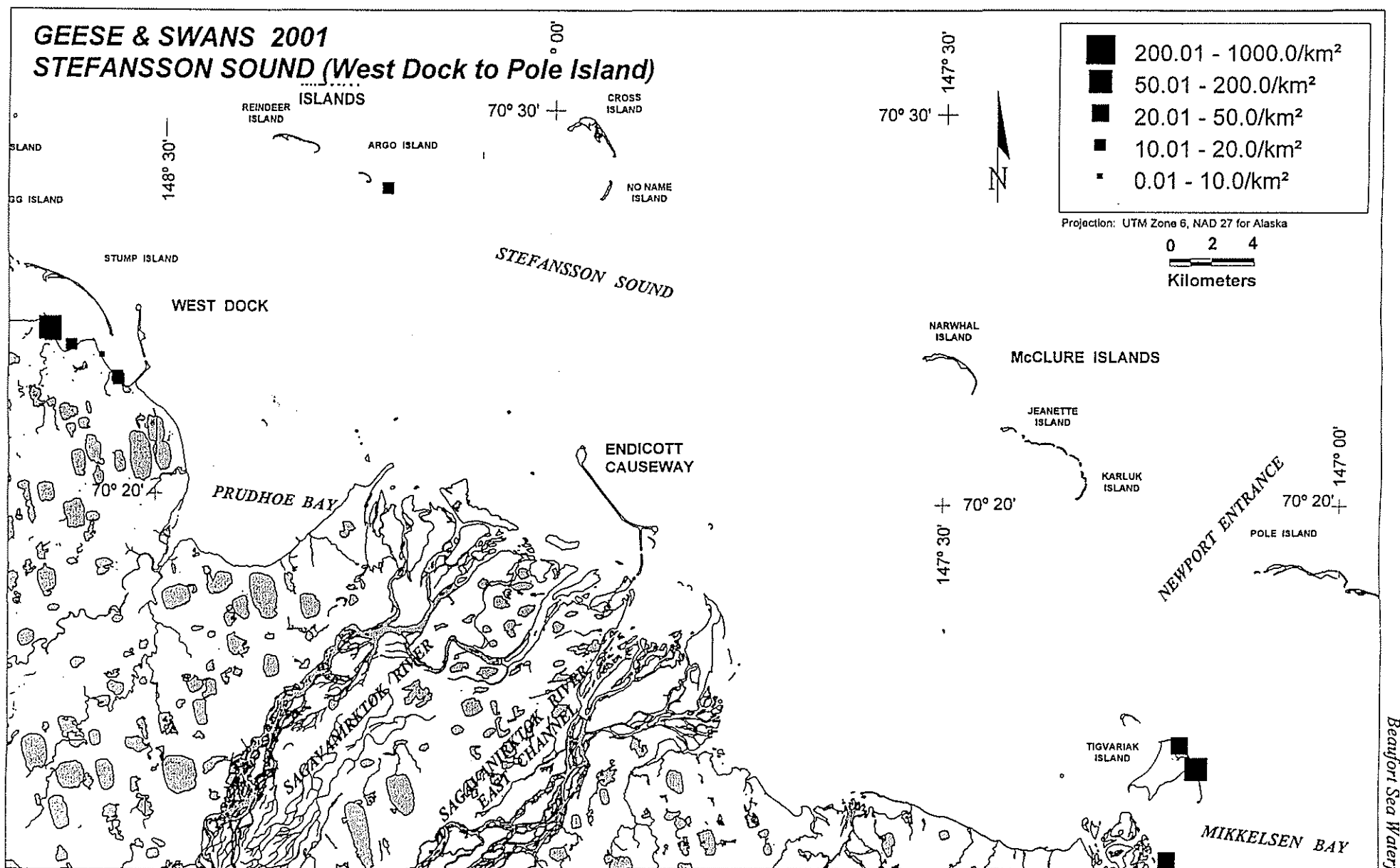


Figure 47. Summary of density for geese and swans by 30-s time period segments in the barrier island-lagoon system between West Dock and Pole Island, Alaska, 23 July-11 August 2001.

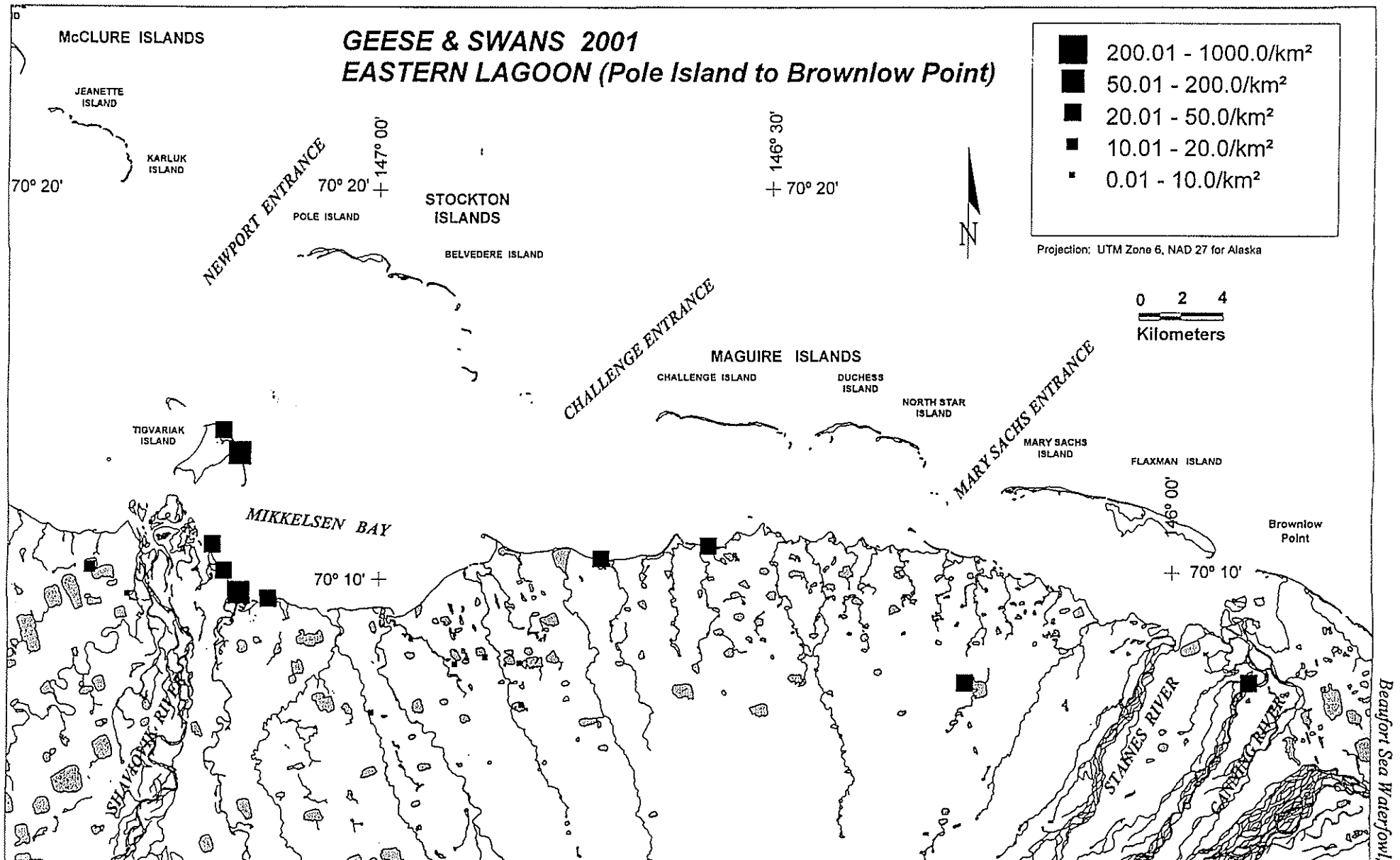


Figure 48. Summary of density for geese and swans by 30-s time period segments in the barrier island-lagoon system between Pole Island and Brownlow Point, Alaska, 23 July-11 August 2001.

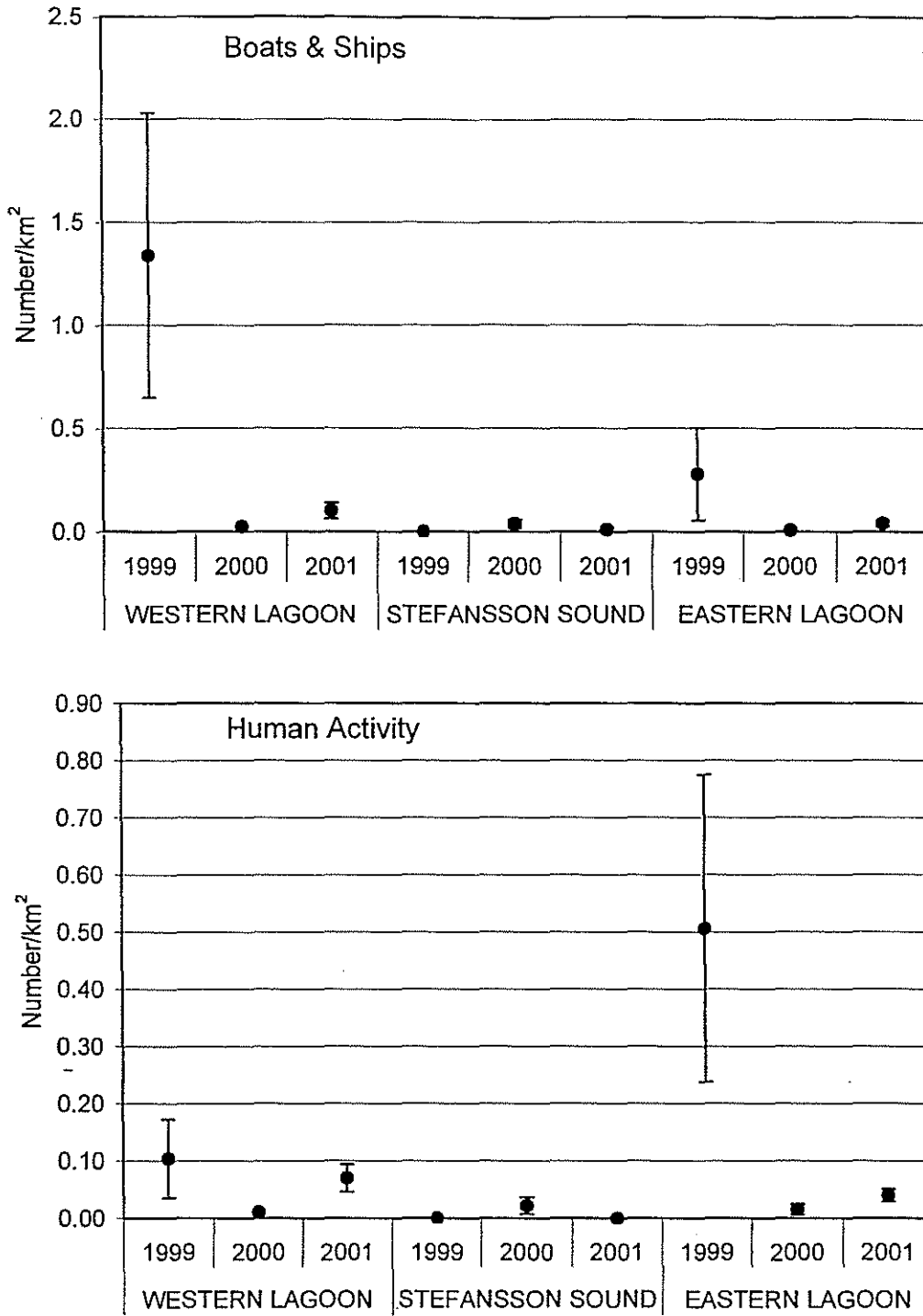


Figure 49. Mean areal density with standard error for vessel traffic and human activity (nets, camps, and/or people) during aerial surveys by region between Spy Island and Brownlow Point, Alaska, July-August 1999-2001.

Table 1. Summary of weather and lagoon conditions during 3 aerial surveys in the barrier island-lagoon systems between Spy Island and Brownlow Point and on tundra transects from Brownlow Point to the Shaviovik River, Alaska, 23 July–11 August 2001. (ADST = Alaska Daylight Savings Time)

Survey	Start Time (ADST)	Survey Duration (minutes)	Air Temperature (°C)	Wind Speed (kph)	Cloud Cover (tenths)	Right Front Observer	Left Rear Observer
WESTERN LAGOON (Spy Island to West Dock)							
23 Jul 01	13:35:04	96.6	19°	9	2	Lynn Noel	Bob Rodrigues
08 Aug 01	13:40:47	91.7	13°	8	9	Lynn Noel	Bob Rodrigues
11 Aug 01	13:43:24	96.3	9°	8	3	Lynn Noel	Paul Jensen
STEFANSSON SOUND (West Dock to Pole Island)							
23 Jul 01	16:09:04	20.6	19°	8	6	Lynn Noel	Bob Rodrigues
08 Aug 01	16:14:03	22.7	12°	8	6	Lynn Noel	Bob Rodrigues
11 Aug 01	16:10:45	23.0	6°	8	5	Lynn Noel	Paul Jensen
EASTERN LAGOON (Pole Island to Brownlow Point)							
23 Jul 01	16:29:53	85.8	19°	10	5	Lynn Noel	Bob Rodrigues
08 Aug 01	16:37:18	98.3	11°	8	6	Lynn Noel	Bob Rodrigues
11 Aug 01	16:34:24	95.6	5°	8	8	Lynn Noel	Paul Jensen
TUNDRA (Brownlow Point to Shaviovik River)							
23 Jul 01	Fog-no survey						
08 Aug 01	18:16:36	17.2	11°	8	9	Lynn Noel	Bob Rodrigues
11 Aug 01	18:11:04	18.4	6°	8	10	Lynn Noel	Paul Jensen

Table 2. Summary of survey effort in the barrier island-lagoon systems between Spy Island and Brownlow Point and tundra between Brownlow Point and the Shaviovik River, Alaska, 23 July–11 August 2001. Western Lagoon (Spy Island to West Dock), Stefansson Sound (West Dock to Pole Island), Eastern Lagoon (Pole Island to Flaxman Island), and Tundra (Brownlow Point to Shaviovik River).

Region	Transect Number	Number of Replicates	Total Length (km)	Total Areal Coverage (km ²)	Region	Transect Number	Number of Replicates	Total Length (km)	Total Areal Coverage (km ²)
Western Lagoon	22	3	23.8	9.52	Eastern Lagoon	60	3	38.7	15.48
	23	3	30.3	12.12		61	3	37.4	14.96
	24	3	32.4	12.96		62	3	36.7	14.68
	25	3	34.1	13.64		63	3	40.2	16.08
	30	3	39.9	15.96		133	3	43.1	17.24
	31	3	41.7	16.68		134	3	41.0	16.40
	32	3	45.5	18.20		135	3	41.3	16.52
	33	3	55.0	22.00		136	3	46.0	18.40
	101	3	66.4	26.56		180	3	44.1	17.64
	102	3	42.8	17.12		181	3	36.7	14.68
	201	3	64.5	25.80		182	3	39.0	15.60
	202	3	47.2	18.88		183	3	35.2	14.08
	301	3	53.1	21.24		190	2	32.0	12.80
	302	3	36.7	14.68		191	2	29.2	11.68
	401	3	54.6	21.84		192	3	52.7	21.08
	402	3	42.5	17.00		193	3	64.1	25.64
601	3	43.3	14.44	604	3	39.4	15.76		
602	3	38.2	13.98	605	3	39.7	15.88		
603	3	55.2	22.08	606	3	36.1	14.44		
Total Effort			847.2	334.70	607	3	41.2	16.48	
					Total Effort			813.8	325.52
Stefansson Sound	130	3	75.2	30.08	Tundra	500	2	32.8	13.12
	131	3	74.6	29.84		501	2	30.1	12.04
	132	3	53.1	21.24		502	2	31.7	12.68
Total Effort		202.9	81.16	503		2	27.9	11.16	
					Total Effort			122.5	49.00
					Total Effort All Transects			1986.4	790.38

Table 3. Total number of bird sightings and individuals seen on- and off-transect for all aerial survey transects (total length = 1986.4 km) in the barrier island-lagoon system, offshore, and on tundra between Spy Island and Brownlow Point, Alaska, 23 July - 11 August 2001.

Species Code	Species Name	Number of Sightings	Percent of Sightings	Number of Individuals	Percent of Individuals	Percent of Classified for Group
PALO	Pacific Loon (<i>Gavia pacifica</i>)	146	7.9	212	0.6	70.7
RTLO	Red-throated Loon (<i>Gavia stellata</i>)	59	3.2	80	0.2	26.7
YBLO	Yellow-billed Loon (<i>Gavia adamsii</i>)	8	0.4	8	0.0	2.7
LOSP	Loon Species (<i>Gavia</i> spp.)	7	0.4	8	0.0	
Loons		220	11.9	308	0.9	
POJA	Pomarine Jaeger (<i>Stercorarius pomarinus</i>)	1	0.1	2	0.0	100.0
Jaegers		1	0.1	2	0.0	
GLGU	Glaucous Gull (<i>Larus hyperboreus</i>)	347	18.7	856	2.5	94.6
SAGU	Sabine's Gull (<i>Xema sabini</i>)	3	0.2	49	0.1	5.4
Gulls		350	18.9	905	2.6	
ARTE	Arctic Tern (<i>Sterna paradisaea</i>)	21	1.1	34	0.1	
COMU	Common Murre (<i>Uria aalge</i>)	1	0.1	1	0.0	
BLGU	Black Guillemot (<i>Cepphus grylle</i>)	1	0.1	1	0.0	
SEABIRDS (Jaegers, Gulls, and Terns)		374	20.1	942	2.7	
COEI	Common (Pacific) Eider (<i>Somateria mollissima v-nigrum</i>)	190	10.3	2240	6.4	99.5
KIEI	King Eider (<i>Somateria spectabilis</i>)	1	0.1	11	0.0	0.5
EISP	Eider Species (<i>Somateria</i> spp.)	6	0.3	104	0.3	
Eiders		197	10.6	2355	6.7	
SUSC	Surf Scoter (<i>Melanitta perspicillata</i>)	71	3.8	698	2.0	99.6
BLSC	Black Scoter (<i>Melanitta nigra</i>)	1	0.1	1	0.0	0.1
SCOT	Scoter Species (<i>Melanitta</i> spp.)	2	0.1	2	0.0	0.3
Scoters		74	4.0	701	2.0	
NOPI	Northern Pintail (<i>Anas acuta</i>)	2	0.1	24	0.1	
OLDS	Long-tailed Duck (<i>Clangula hyemalis</i>)	857	46.3	26878	77.0	
RBME	Red-breasted Merganser (<i>Mergus serrator</i>)	1	0.1	1	0.0	
GRSC	Greater Scaup (<i>Aythya marila</i>)	1	0.1	20	0.1	
SCAUP	Scaup Species (<i>Aythya</i> spp.)	3	0.2	10	0.0	
DKSP	Duck Species	22	1.2	201	0.6	
Ducks		1157	62.5	30190	86.5	
BRAN	Black Brant (<i>Branta bernicla</i>)	21	1.1	1129	3.2	33.6
CAGO	Canada Goose (<i>Branta canadensis</i>)	17	0.9	461	1.3	13.7
GWGO	Greater White-fronted Goose (<i>Anser albifrons</i>)	31	1.7	1230	3.5	36.6
LSGO	Lesser Snow Goose (<i>Chen caerulescens caerulescens</i>)	8	0.4	520	1.5	15.5
TUSW	Tundra Swan (<i>Cygnus columbianus</i>)	7	0.4	19	0.1	0.6
DAGO	Dark Goose	2	0.1	100	0.3	
Geese & Swans		84	4.5	3359	9.6	
WATERFOWL (Ducks, Geese & Swans)		1241	67.0	33549	96.1	
PHSP	Phalarope Species (<i>Phalaropus</i> spp.)	3	0.2	81	0.2	
SMSH	Small Shorebird	5	0.3	11	0.0	
MESH	Medium Shorebird	2	0.1	5	0.0	
SHOREBIRDS		10	0.5	97	0.3	
SNOW	Snowy Owl (<i>Nyctea scandiaca</i>)	1	0.1	1	0.0	
SNBU	Snow Bunting (<i>Plectrophenax nivalis</i>)	1	0.1	1	0.0	
RLHA	Rough-legged Hawk (<i>Buteo lagopus</i>)	1	0.1	1	0.0	
BISP	Bird Species	4	0.2	8	0.0	
ALL BIRDS		1852	100	34907	100	

Table 4. Total number of bird sightings and individuals seen on- and off-transect for aerial survey transects (total length = 847.2 km) in the barrier island-lagoon system and offshore between Spy Island and West Dock, Alaska, 23 July-11 August 2001.

Species Code	WESTERN LAGOON Species Name	Number of Sightings	Percent of Sightings	Number of Individuals	Percent of Individuals	Percent of Classified for Group
PALO	Pacific Loon (<i>Gavia pacifica</i>)	93	9.1	129	0.8	62.6
RTLO	Red-throated Loon (<i>Gavia stellata</i>)	51	5.0	71	0.4	34.5
YBLO	Yellow-billed Loon (<i>Gavia adamsii</i>)	6	0.6	6	0.0	2.9
LOSP	Loon Species (<i>Gavia</i> spp.)	7	0.7	8	0.0	
Loons		157	15.3	214	1.3	
GLGU	Glaucous Gull (<i>Larus hyperboreus</i>)	208	20.3	559	3.4	93.2
SAGU	Sabine's Gull (<i>Xema sabini</i>)	2	0.2	41	0.2	6.8
Gulls		210	20.4	600	3.6	
ARTE	Arctic Tern (<i>Sterna paradisaea</i>)	5	0.5	6	0.0	
SEABIRDS (Jaegers, Gulls, and Terns)		215	20.93	606	3.7	
COEI	Common (Pacific) Eider (<i>Somateria mollissima v-nigrum</i>)	30	2.9	219	1.3	100.0
EISP	Eider Species (<i>Somateria</i> spp.)	2	0.2	45	0.3	
Eiders		32	3.1	264	1.6	
SUSC	Surf Scoter (<i>Melanitta perspicillata</i>)	65	6.3	683	4.2	100.0
SCOT	Scoter Species (<i>Melanitta</i> spp.)	2	0.2	2	0.0	
Scoters		67	6.5	685	4.2	
NOPI	Northern Pintail (<i>Anas acuta</i>)	1	0.1	4	0.0	
OLDS	Long-tailed Duck (<i>Clangula hyemalis</i>)	479	46.6	12207	74.2	
GRSC	Greater Scaup (<i>Aythya marila</i>)	1	0.1	20	0.1	
SCAUP	Scaup Species (<i>Aythya</i> spp.)	1	0.1	2	0.0	
DKSP	Duck Species	14	1.4	147	0.9	
Ducks		595	57.8	13329	81.0	
BRAN	Black Brant (<i>Branta bernicla</i>)	21	2.0	1129	6.9	49.5
GWGO	Greater White-fronted Goose (<i>Anser albifrons</i>)	25	2.4	1009	6.1	44.3
CAGO	Canada Goose (<i>Branta canadensis</i>)	6	0.6	140	0.9	6.1
TUSW	Tundra Swan (<i>Cygnus columbianus</i>)	1	0.1	2	0.0	0.1
DAGO	Dark Goose	1	0.1	20	0.1	
Geese & Swans		53	5.2	2280	13.9	
WATERFOWL (Ducks, Geese & Swans)		648	63.0	15609	94.9	
MESH	Medium Shorebird	1	0.1	2		
SMSH	Small Shorebird	1	0.1	1	0.0	
SHOREBIRDS		2	0.1	3	0.0	
RLHA	Rough-legged Hawk (<i>Buteo lagopus</i>)	1	0.1	1	0.0	
RAPTORS		1	0.1	1	0.0	
BISP	Bird Species	4	0.4	8	0.0	
ALL BIRDS		1027	100	16441	100	

Table 5 Total number of bird sightings and individuals seen on- and off-transect for aerial survey transects (total length = 202.9 km) in the barrier island-lagoon system between West Dock and Pole Island, Alaska, 23 July-11 August 2001.

Species Code	STEFANSSON SOUND Species Name	Number of Sightings	Percent of Sightings	Number of Individuals	Percent of Individuals	Percent of Classified for Group
PALO	Pacific Loon (<i>Gavia pacifica</i>)	6	3.9	11	0.6	78.6
RTLO	Red-throated Loon (<i>Gavia stellata</i>)	2	1.3	2	0.1	14.3
YBLO	Yellow-billed Loon (<i>Gavia adamsii</i>)	1	0.6	1	0.1	7.1
Loons		9	5.8	14	0.8	
GLGU	Glaucous Gull (<i>Larus hyperboreus</i>)	27	17.4	46	2.6	100.0
Gulls		27	17.4	46	2.6	
ARTE	Arctic Tern (<i>Sterna paradisaea</i>)	11	7.1	18	1.0	
BLGU	Black Guillemot (<i>Cephus grylle</i>)	1	0.6	1	0.1	
SEABIRDS (Jaegers, Gulls, and Terns)		39	25.2	65	3.7	
COEI	Common (Pacific) Eider (<i>Somateria mollissima v-nigrum</i>)	52	33.5	251	14.1	100.0
Eiders		52	33.5	251	14.1	
OLDS	Long-tailed Duck (<i>Clangula hyemalis</i>)	52	33.5	1370	77.2	
DKSP	Duck Species	1	0.6	4	0.2	
Ducks		105	67.7	1625	91.6	
LSGO	Lesser Snow Goose (<i>Chen caerulescens caerulescens</i>)	1	0.6	30	1.7	100.0
Geese & Swans		1	0.6	30	1.7	
WATERFOWL (Ducks, Geese & Swans)		106	68.4	1655	93.3	
PHSP	Phalarope Species (<i>Phalaropus</i> spp.)	1	0.6	40	2.3	100.0
SHOREBIRDS		1	0.6	40	2.3	
ALL BIRDS		155	100	1774	100	

Table 6. Total number of bird sightings and individuals seen on- and off-transect for aerial survey transects (total length = 813.8 km) in the barrier island-lagoon system and offshore between Pole Island and Brownlow Point, Alaska, 23 July-11 August 2001.

Species Code	<i>EASTERN LAGOON</i> Species Name	Number of Sightings	Percent of Sightings	Number of Individuals	Percent of Individuals	Percent of Classified for Group
PALO	Pacific Loon (<i>Gavia pacifica</i>)	30	5.8	44	0.3	88.0
RTLO	Red-throated Loon (<i>Gavia stellata</i>)	5	1.0	5	0.0	10.0
YBLO	Yellow-billed Loon (<i>Gavia adamsii</i>)	1	0.2	1	0.0	2.0
Loons		36	7.0	50	0	
GLGU	Glaucous Gull (<i>Larus hyperboreus</i>)	109	21.2	248	1.7	96.9
SAGU	Sabine's Gull (<i>Xema sabini</i>)	1	0.2	8	0.1	3.1
Gulls		110	21.4	256	1.8	
ARTE	Arctic Tern (<i>Sterna paradisaea</i>)	5	1.0	10	0.1	
COMU	Common Murre (<i>Uria aalge</i>)	1	0.2	1	0.0	
SEABIRDS (Jaegers, Gulls, and Terns)		116	22.5	267	1.8	
COEI	Common (Pacific) Eider (<i>Somateria mollissima v-nigrum</i>)	108	21.0	1770	12.1	99.4
KIEI	King Eider (<i>Somateria spectabilis</i>)	1	0.2	11	0.1	0.6
EISP	Eider Species (<i>Somateria</i> spp.)	3	0.6	54	0.4	
Eiders		4	0.8	65	0.4	
SUSC	Surf Scoter (<i>Melanitta perspicillata</i>)	6	1.2	15	0.1	93.8
BLSC	Black Scoter (<i>Melanitta nigra</i>)	1	0.2	1	0.0	6.3
Scoters		7	1.4	16	0.1	
OLDS	Long-tailed Duck (<i>Clangula hyemalis</i>)	321	62.3	13249	90.9	
SCAUP	Scaup Species (<i>Aythya</i> spp.)	1	0.2	6	0.0	
NOPI	Northern Pintail (<i>Anas acuta</i>)	1	0.2	20	0.1	
RBME	Red-breasted Merganser (<i>Mergus serrator</i>)	1	0.2	1	0.0	
DKSP	Duck Species	7	1.4	50	0.3	
Ducks		342	66.4	13407	92.0	
CAGO	Canada Goose (<i>Branta canadensis</i>)	5	1.0	210	1.4	24.8
GWGO	Greater White-fronted Goose (<i>Anser albifrons</i>)	4	0.8	141	1.0	16.7
LSGO	Lesser Snow Goose (<i>Chen caerulescens caerulescens</i>)	7	1.4	490	3.4	57.9
TUSW	Tundra Swan (<i>Cygnus columbianus</i>)	2	0.4	5	0.0	0.6
DAGO	Dark Goose	1	0.2	80	0.5	
Geese & Swans		18	3.5	846	5.8	
WATERFOWL (Ducks, Geese & Swans)		360	70	14253	98	
SMSH	Small Shorebird	1	0.2	1	0.0	
MESH	Medium Shorebird	1	0.2	3	0.0	
SHOREBIRDS		2	0.4	4	0.0	
SNOW	Snowy Owl (<i>Nyctea scandiaca</i>)	1		1		
ALL BIRDS		515	100	14575	100	

Table 7. Total number of bird sightings and individuals seen on- and off-transect for aerial survey transects (total length = 122.5 km) on tundra between Brownlow Point and the Shaviovik River, Alaska, 8 and 11 August 2001.

Species Code	<i>TUNDRA</i> Species Name	Number of Sightings	Percent of Sightings	Number of Individuals	Percent of Individuals	Percent of Classified for Group
PALO	Pacific Loon (<i>Gavia pacifica</i>)	17	36.2	28	8.0	93.3
RTLO	Red-throated Loon (<i>Gavia stellata</i>)	1	2.1	2	0.6	6.7
Loons		18	38.3	30	8.6	
POJA	Pomarine Jaeger (<i>Stercorarius pomarinus</i>)	1	2.1	2	0.6	100.0
Jaegers		1	2.1	2	0.6	
GLGU	Glaucous Gull (<i>Larus hyperboreus</i>)	3	6.4	3	0.9	100.0
Gulls		3	6.4	3	0.9	
SEABIRDS (Jaegers, Gulls, and Terns)		4	8.5	5	1.4	
EISP	Eider Species (<i>Somateria</i> spp.)	1	2.1	5	1.4	
Eiders		1	2.1	5	1.4	
OLDS	Long-tailed Duck (<i>Clangula hyemalis</i>)	5	10.6	52	14.9	
SCAUP	Scaup Species (<i>Aythya</i> spp.)	1	2.1	2	0.6	
Ducks		7	14.9	59	17.0	
CAGO	Canada Goose (<i>Branta canadensis</i>)	6	12.8	111	31.9	54.7
GWGO	Greater White-fronted Goose (<i>Anser albifrons</i>)	2	4.3	80	23.0	39.4
TUSW	Tundra Swan (<i>Cygnus columbianus</i>)	4	8.5	12	3.4	5.9
Geese & Swans		12	25.5	203	58.3	
WATERFOWL (Ducks, Geese & Swans)		19	40.4	262	75.3	
PHSP	Phalarope Species (<i>Phalaropus</i> spp.)	2	4.3	41	11.8	
SMSH	Small Shorebirds	3	6.4	9	2.6	
SHOREBIRDS		5	10.6	50	14.4	
SNBU	Snow Bunting (<i>Plectrophenax nivalis</i>)	1	2.1	1	0.3	
ALL BIRDS		47	100	348	100	

Table 8. Long-tailed duck density (number of individuals/km²) by aerial survey transect in the barrier island-lagoon system between Spy Island and West Dock, Alaska, 23 July - 11 August 2001.

Date	Transect Numbers																		
	Barrier Islands				Mid-Lagoon						Mainland Shore				Off Shore				
	23	31	202	201	24	32	301	302	601	602	603	25	33	401	402	22	30	101	102
Molt (15 July - 21 August)																			
23 Jul 01	15.50	124.44	34.18	41.25	3.29	32.57	27.92	28.48	55.21	10.66	32.43	0.44	0.00	3.69	0.71	24.06	7.46	2.67	3.15
8 Aug 01	21.36	218.39	27.04	36.84	0.72	68.18	45.08	182.79	91.03	119.04	40.61	6.53	0.53	9.39	45.18	0.00	0.38	2.75	0.00
11 Aug 01	1.25	34.79	0.97	4.13	0.00	0.84	9.04	34.76	0.00	90.26	29.70	2.16	0.00	6.32	6.08	1.58	0.00	0.12	0.00
Average Density	12.70	125.87	20.73	27.41	1.34	33.86	27.35	82.01	48.75	73.32	34.25	3.04	0.18	6.47	17.32	8.55	2.61	1.85	1.05

Table 9. Long-tailed duck density (number of individuals/km²) by aerial survey transect in the barrier island-lagoon system and on tundra between Pole Island and Brownlow Point, Alaska, 23 July-11 August 2001.

Date	Barrier Islands				Transect Numbers								Mainland Shore			
	133	134	135	136	180	181	182	183	604	605	606	607	190	191	192	193
MOLT 23 July - 11 August																
23 Jul 01	133.22	49.80	42.19	95.92	35.46	9.96	0.00	0.00	0.00	0.38	2.89	34.38	-	-	118.75	206.34
8 Aug 01	211.25	56.65	5.87	28.08	20.95	5.20	7.96	0.00	0.00	7.63	73.16	40.26	133.59	235.64	123.63	44.35
11 Aug 01	68.35	0.00	0.00	10.78	3.08	8.61	0.00	0.20	0.00	0.00	11.65	4.46	25.31	34.20	42.11	9.09
Average Density	137.61	35.48	16.02	44.93	19.83	7.92	2.65	0.07	0.00	2.67	29.23	26.37	79.45	134.92	94.83	86.59
Date	Off Shore				Tundra											
	60	61	62	63	500	501	502	503								
MOLT 23 July - 11 August																
23 Jul 01	4.88	9.00	0.00	0.00	-	-	-	-								
8 Aug 01	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.18								
11 Aug 01	11.54	0.00	0.61	0.00	0.00	0.00	0.92	8.15								
Average Density	5.47	3.07	0.20	0.00	0.00	0.00	0.46	4.17								

Table 10. Long-tailed duck density (number of individuals/km²) by aerial survey transect in the barrier island-lagoon system between West Dock and Pole Island, Alaska, 23 July-11 August 2001.

Date	Transect Numbers		
	Barrier Islands		
	130	131	132
Molt (15 July - 21 August)			
23 Jul 01	9.32	43.01	11.31
8 Aug 01	2.05	12.66	15.53
11 Aug 01	4.27	3.11	32.61
Average Density	5.21	19.59	19.82

Table 11. Species densities for all aerial survey transects (total area = 790.38 km²) in the barrier island-lagoon systems and on tundra between Spy Island and Brownlow Point, Alaska, 23 July-11 August 2001.

Species Code	Species Name	Total Number of Birds on Transect	Number of Sightings on Transect	Bird Density (Number/km ²)
LOONS				
PALO	Pacific Loon (<i>Gavia pacifica</i>)	160	114	0.202
RTLO	Red-throated Loon (<i>Gavia stellata</i>)	76	57	0.096
YBLO	Yellow-billed Loon (<i>Gavia adamsii</i>)	8	8	0.010
LOSP	Loon Species (<i>Gavia</i> spp.)	2	2	0.003
SEABIRDS (Jaegers, Gulls, and Terns)				
GLGU	Glaucous Gull (<i>Larus hyperboreus</i>)	772	314	0.977
SAGU	Sabine's Gull (<i>Xema sabini</i>)	49	3	0.062
ARTE	Arctic Tern (<i>Sterna paradisaea</i>)	34	21	0.043
BLGU	Black Guillemot (<i>Cepphus grylle</i>)	1	1	0.001
COMU	Common Murre (<i>Uria aalge</i>)	1	1	0.001
WATERFOWL (Ducks, Geese & Swans)				
COEI	Common (Pacific) Eider (<i>Somateria mollissima v-nigrum</i>)	1894	172	2.396
KIEI	King Eider (<i>Somateria spectabilis</i>)	11	1	0.014
EISP	Eider Species (<i>Somateria</i> spp.)	99	5	0.125
SUSC	Surf Scoter (<i>Melanitta perspicillata</i>)	643	68	0.814
BLSC	Black Scoter (<i>Melanitta nigra</i>)	1	1	0.001
SCOT	Scoter Species (<i>Melanitta</i> spp.)	1	1	0.001
OLDS	Long-tailed Duck (<i>Clangula hyemalis</i>)	22660	784	28.670
GRSC	Greater Scaup (<i>Aythya marila</i>)	20	1	0.025
SCAUP	Scaup Species (<i>Aythya</i> spp.)	8	2	0.010
NOPI	Northern Pintail (<i>Anas acuta</i>)	4	1	0.005
RBME	Red-breasted Merganser (<i>Mergus serrator</i>)	1	1	0.001
DKSP	Duck Species	11	3	0.014
DAGO	Dark Goose	20	1	0.025
BRAN	Black Brant (<i>Branta bernicla</i>)	1069	20	1.353
CAGO	Canada Goose (<i>Branta canadensis</i>)	348	10	0.440
GWGO	Greater White-fronted Goose (<i>Anser albifrons</i>)	893	26	1.130
LSGO	Lesser Snow Goose (<i>Chen caerulescens caerulescens</i>)	220	6	0.278
TUSW	Tundra Swan (<i>Cygnus columbianus</i>)	5	2	0.006
Other Species				
PHSP	Phalarope Species (<i>Phalaropus</i> spp.)	40	1	0.051
RLHA	Rough-legged Hawk (<i>Buteo lagopus</i>)	1	1	0.001
SMSH	Small Shorebirds	2	2	0.003
MESH	Medium Shorebirds	5	2	0.006
BISP	Bird Species	2	2	0.003

Table 12. Habitat associations of loons during aerial surveys in the barrier island-lagoon systems and tundra transects between Spy Island and Brownlow Point, Alaska, 23 July-11 August 2001

General Habitat Type	Specific Habitat Type	Pacific Loon		Red-throated Loon		Yellow-billed Loon	
		Number of Sightings	Percent of Total	Number of Sightings	Percent of Total	Number of Sightings	Percent of Total
Lagoon (9)	Lagoon (9)	55	38	23	39	3	38
Barrier Island (11)	Shoreline (water side; 15)	27	18	11	19	4	50
Nearshore Sea <3 mi. (13)	Ocean (8)	13	9	9	15	-	-
	Lagoon (9)	3	2	-	-	-	-
Wet Tundra (25)	Pond or Lake (18)	1	1	-	-	-	-
	Completely vegetated (25)	1	1	-	-	-	-
	Pond without Emigrants (46)	1	1	-	-	-	-
	Pond (47)	6	4	-	-	-	-
	River Delta (54)	1	1	-	-	-	-
	Stream (55)	1	1	-	-	-	-
Mainland Coast (27)	Pond with Emergents (45)	6	4	-	-	-	-
	Shoreline (water side; 15)	28	19	14	24	1	13
	River Delta (16)	1	1	-	-	-	-
River Delta (92)	Tide Flat (13)	2	1	2	3	-	-
TOTAL		146	100	59	100	8	100

Table 13. Habitat associations of seabirds during aerial surveys in the barrier island-lagoon systems and tundra transects between Spy Island and Brownlow Point, Alaska, 23 July-11 August 2001.

General Habitat Type	Specific Habitat Type	Arctic Tern		Glaucous Gull		Sabine's Gull	
		Number of Sightings	Percent of Total	Number of Sightings	Percent of Total	Number of Sightings	Percent of Total
Lagoon (9)	Lagoon (9)	-	-	25	7.2	1	33.3
	Smooth fast ice(1)	-	-	1	0.3	-	-
Barrier Island (11)	Spit (10)	-	-	6	1.7	-	-
	Island (11)	-	-	16	4.6	-	-
	Shoal (12)	1	4.8	3	0.9	-	-
	Shoreline (land side; 14)	-	-	9	2.6	-	-
	Shoreline (water side; 15)	13	61.9	158	45.5	1	33.3
Nearshore Sea <3 mi. (13)	Ocean (8)	4	19.0	3	0.9	1	33.3
	Lagoon (9)	3	14.3	11	3.2	-	-
Wet Tundra (25)	Pond (47)	-	-	1	0.3	-	-
	Lake Shore (44)	-	-	1	0.3	-	-
Mainland Coast (27)	Spit (10)	-	-	3	0.9	-	-
	Island (11)	-	-	4	1.2	-	-
	Shoal (12)	-	-	1	0.3	-	-
	Shoreline (land side; 14)	-	-	6	1.7	-	-
	Shoreline (water side; 15)	-	-	85	24.5	-	-
	River Delta (16)	-	-	1	0.3	-	-
	Mudflat (41)	-	-	1	0.3	-	-
River Delta (92)	Tide Flat (13)	-	-	8	2.3	-	-
	Mudflat (41)	-	-	4	1.2	-	-
TOTAL		21	100	347	100	3	100

Table 14. Habitat associations of eiders during aerial surveys in the barrier island-lagoon systems and tundra transects between Spy Island and Brownlow Point, Alaska, 23 July-11 August 2001.

General Habitat Type	Specific Habitat Type	Common Eider		King Eider		Eider Species		All Eiders	
		Number of Sightings	Percent of Total	Number of Sightings	Percent of Total	Number of Sightings	Percent of Total	Number of Sightings	Percent of Total
Lagoon (9)	Lagoon (9)	29	15.3	1	100	-	-	30	15.6
	Smooth fast ice (1)	2	1.1	-	-	-	-	-	-
Barrier Island (11)	Lagoon (9)	1	0.5	-	-	-	-	-	-
	Smooth fast ice (1)	1	0.5	-	-	-	-	-	-
	Shoreline (land side; 14)	2	1.1	-	-	-	-	2	1.0
	Shoreline (water side; 15)	102	53.7	-	-	1	16.7	103	53.6
	Shoal (12)	2	1.1	-	-	-	-	2	1.0
Nearshore Sea <3 mi. (13)	Ocean (8)	12	6.3	-	-	-	-	12	6.3
	Lagoon (9)	20	10.5	-	-	-	-	20	10.4
Wet Tundra (25)	Pond (47)	-	-	-	-	1	16.7	1	0.5
Mainland Coast (27)	Spit (10)	1	0.5	-	-	-	-	-	-
	Shoreline (water side; 15)	18	9.5	-	-	4	66.7	22	11.5
TOTAL		190	100	1	100	6	100	192	100

Table 15. Habitat associations of scoters during aerial surveys in the barrier island-lagoon systems between Spy Island and Brownlow Point, Alaska, 23 July-11 August 2001.

General Habitat Type	Specific Habitat Type	Surf Scoter		Black Scoter		Scoter Species		All Scoters	
		Number of Sightings	Percent of Total	Number of Sightings	Percent of Total	Number of Sightings	Percent of Total	Number of Sightings	Percent of Total
Lagoon (9)	Lagoon (9)	55	77.5	1	100	-	-	56	75.7
Barrier Island (11)	Shoreline (water side; 15)	13	18.3	-	-	1	50	14	18.9
Nearshore Sea <3 mi. (13)	Ocean (8)	2	2.8	-	-	-	-	2	2.7
Mainland Coast (27)	Shoreline (water side; 15)	1	1.4	-	-	1	50	2	2.7
TOTAL		71	100	1	100	2	100	74	100

Table 16. Habitat associations of geese and swans during aerial surveys in the barrier island-lagoon systems and tundra transects between Spy Island and Brownlow Point, Alaska, 23 July-11 August 2001.

General Habitat Type	Specific Habitat Type	Black Brant		Canada Goose		Greater White-fronted Goose		Tundra Swan	
		Number of Sightings	Percent of Total	Number of Sightings	Percent of Total	Number of Sightings	Percent of Total	Number of Sightings	Percent of Total
Barrier Island (11)	Shoreline (water side; 15)	1	4.8	2	11.8	1	3.2	-	-
Wet Tundra (25)	Pond or Lake (18)	-	-	1	5.9	-	-	-	-
	Lake with Emergents (42)	-	-	-	-	-	-	1	14.3
	Lake (50)	-	-	1	5.9	-	-	-	-
	Pond (47)	-	-	-	-	1	3.2	3	42.9
	River Delta (54)	-	-	1	5.9	-	-	-	-
	Lake Shore (44)	-	-	1	5.9	-	-	-	-
	Pond with Emergents (45)	-	-	1	5.9	-	-	-	-
	Large Lake (49)	-	-	-	-	1	3.2	-	-
Mainland Coast (27)	Shoreline (water side; 15)	20	95.2	9	52.9	28	90.3	3	42.9
River Delta (92)	Tide Flat (13)	-	-	1	5.9	-	-	-	-
TOTAL		21	100	17	100	31	100	7	100