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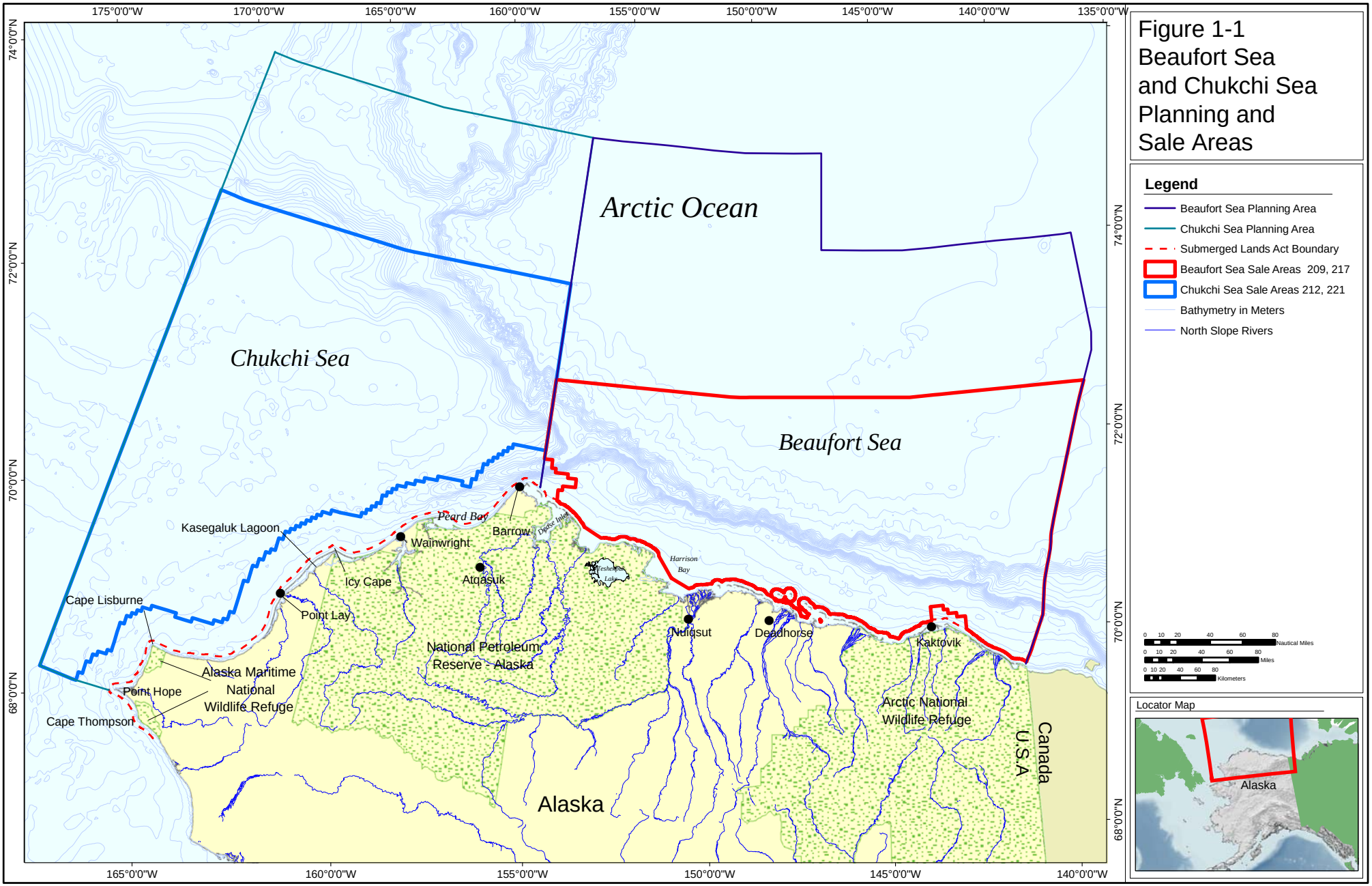


Figure 1-1
Beaufort Sea and Chukchi Sea Planning and Sale Areas

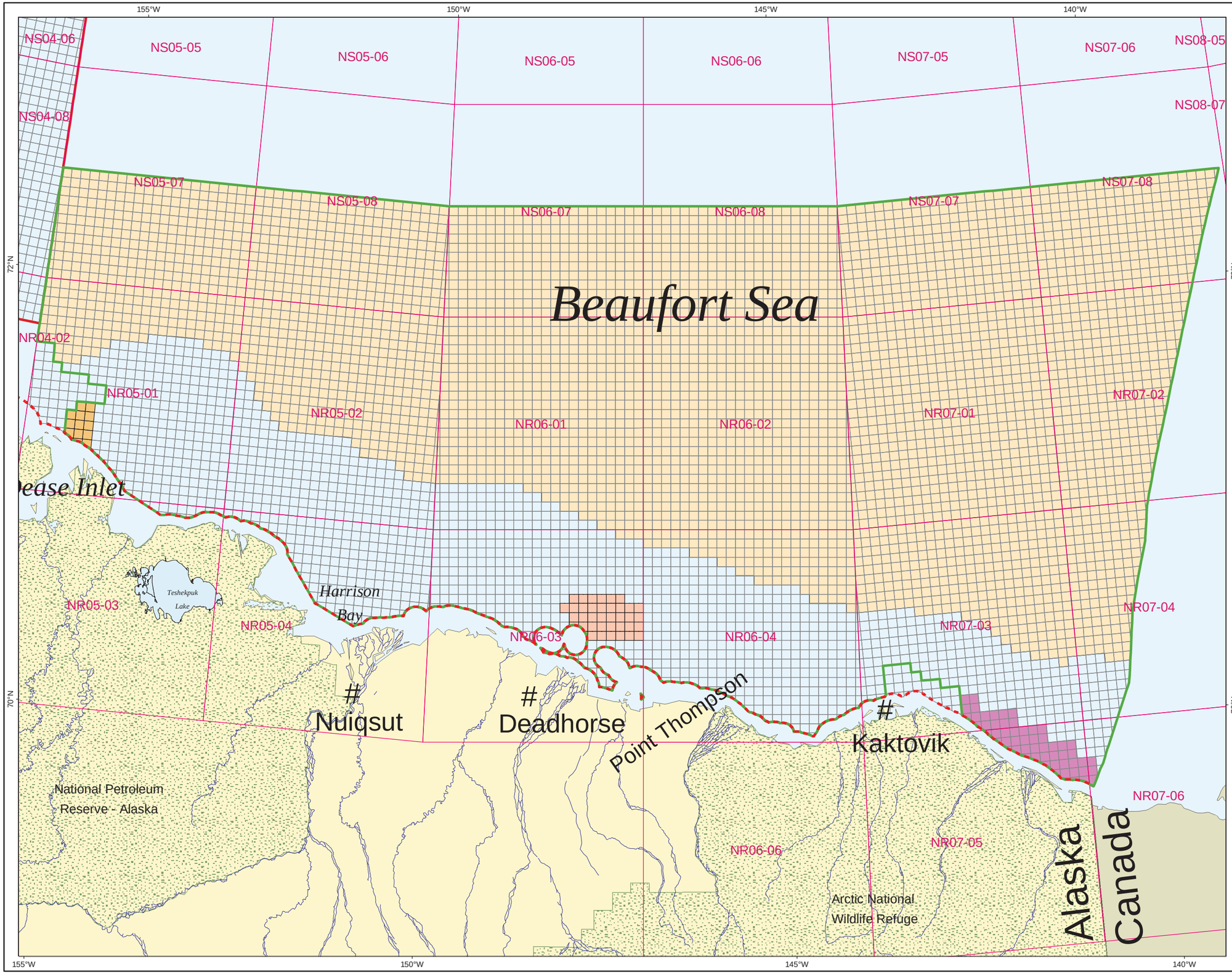


Figure 2-1
Beaufort Sea Program Area

Legend

- Cross Island Deferral Alternative
- Program Area Boundary
- East of Kaktovic Deferral Alternative
- Barrow Deferral Alternative
- Deep Water Deferral Alternative
- Rivers Greater Than 100 Km in Length
- Submerged Lands Act Boundary
- Official Protraction Diagram

0 3.5 7 14 21 28 Nautical Miles
0 3.5 7 14 21 28 Miles
0 10 20 40 60 80 Kilometers

Locator Map

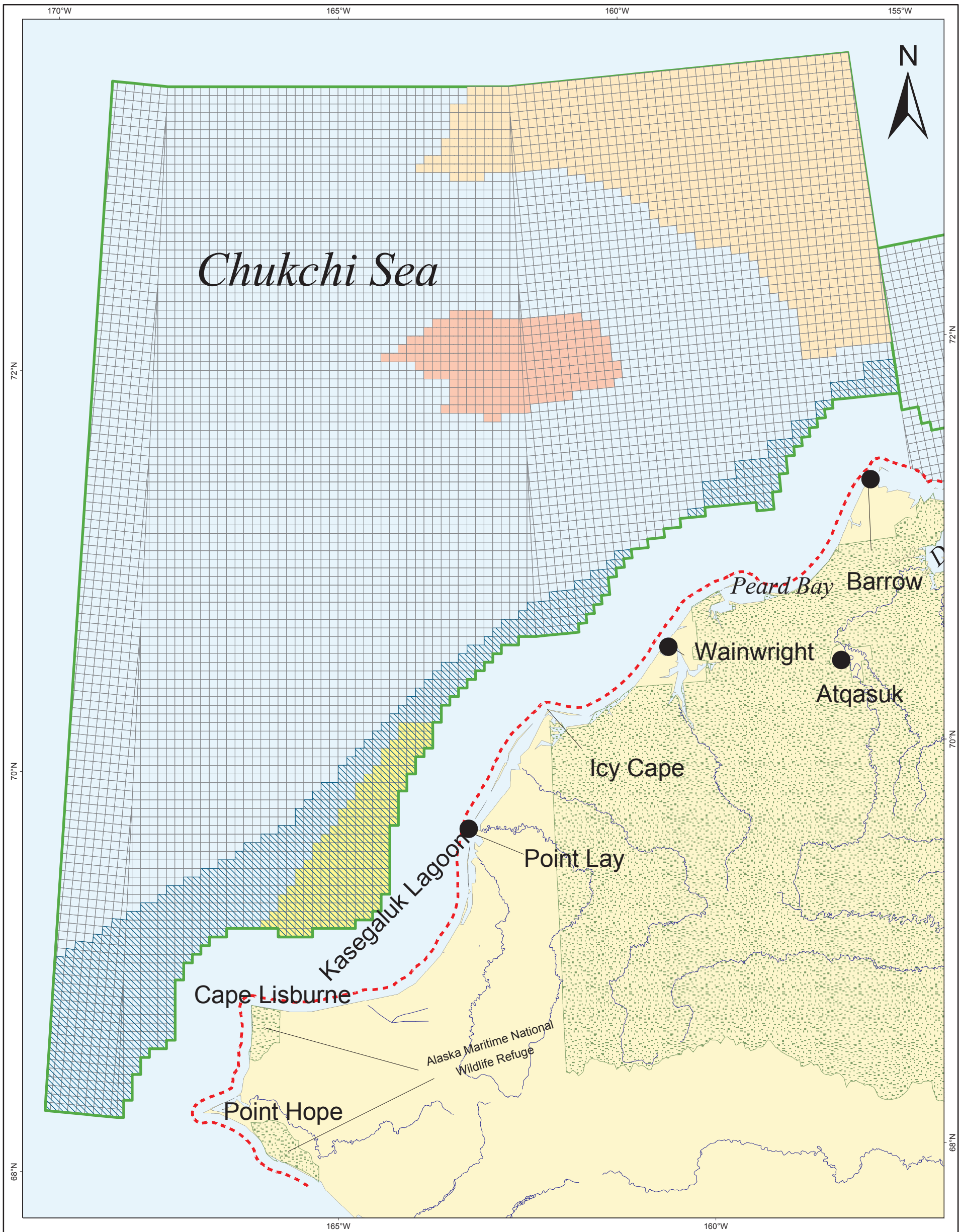


Figure 2-2
Deferral Areas
Chukchi Sea
Program Area

0 2.5 5 10 15 20 Nautical Miles
0 2.5 5 10 15 20 Miles
0 5 10 20 30 40 Kilometers

Legend

- Program Area Boundary
- Submerged Lands Act Boundary
- Coastal Deferral Alternative
- Deep Water Deferral Alternative
- Hanna Shoal Deferral Alternative
- Ledyard Bay Deferral Alternative

Locator Map

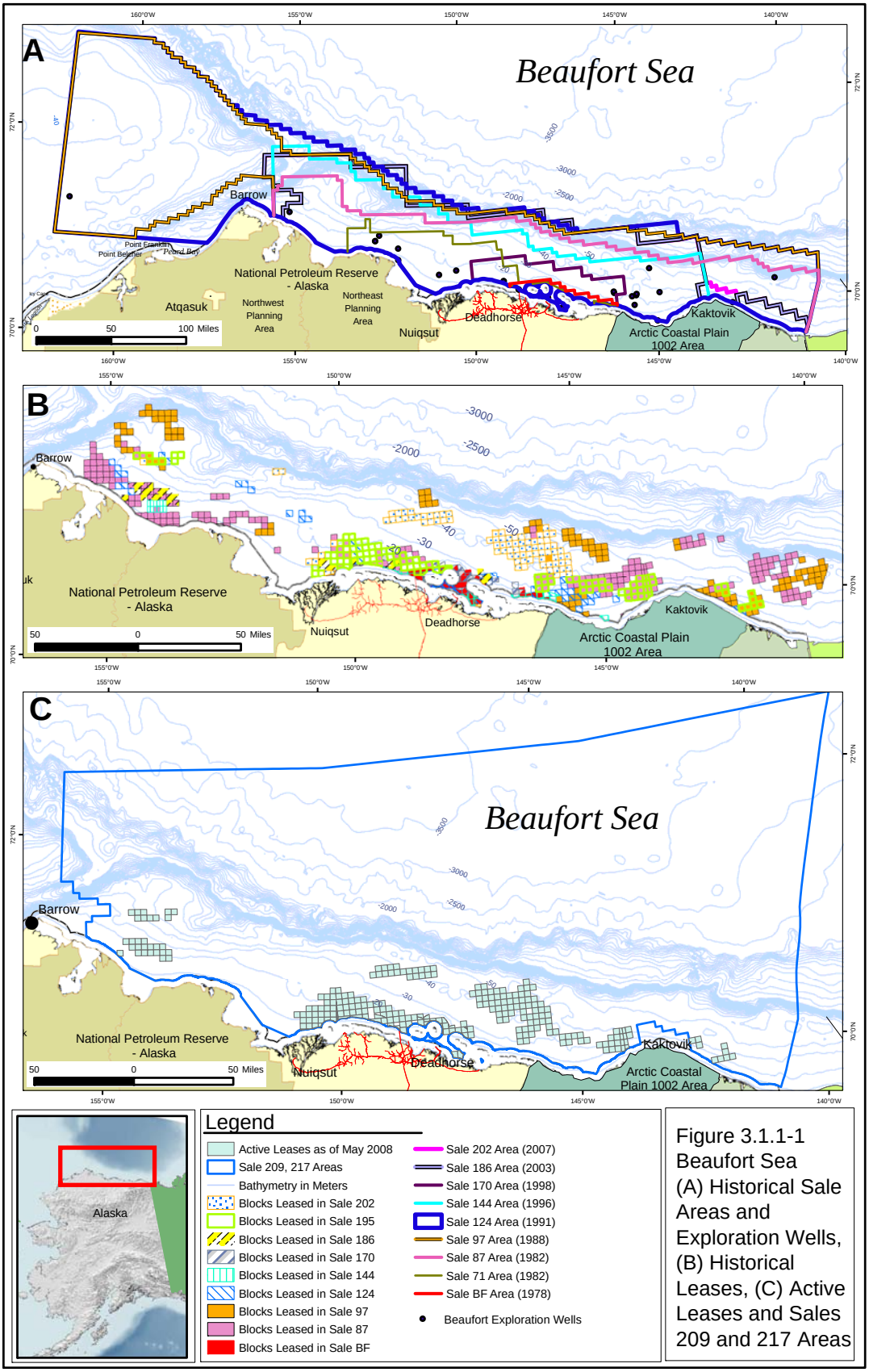
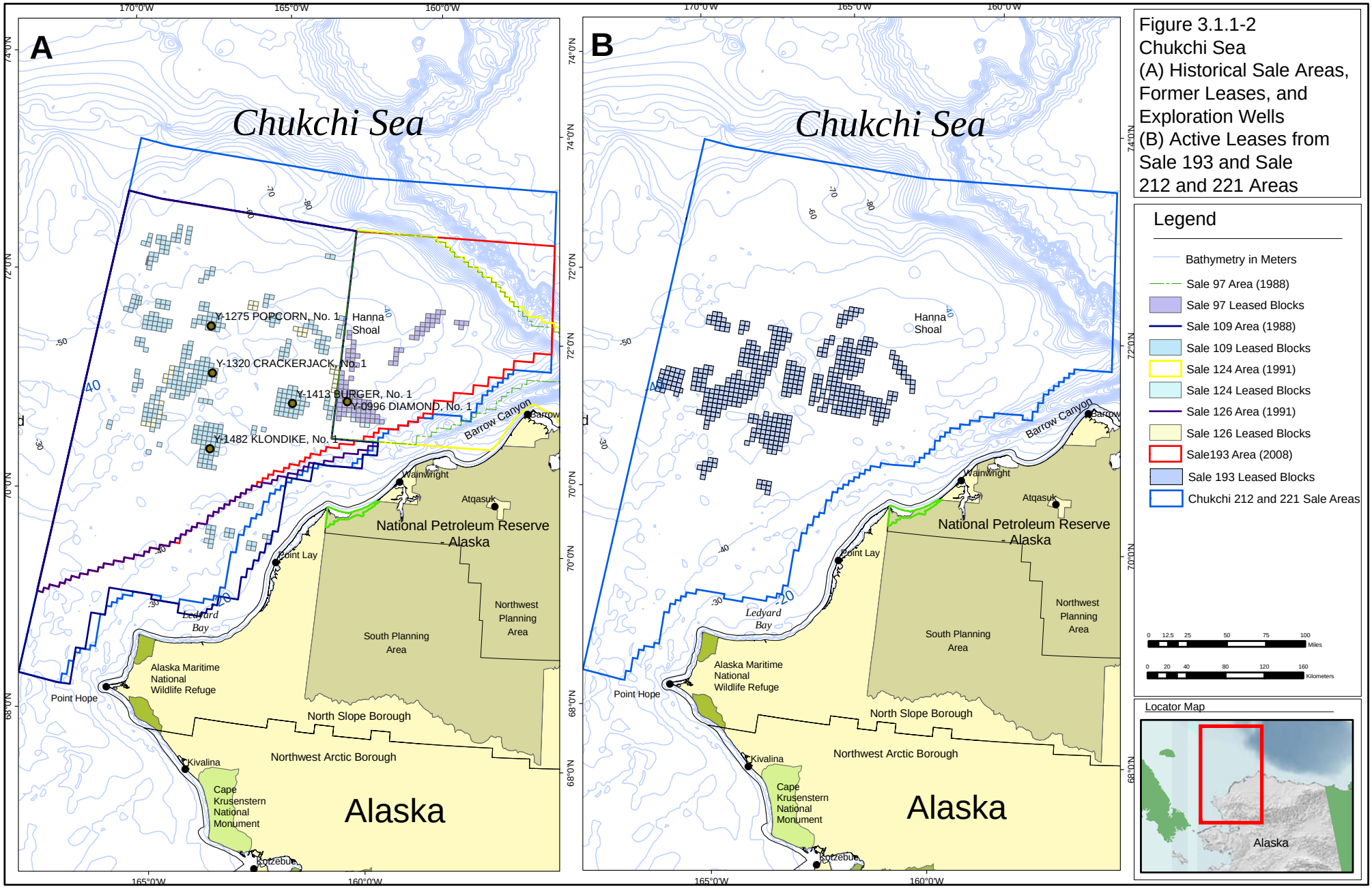


Figure 3.1.1-1 Beaufort Sea (A) Historical Sale Areas and Exploration Wells, (B) Historical Leases, (C) Active Leases and Sales 209 and 217 Areas


A
B
Chukchi Sea
Chukchi Sea
Y-1275 POPCORN, No. 1
Y-1320 CRACKERJACK, No. 1
Y-1413 BURGER, No. 1
Y-0996 DIAMOND, No. 1
Y-1482 KLONDIKE, No. 1
Hanna Shoal
Barrow Canyon
Barrow
Wainwright
Atqasuk
Point Lay
Ledyard Bay
National Petroleum Reserve - Alaska
Northwest Planning Area
South Planning Area
Alaska Maritime National Wildlife Refuge
Point Hope
North Slope Borough
Northwest Arctic Borough
Kivalina
Cape Krusenstern National Monument
Kotzebue
Alaska
170°0'W
165°0'W
160°0'W
74°0'N
72°0'N
70°0'N
68°0'N
Figure 3.1.1-2
Chukchi Sea
(A) Historical Sale Areas, Former Leases, and Exploration Wells
(B) Active Leases from Sale 193 and Sale 212 and 221 Areas
Legend
Bathymetry in Meters
Sale 97 Area (1988)
Sale 97 Leased Blocks
Sale 109 Area (1988)
Sale 109 Leased Blocks
Sale 124 Area (1991)
Sale 124 Leased Blocks
Sale 126 Area (1991)
Sale 126 Leased Blocks
Sale193 Area (2008)
Sale 193 Leased Blocks
Chukchi 212 and 221 Sale Areas
0 12.5 25 50 75 100 Miles
0 20 40 80 120 160 Kilometers
Locator Map
Alaska

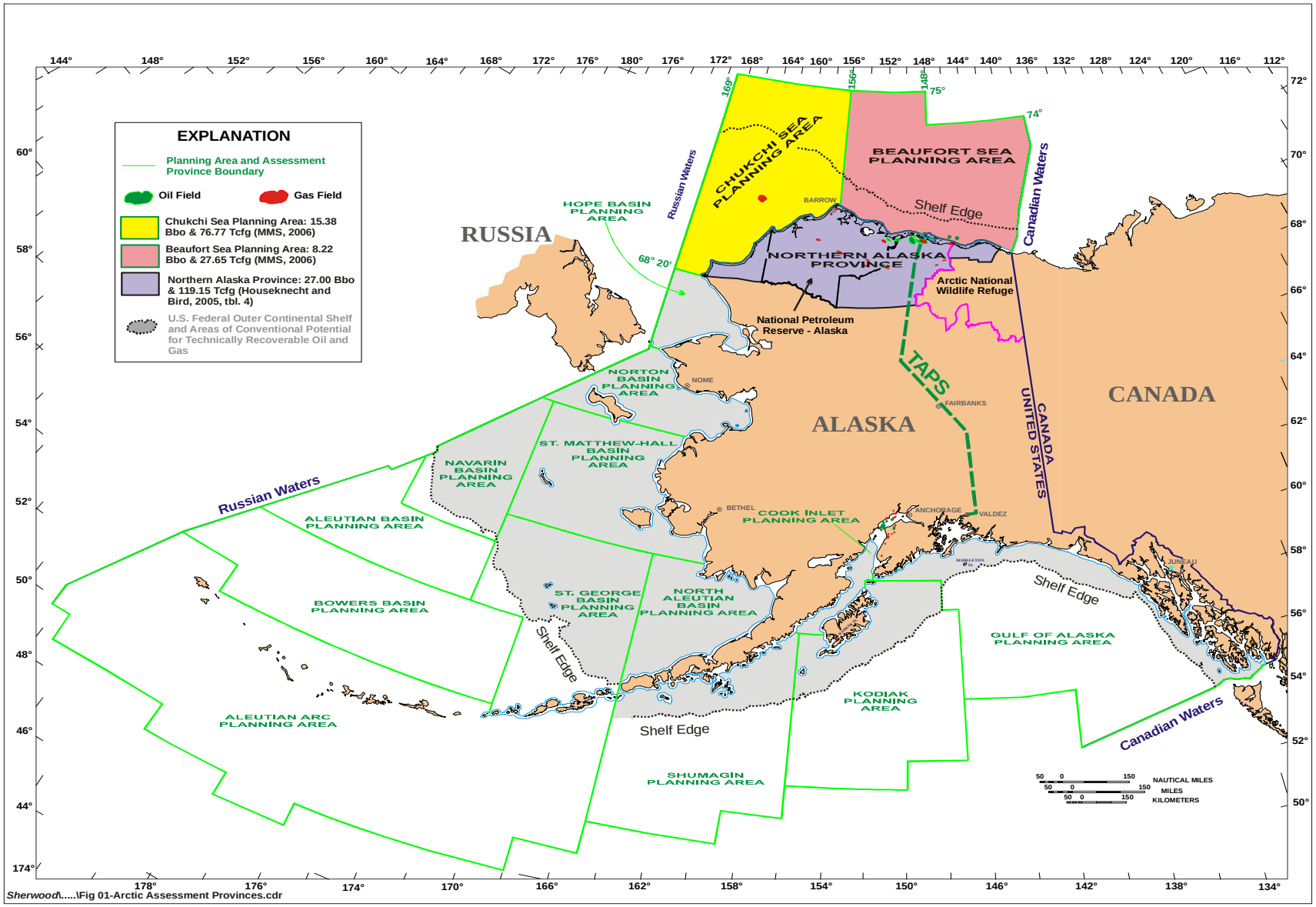


Figure 3.2.1-1 The Three Components of the Arctic Alaska Petroleum Province: (1) the Northern Alaska (onshore) Province; (2) the Chukchi Sea Planning Area; and (3) the Beaufort Sea Planning Area. The Alaska Federal OCS Planning Areas Also Are Shown.

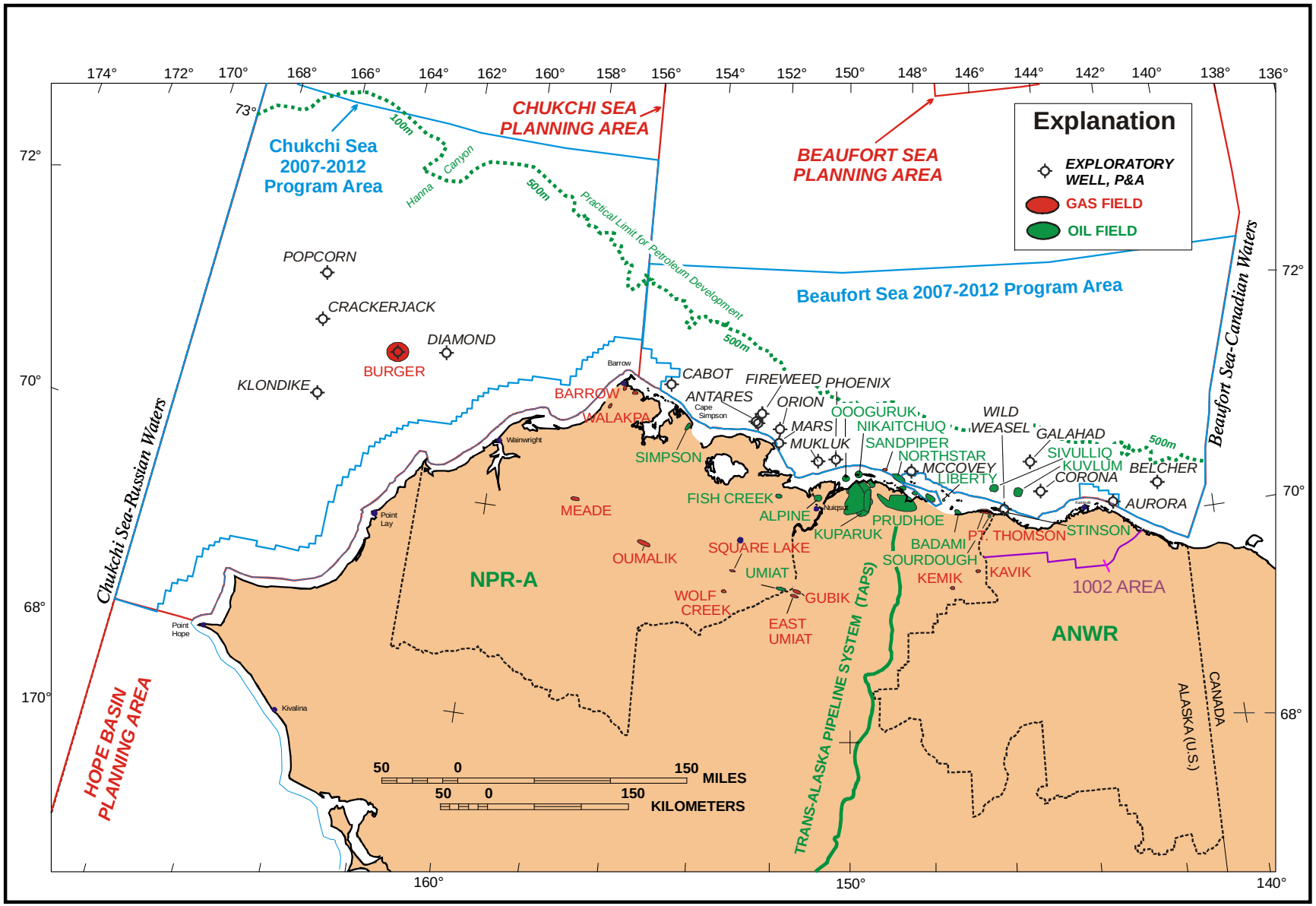


Figure 3.2.1-2 Oil and Gas Fields and Offshore Wells in the Beaufort Sea and Chukchi Sea Planning Areas. The 2007-2012 Five-Year Program Areas Are Subareas Within the Larger Planning Areas.

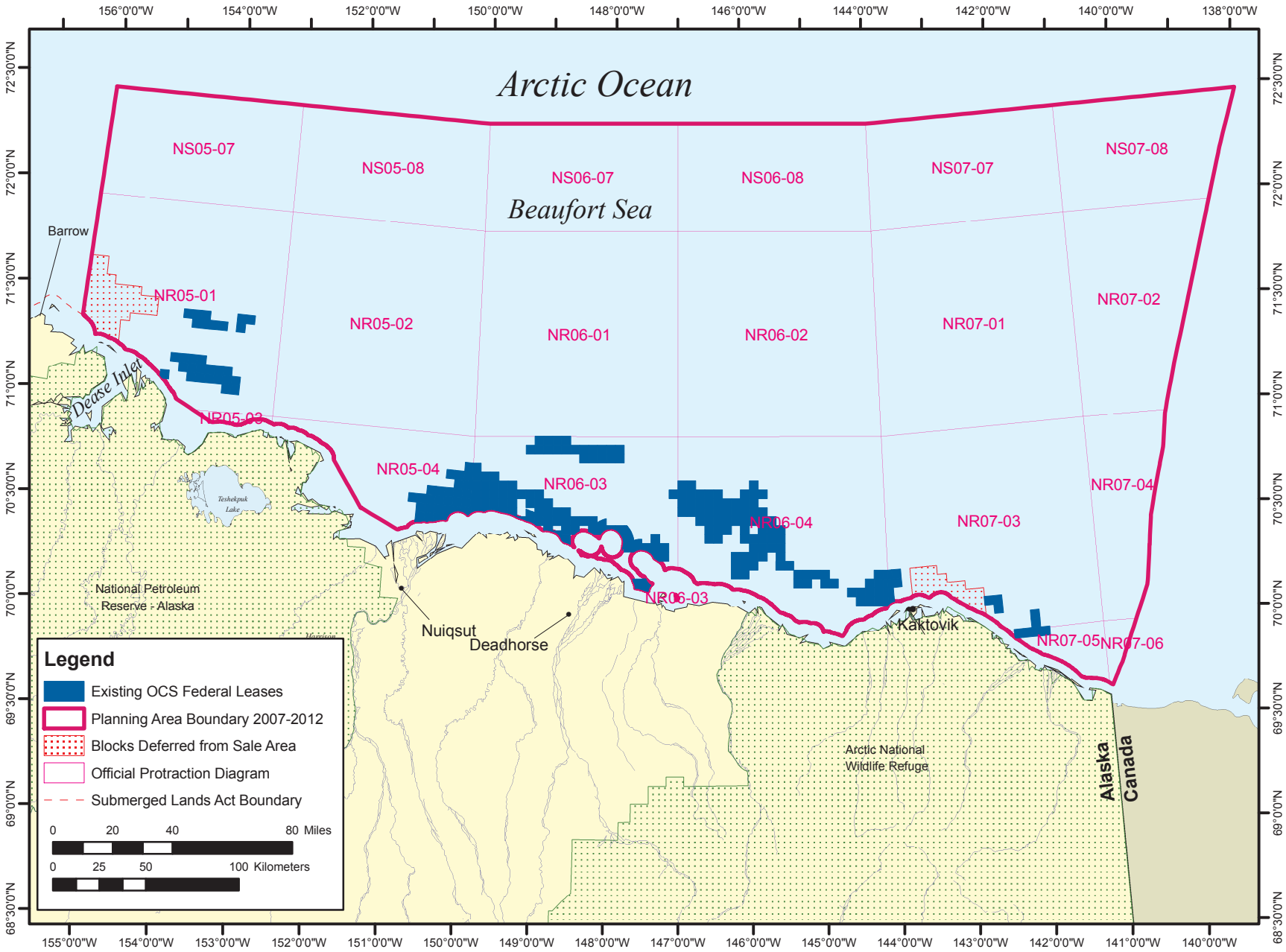


Figure 3.2.1-3 The 261 Active Leases in the Beaufort Sea Planning Area (as of November 2007). The original file of this map is available for download in pdf format at http://www.mms.gov/alaska/Maps/bf_leases.pdf.

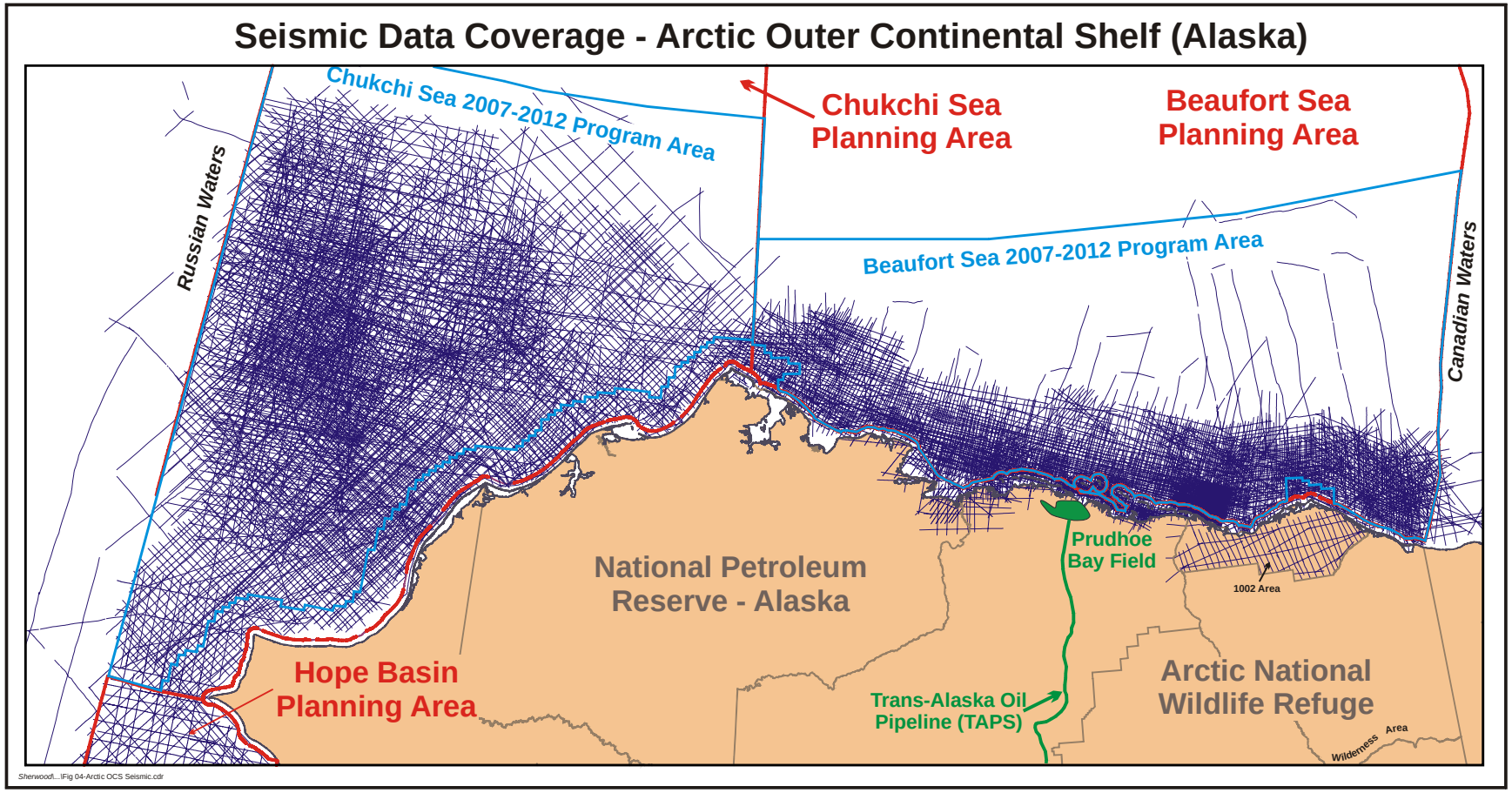


Figure 3.2.1-4 Coverage of 2D Seismic Data in the Beaufort Sea and Chukchi Sea Planning Areas. Only "speculative" (shot by geophysical companies and then offered on the open market) surveys are shown. The locations of 3D seismic surveys conducted in both planning areas are not shown.

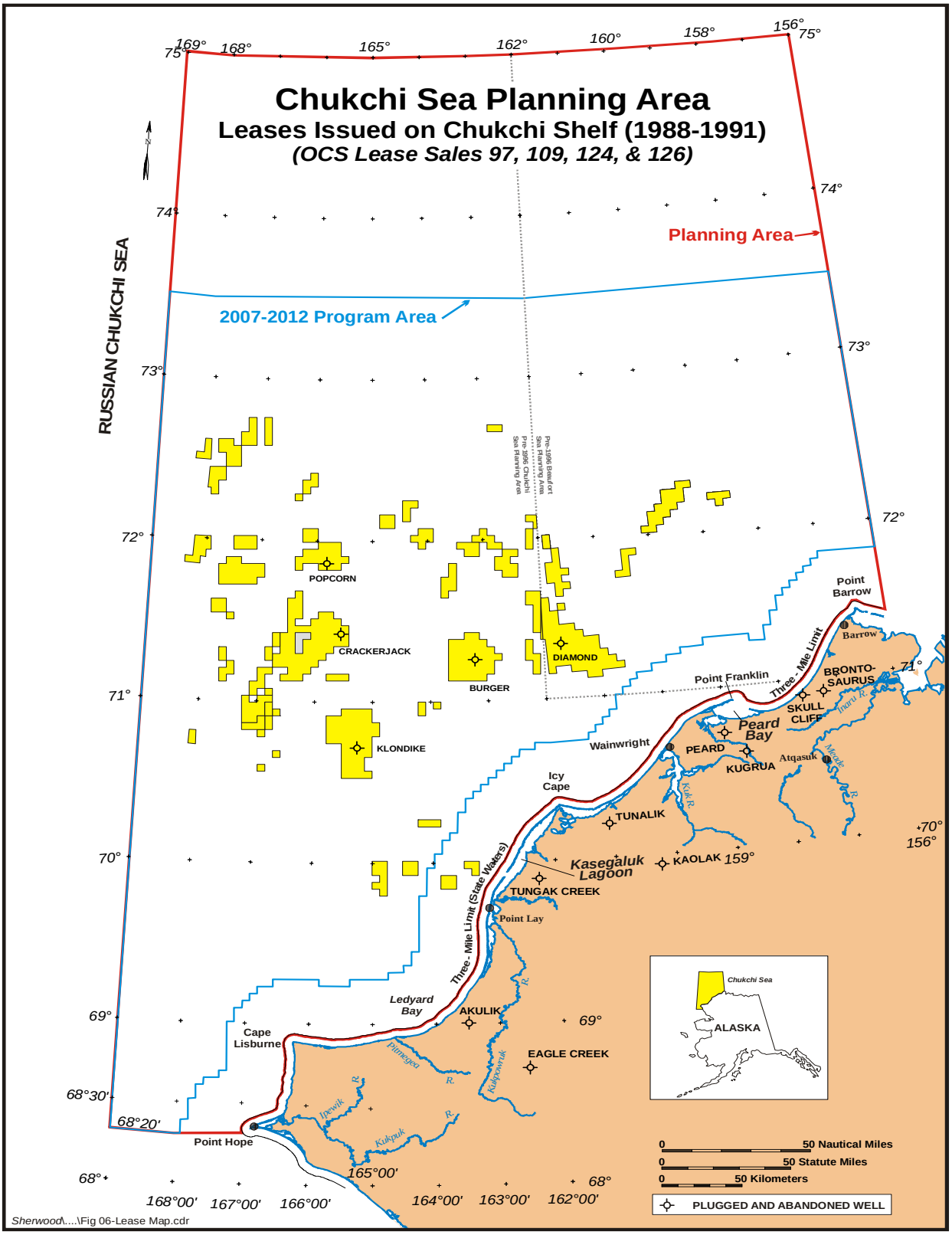


Figure 3.2.1-5 Chukchi Sea Planning Area, Leases Issued on Chukchi Shelf, 1988-1991, OCS Lease Sales 97, 109, 124, and 126. Locations of 483 leases issued (total high bids 512 million dollars) in 1988 and 1991 lease sales in modern Chukchi Sea Planning Area. The pre-1996 boundary between the Beaufort and Chukchi Sea Planning Areas is shown as a dotted line. No lease were active (all relinquished) as of November 2007.

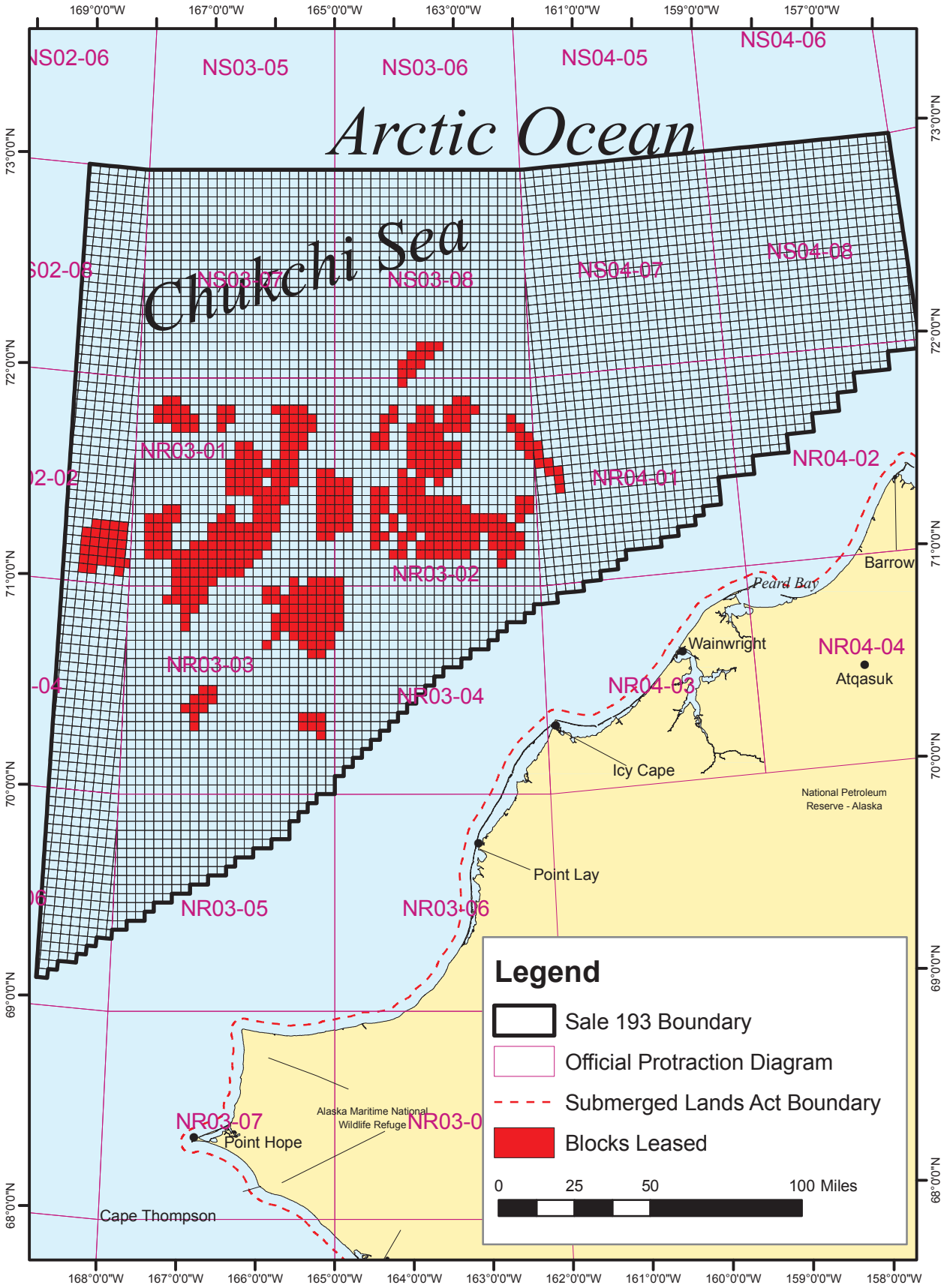


Figure 3.2.1-6 Blocks Leased in Chukchi Sea Sale 193 (February 6, 2008). Adaped from original file of map available for download in pdf format at http://www.mms.gov/alaska/cproject/Chukchi193/193Saleday/Sale_193_blx.pdf

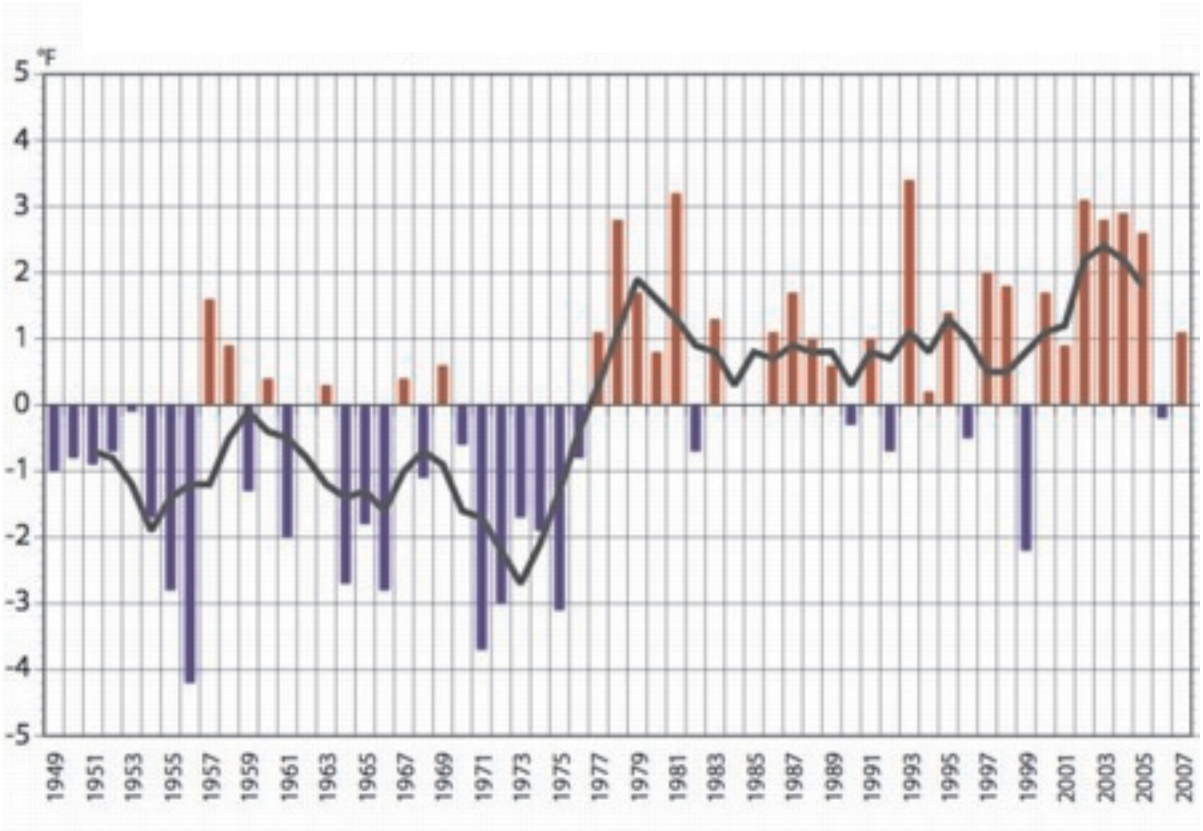


Figure 3.2.2-1 Mean Annual Temperature Departure for Alaska (°F), 1949-2007

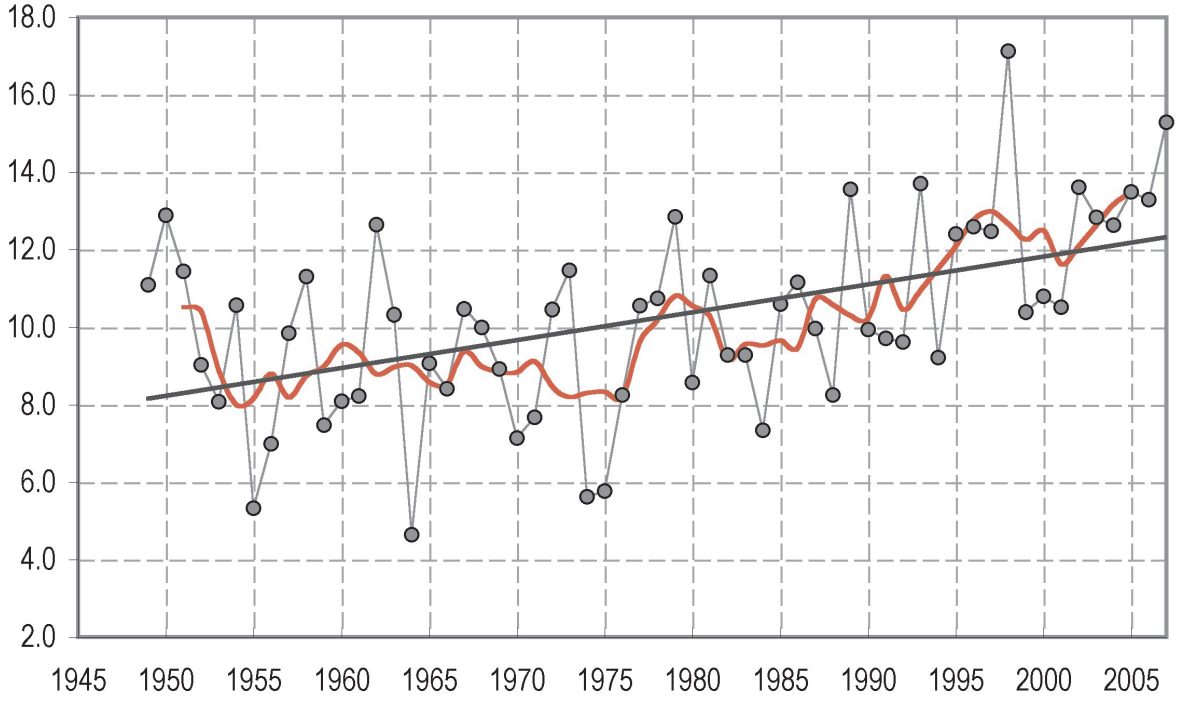


Figure 3.2.2-2 Barrow Mean Annual Temperature (°F)

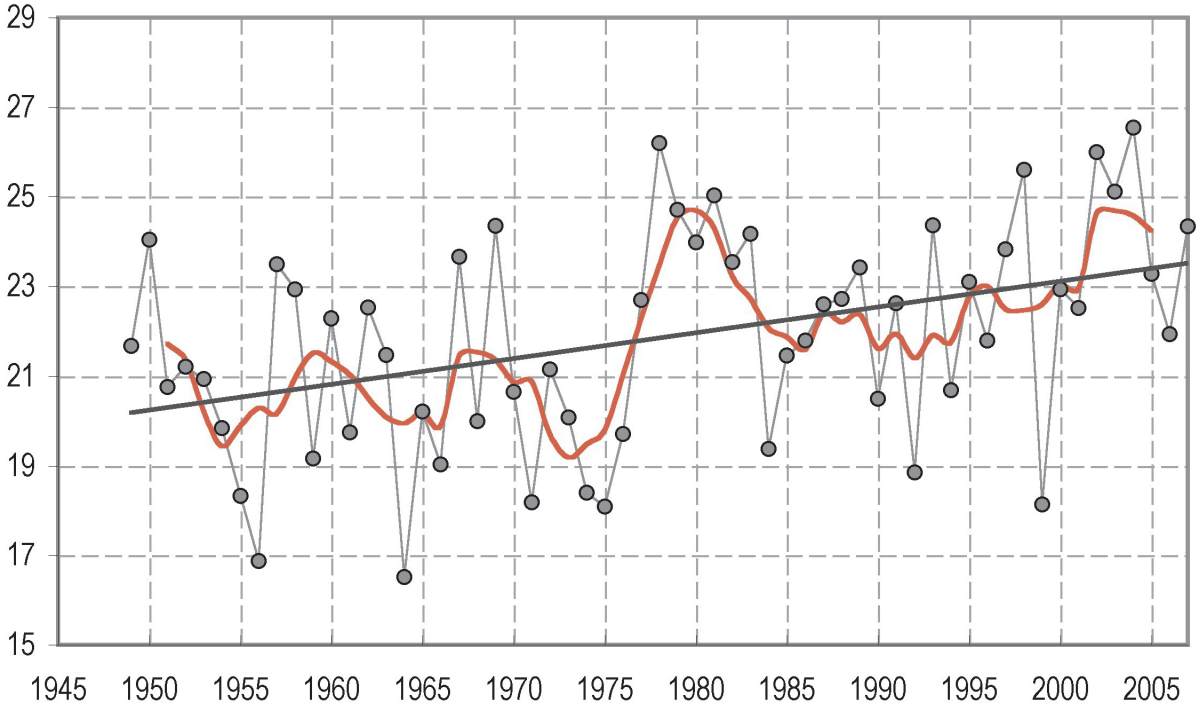


Figure 3.2.2-3 Kotzebue Mean Annual Temperature (˚F)

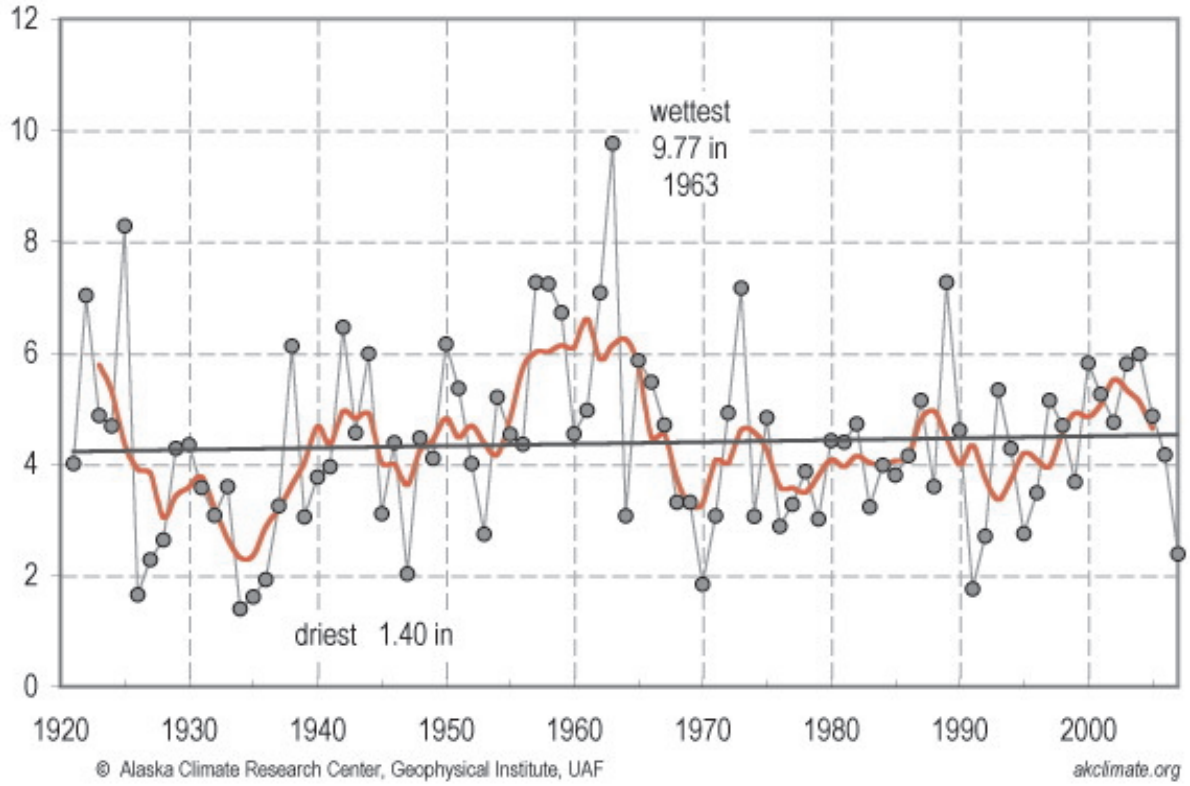


Figure 3.2.2-4 Barrow Total Annual Precipitation (inches)

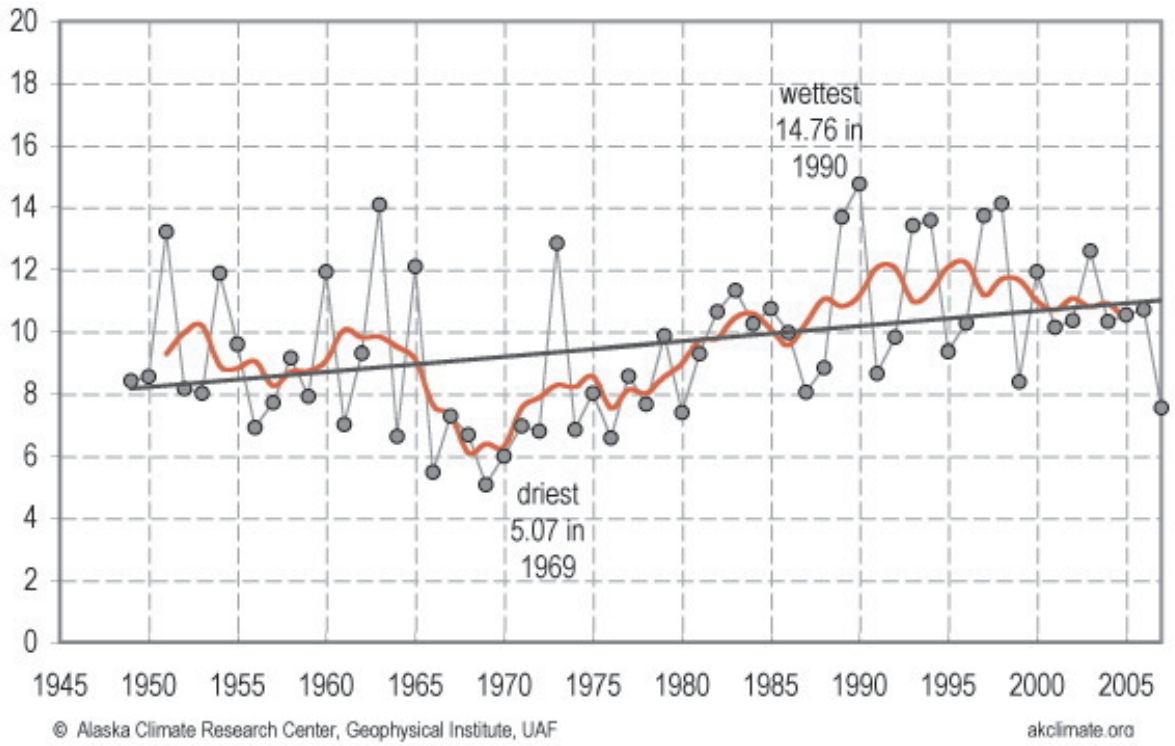
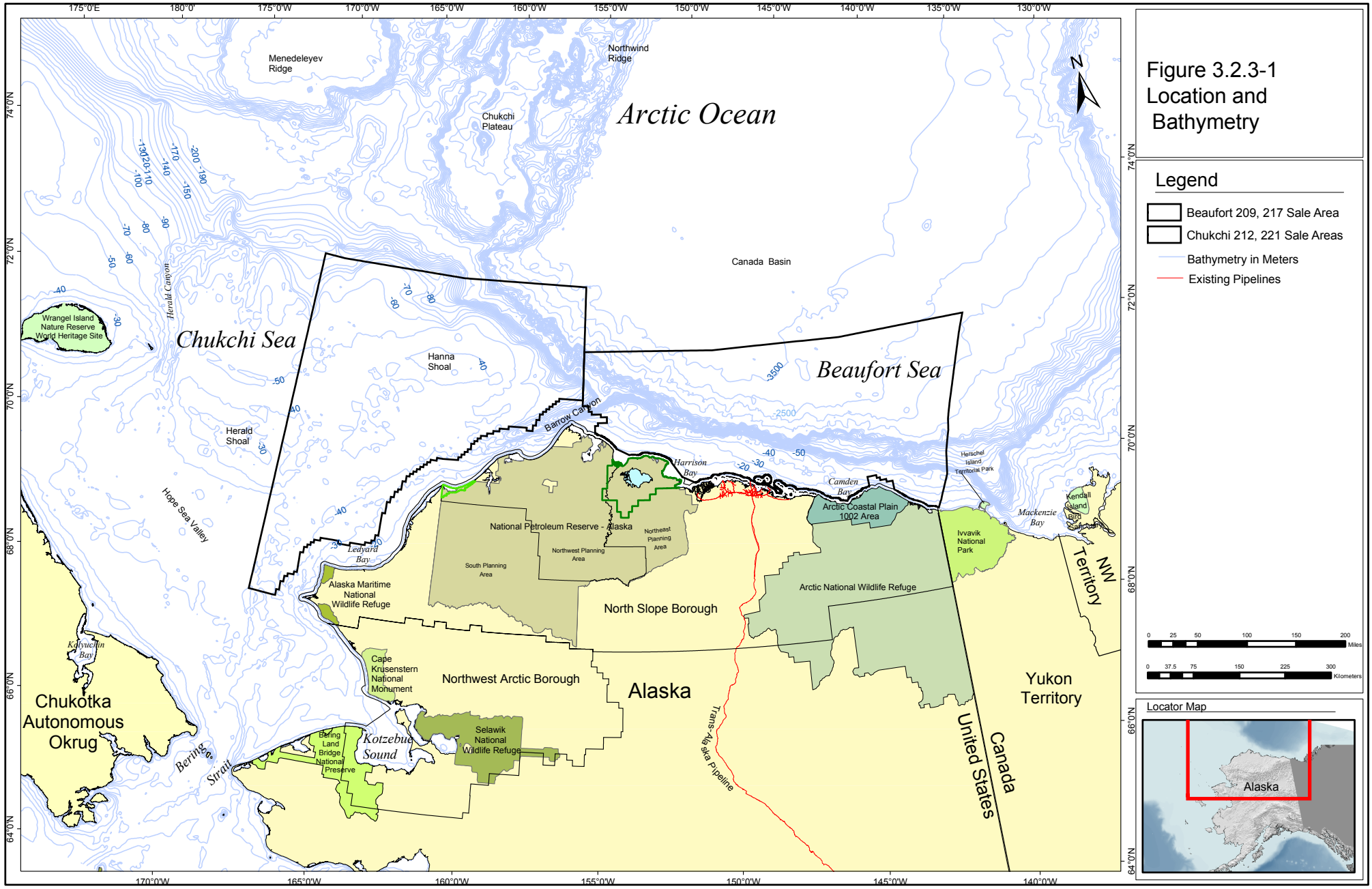


Figure 3.2.2-5 Kotzebue Total Annual Precipitation (inches)


Arctic Ocean
Menedeleyev Ridge
Northwind Ridge
Chukchi Plateau
Canada Basin
Chukchi Sea
Beaufort Sea
Wrangel Island Nature Reserve World Heritage Site
Herald Canyon
Hanna Shoal
Herald Shoal
Hope Sea Valley
Barrow Canyon
Harrison Bay
Camden Bay
Ledyard Bay
Herschel Island Territorial Park
Mackenzie Bay
Kendall Island Bird Sanctuary
Arctic Coastal Plain 1002 Area
Ivvavik National Park
National Petroleum Reserve - Alaska
Northeast Planning Area
Northwest Planning Area
South Planning Area
Alaska Maritime National Wildlife Refuge
North Slope Borough
Arctic National Wildlife Refuge
NW Territory
Kolyuchin Bay
Cape Krusenstern National Monument
Northwest Arctic Borough
Alaska
Yukon Territory
Chukotka Autonomous Okrug
Bering Strait
Bering Land Bridge National Preserve
Kotzebue Sound
Selawik National Wildlife Refuge
Trans-Alaska Pipeline
United States
Canada
N
Figure 3.2.3-1
Location and Bathymetry
Legend
Beaufort 209, 217 Sale Area
Chukchi 212, 221 Sale Areas
Bathymetry in Meters
Existing Pipelines
Miles
Kilometers
Locator Map
Alaska

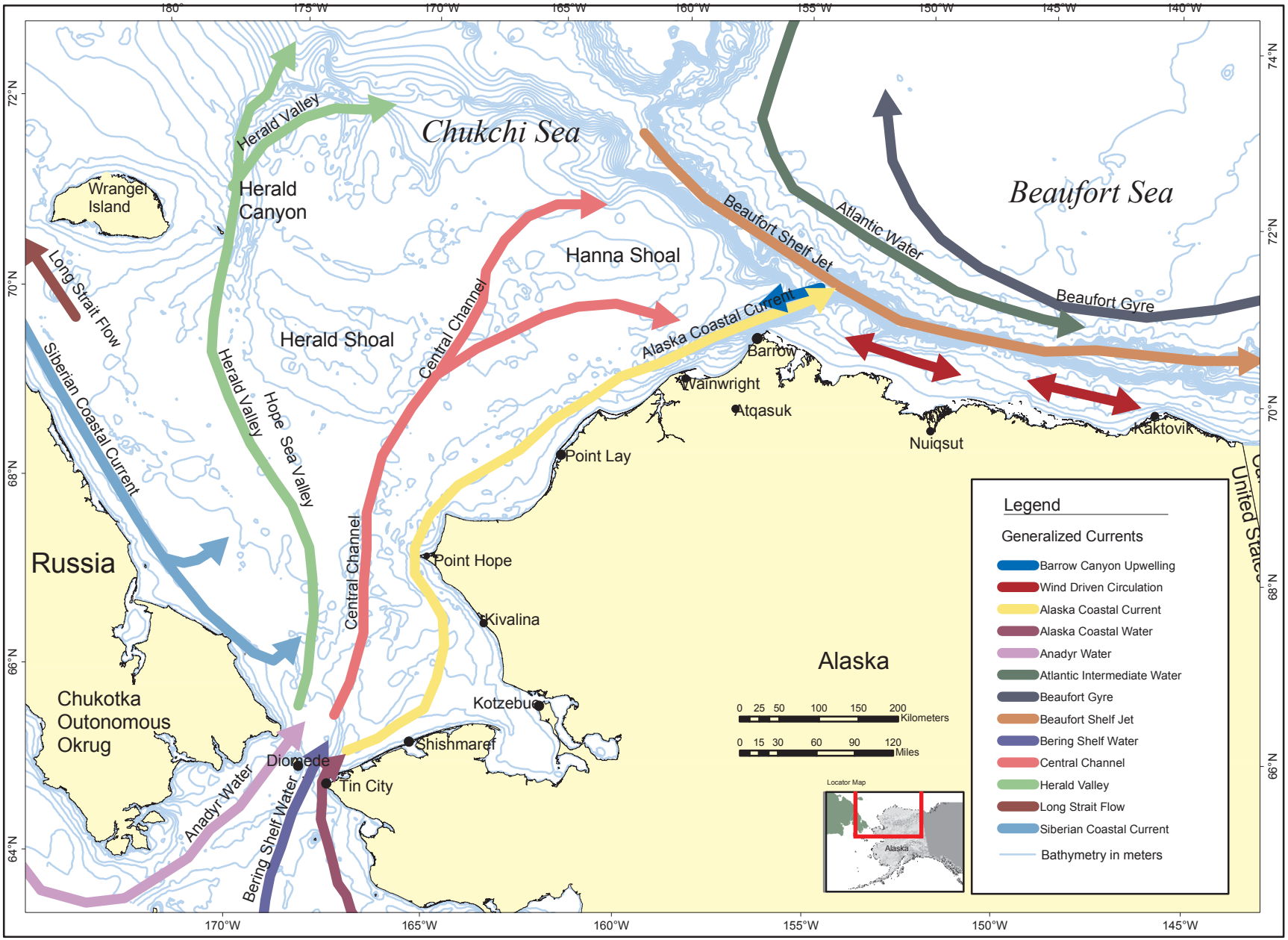
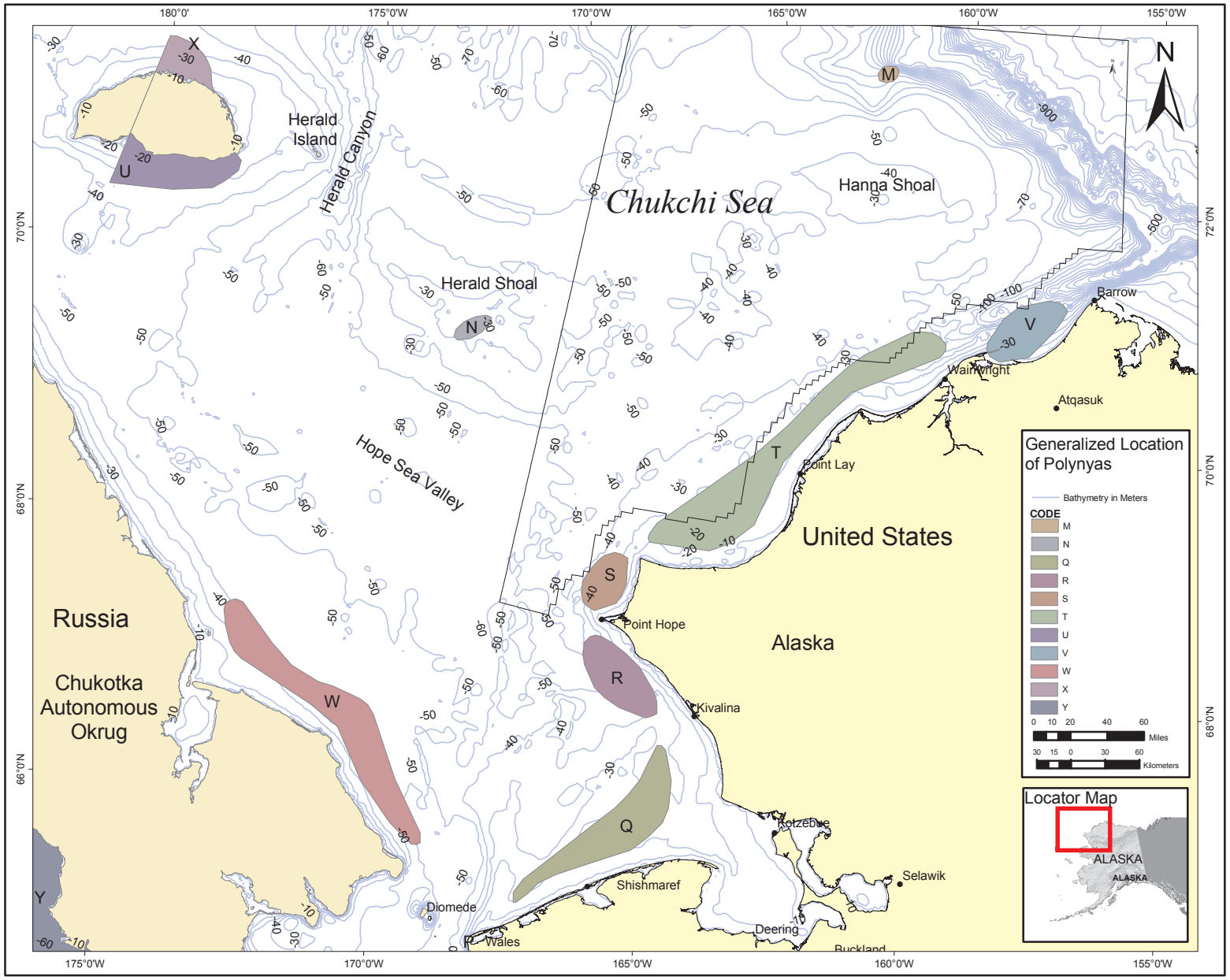
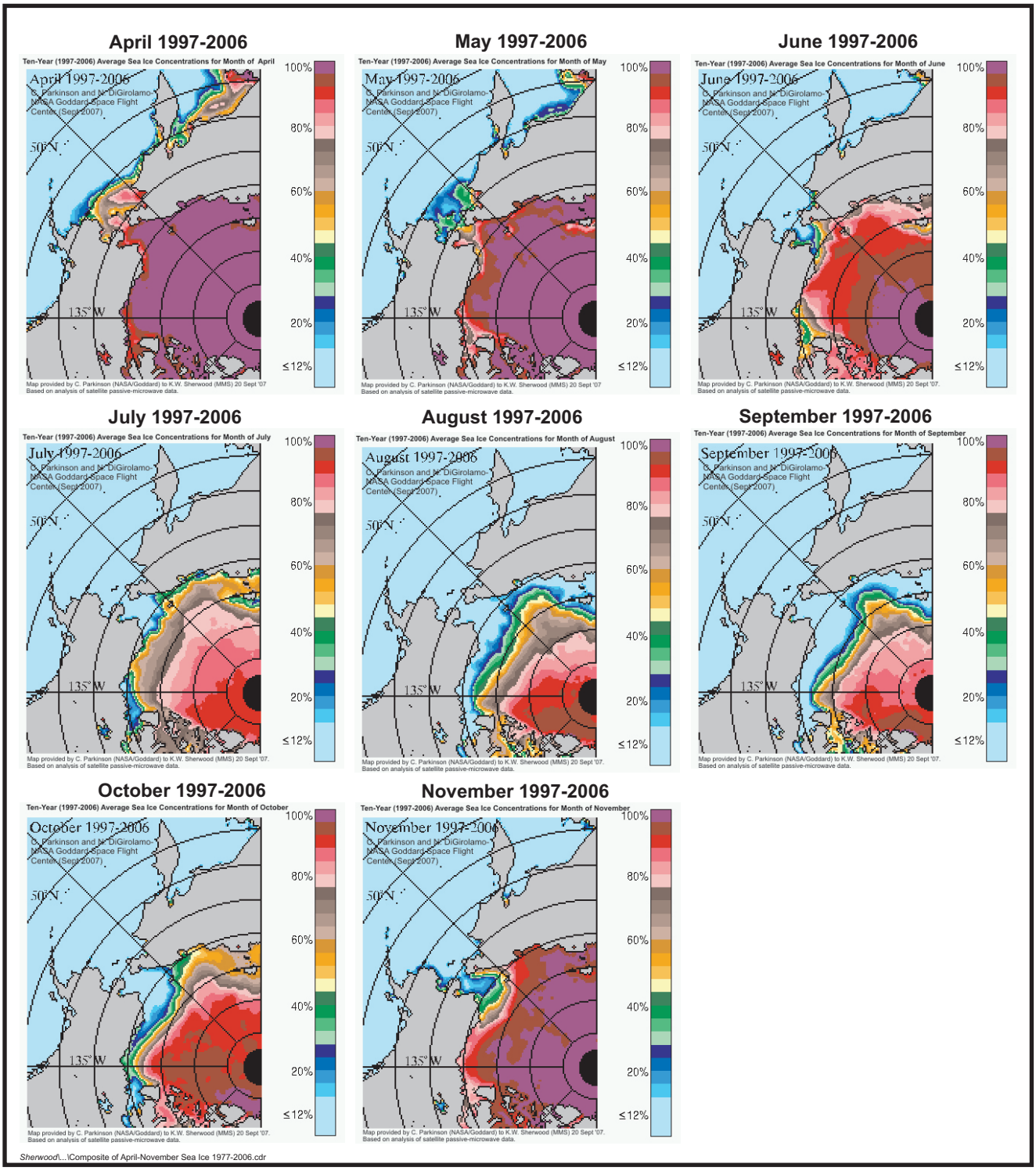


Figure 3.2.3-2 Generalized Circulation over the Chukchi and Beaufort Seas.



Source: Stringer et al. 1991.

Figure 3.2.4-1. Generalized Location of Chukchi Polynyas



Source: Parkinson, 2007

Figure 3.2.4-2 Ten-Year (1997-2006) Average Sea Ice Concentration for the Months April - November

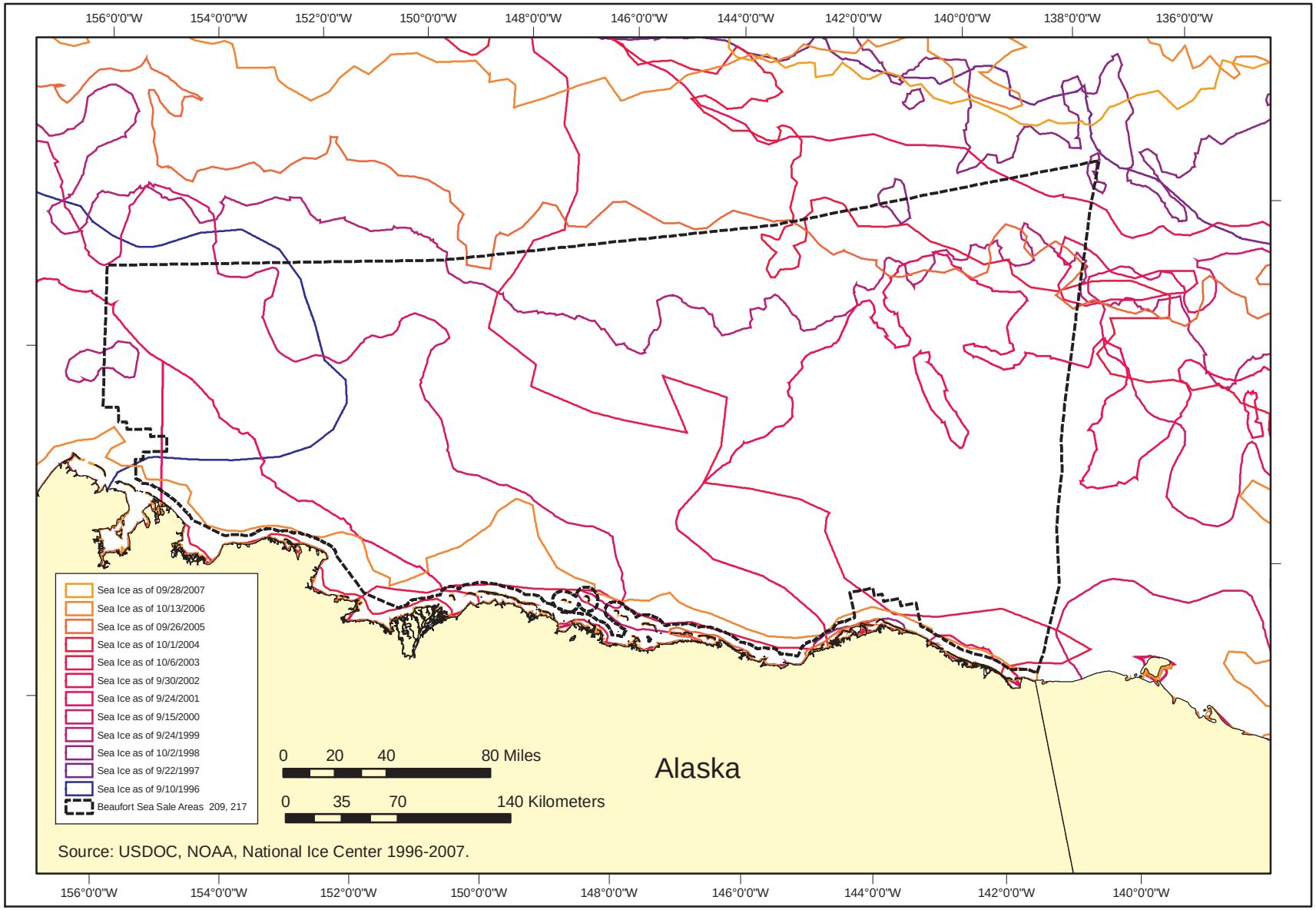


Figure 3.2.4-3. Beaufort Sea Generalized Maximum Retreat of Sea Ice 1996-2007.

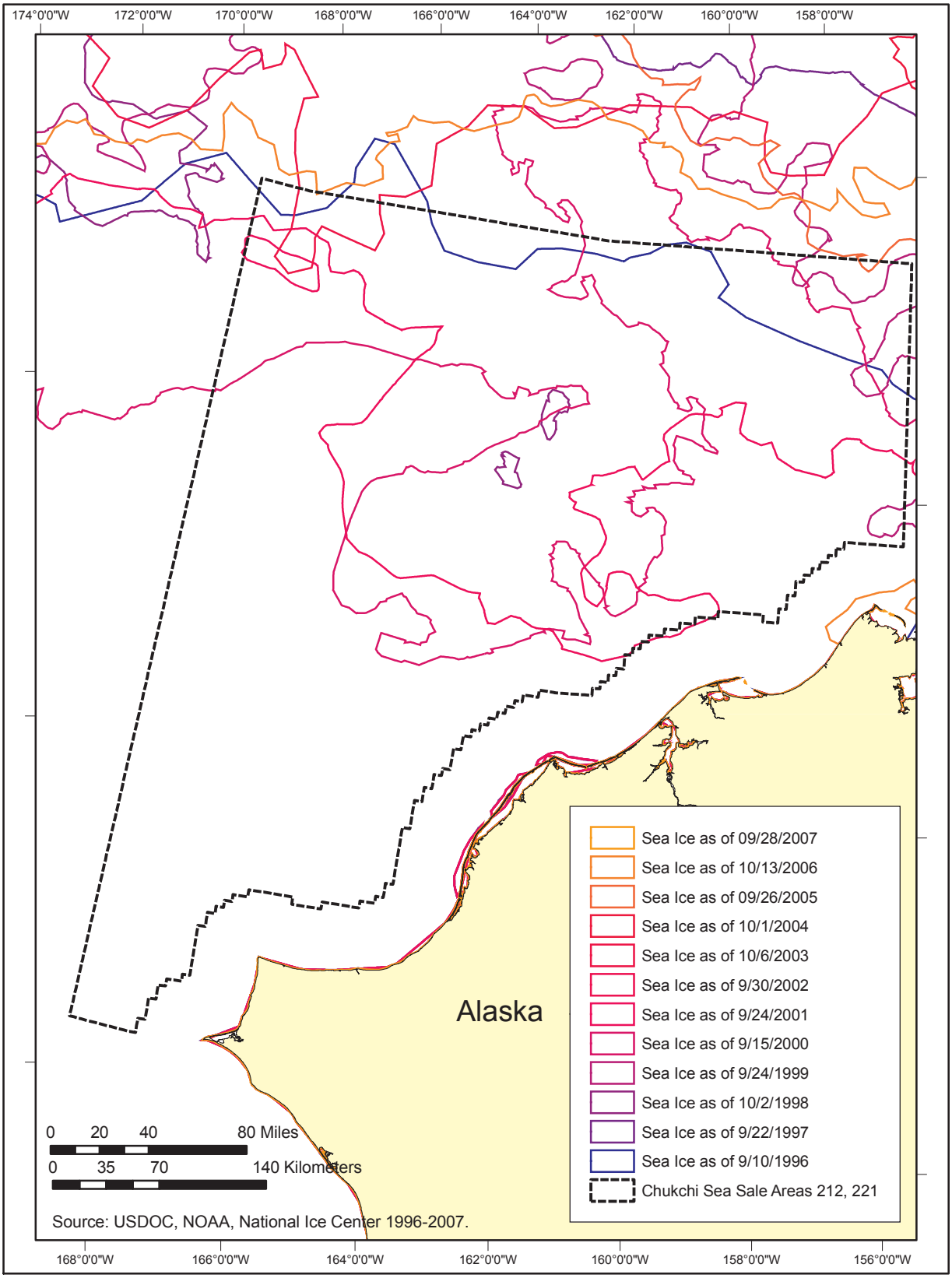


Figure 3.2.4-4. Chukchi Sea Generalized Maximum Retreat of Sea Ice 1996-2007.

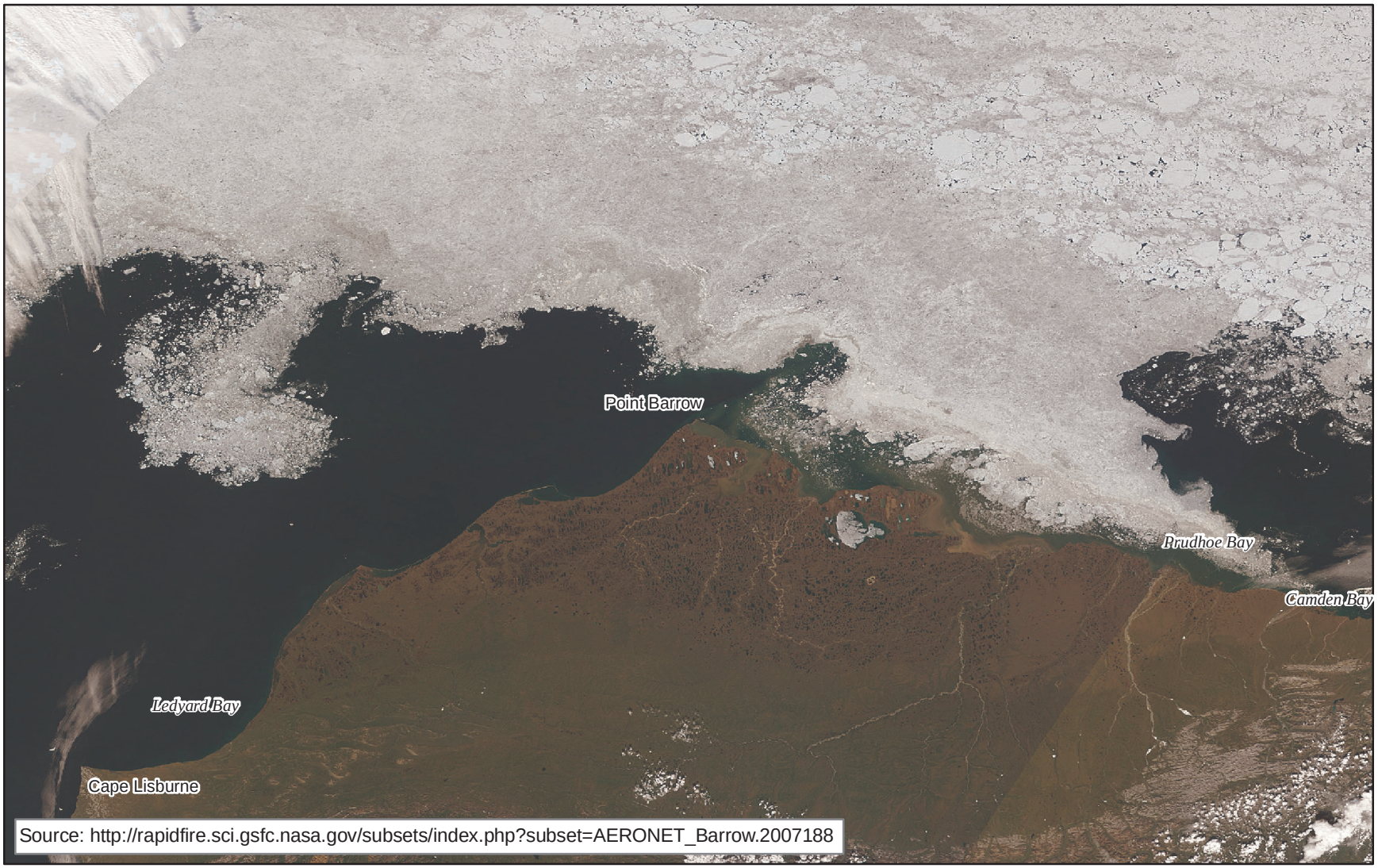


Figure 3.3.1-1 Early summer sea ice and coastal production in part of the proposed lease areas. Some locations in the satellite photograph are Cape Lisburne and Ledyard Bay in the Chukchi Sea on the left, Point Barrow in the center, and Camden Bay in the Beaufort Sea on the right edge. The apparent line of color on shore in the lower right is the result of merging adjacent satellite paths, but the line intersects the coast at Prudhoe Bay. This image, taken on July 7, 2007, reflects the slight reduction in the sea-ice cover during Spring, although climate warming has diminished it greatly during Autumn. An intense phytoplankton bloom has turned the surface water slightly green between the ice cover and shore just to the east of Pt. Barrow.

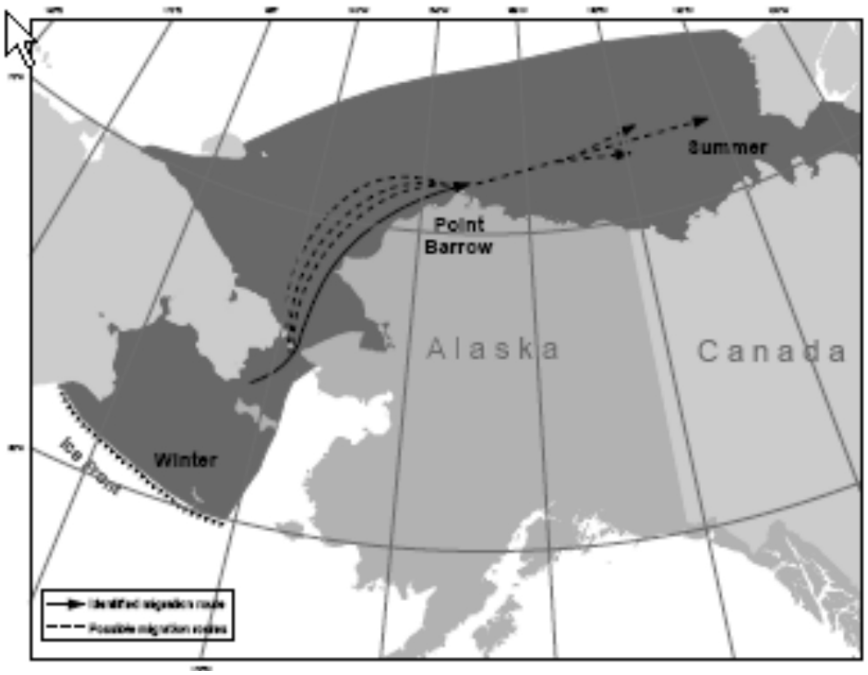


Figure 3.3.4.1-1. Bowhead Whale Distribution and Spring Migration Routes, Shaded area depicts the approximate distribution of Arctic stock bowhead whales. Spring migration is noted by lines and arrows following a route from the Bering Sea wintering areas to the Beaufort Sea summering area. Reproduced from Figure 42 of Angliss and Outlaw Rev. 03/03/07.

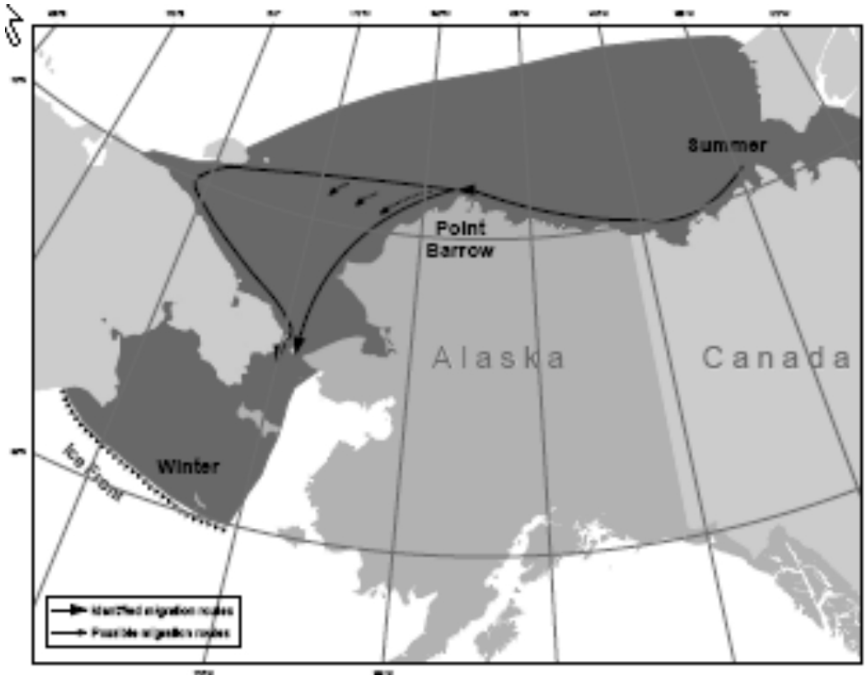


Figure 3.3.4.1-2. Bowhead Whale Distribution and Fall Migration Routes, Shaded area depicts the approximate distribution of Arctic stock bowhead whales. Fall migration is noted by lines and arrows following a route from the Beaufort Sea summering areas to the Bering Sea wintering areas. Reproduced from Figure 40 of Angliss and Outlaw Rev. 03/03/07.

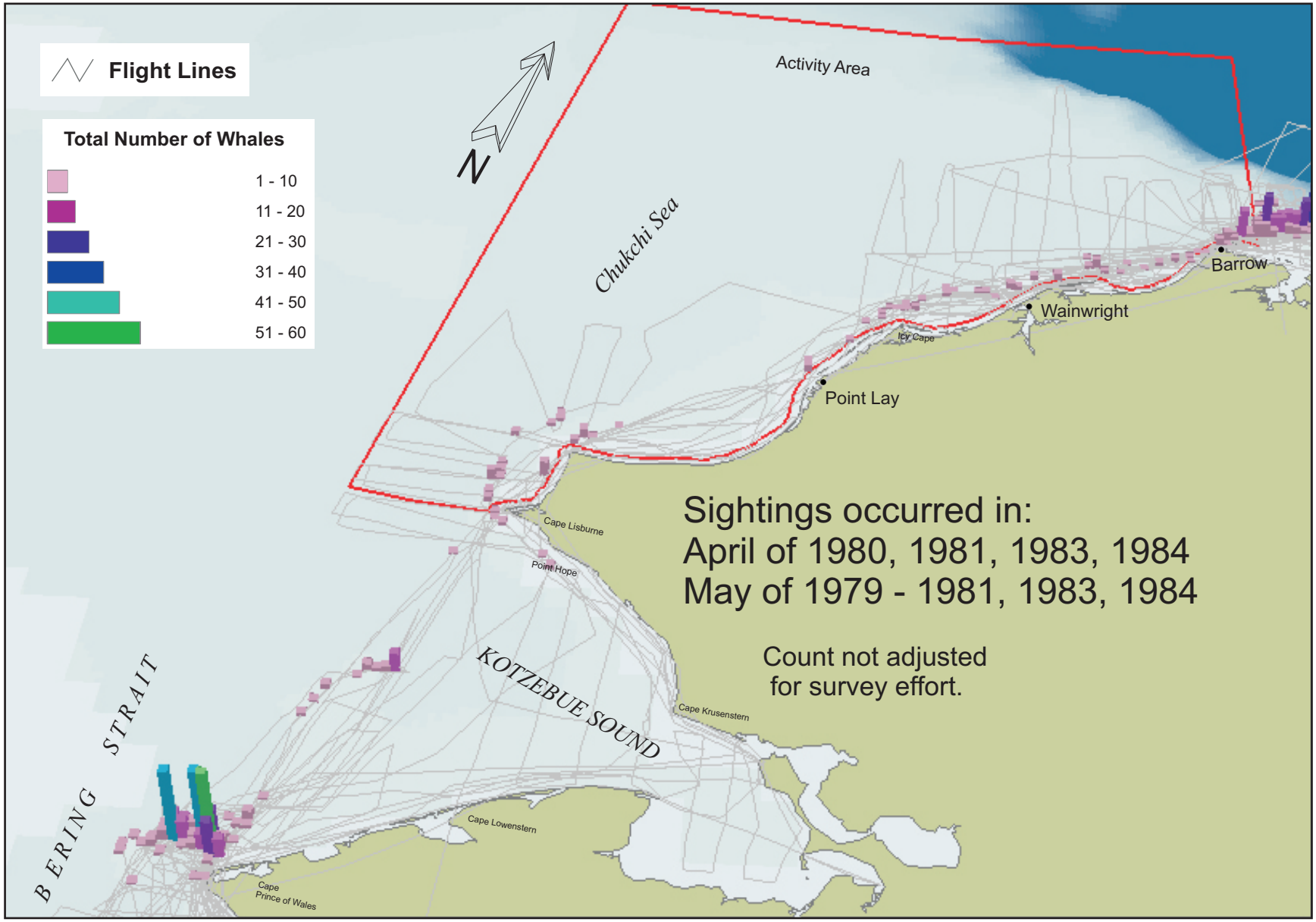


Figure 3.3.4.1-3 Counts of Bowhead Whales in April -May in the Chukchi Sea taken by the MMS (Alaska OCS Region) Bowhead Whale Aerial Survey Project. (Counts are aggregated on a 5-km grid).

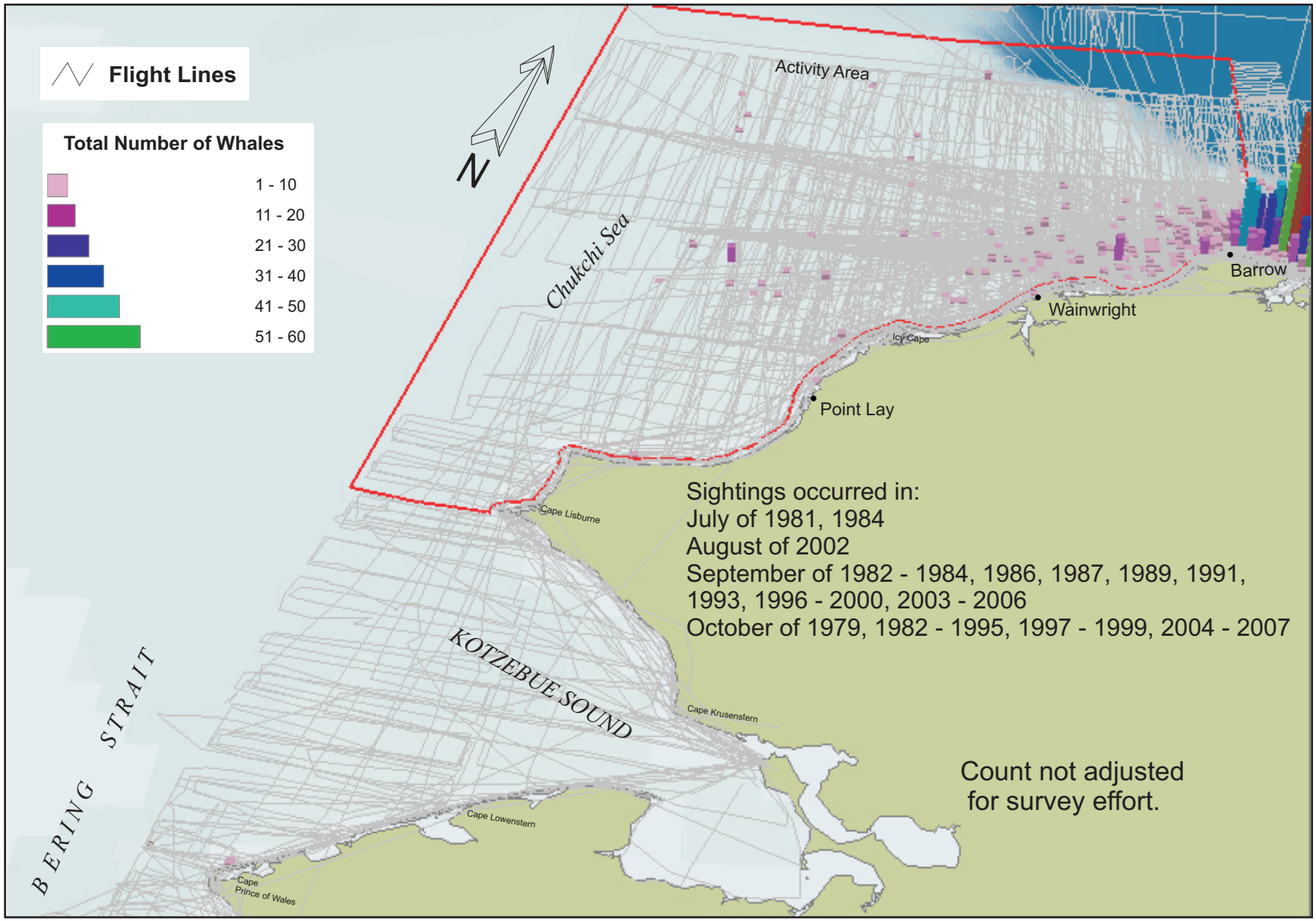


Figure 3.3.4.1-4 Counts of Bowhead Whales in July - November in the Chukchi Sea taken by the MMS (Alaska OCS Region) Bowhead Whale Aerial Survey Project. (Counts are aggregated on a 5-km grid).

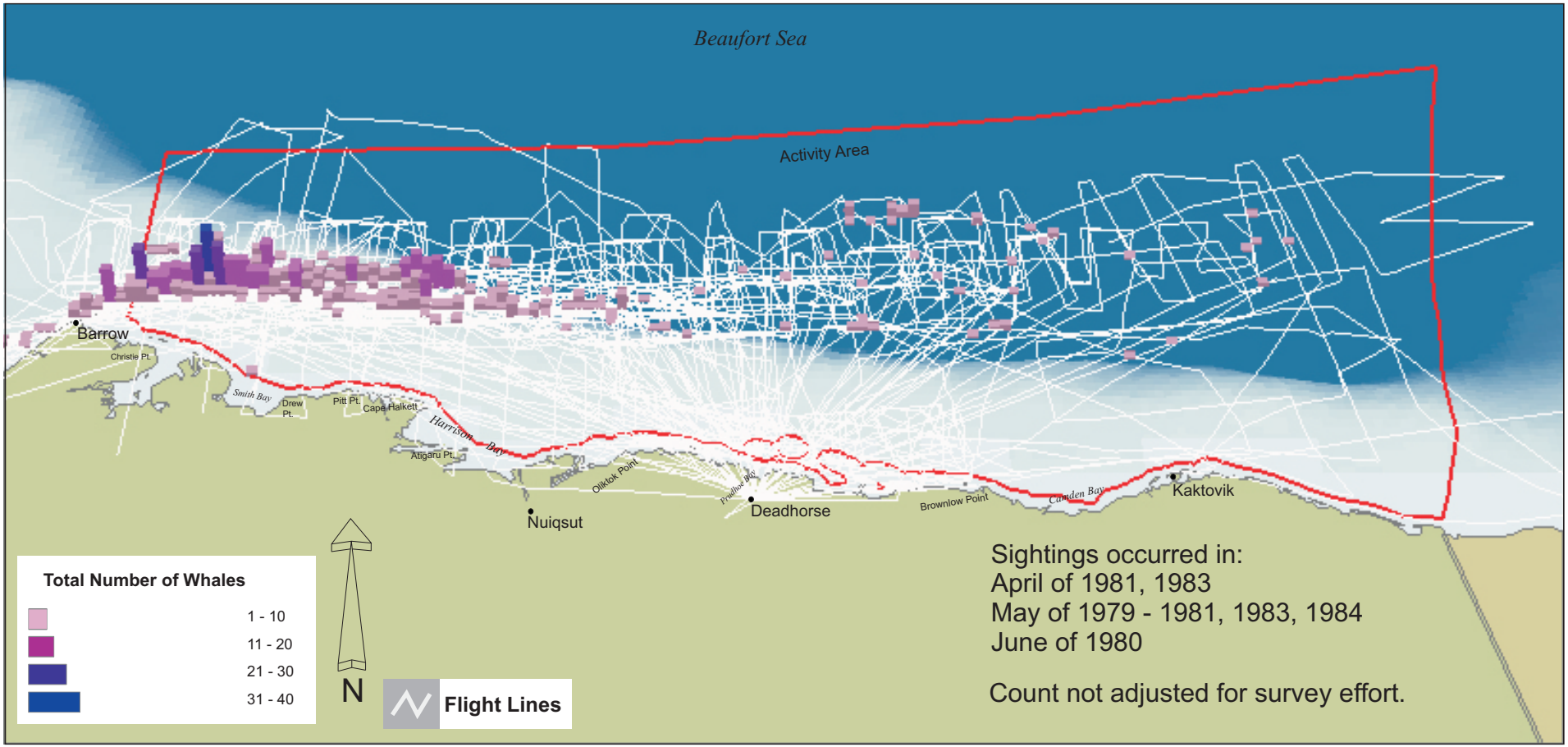


Figure 3.3.4.1-5 Counts of Bowhead Whales in April - June in the Beaufort Sea taken by the MMS (Alaska OCS Region) Bowhead Whale Aerial Survey Project. (Counts are aggregated on a 5-km grid).

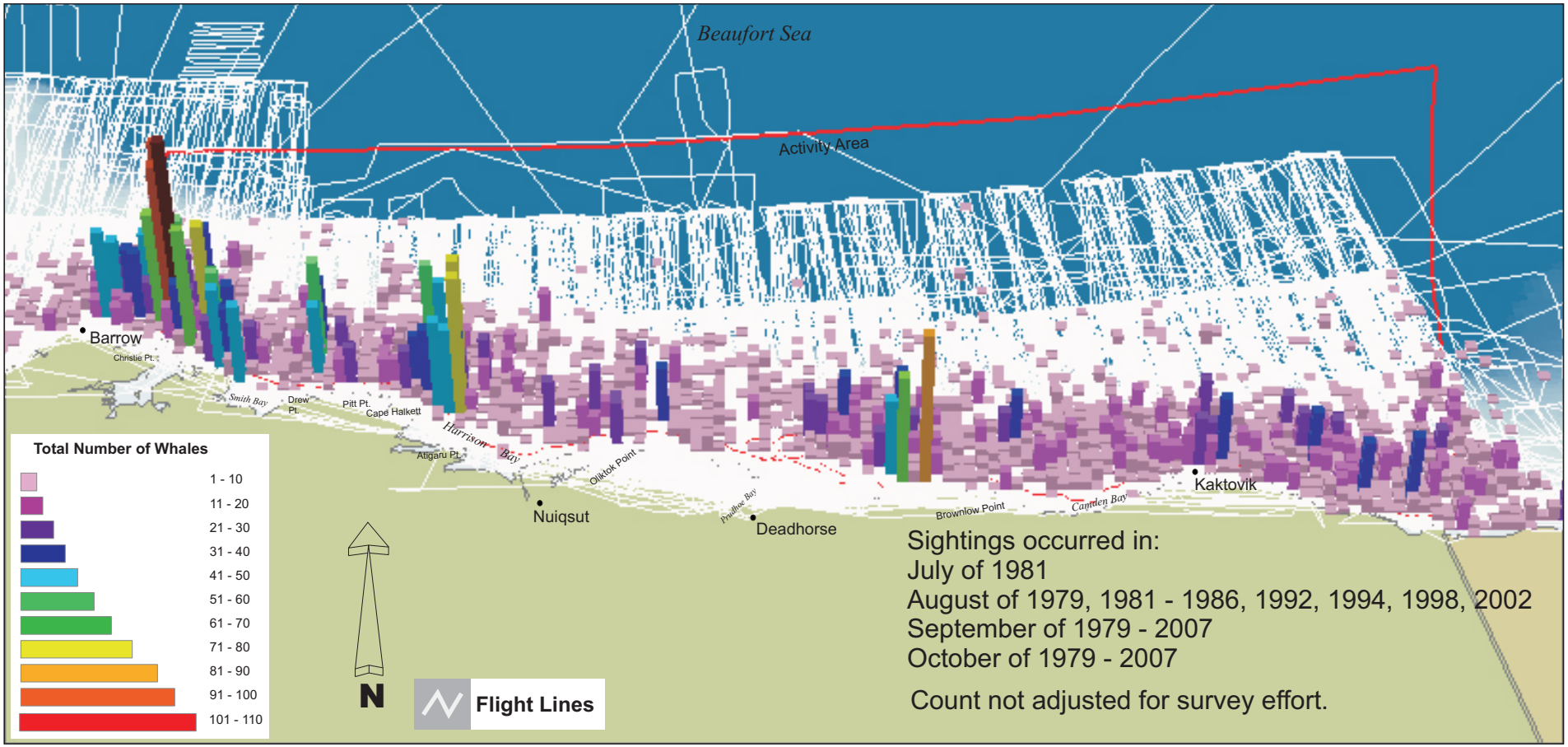


Figure 3.3.4.1-6 Counts of Bowhead Whales in July -October in the Beaufort Sea taken by the MMS (Alaska OCS Region) Bowhead Whale Aerial Survey Project. (Counts are aggregated on a 5-km grid).

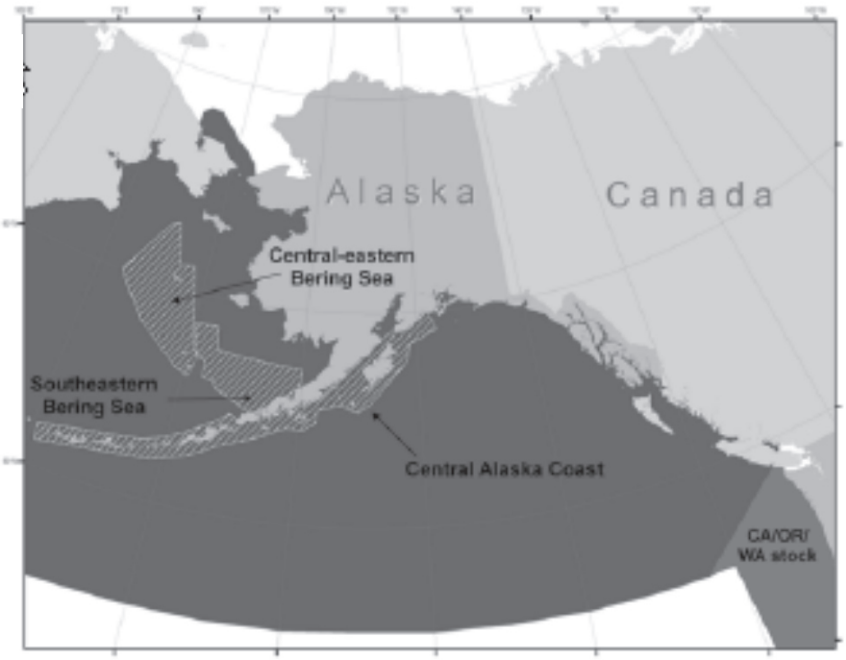


Figure 3.3.4.1-7. Approximate Distribution of Fin Whales in the Eastern North pacific (shaded area). Striped areas indicate where vessel surveys occurred in 1999-2000 (Moore et al. 2002) and 2001-2003 (Zebrini et al. 2006). Reproduced from Figure 40 of Angliss and Outlaw Rev. 03/03/07.

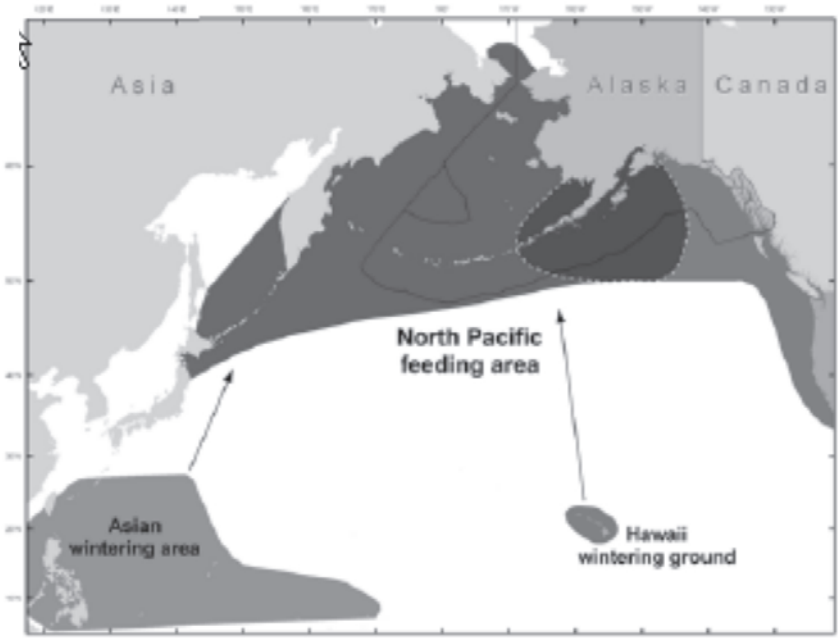
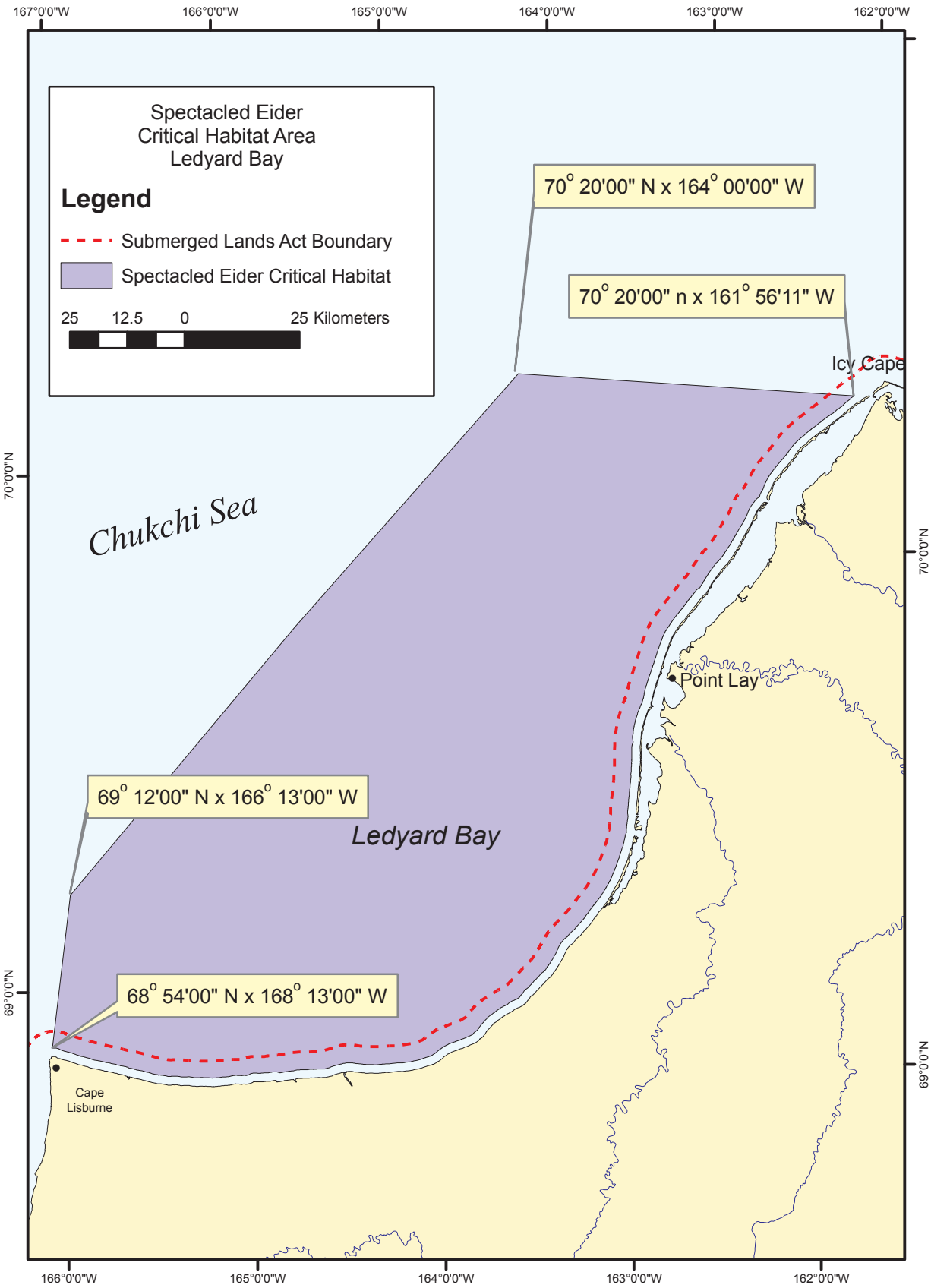


Figure 3.3.4.1-8. Approximate distribution of humpback whales in the Western North Pacific (shaded areas). Feeding and wintering grounds are presented. The dark shading within the dotted line is known to be an area of overlap of the Central North Pacific stock. Reproduced from Figure 38 of Angliss and Outlaw Rev. 03/03/07.



Source: USDOI, FWS (2001b)

Figure 3.3.4.2-1 Location of Ledyard Bay Spectacled Eider Critical Habitat Area

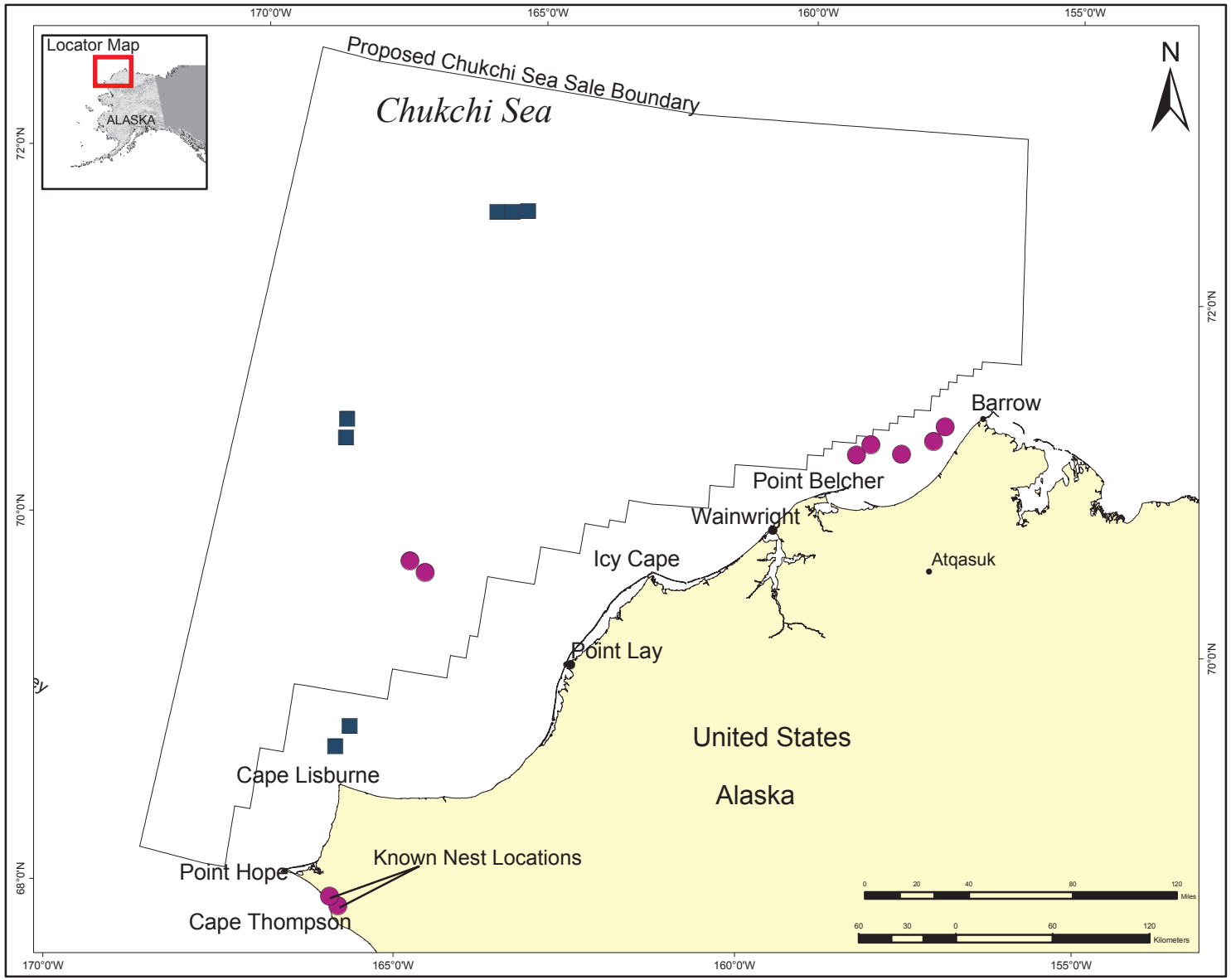
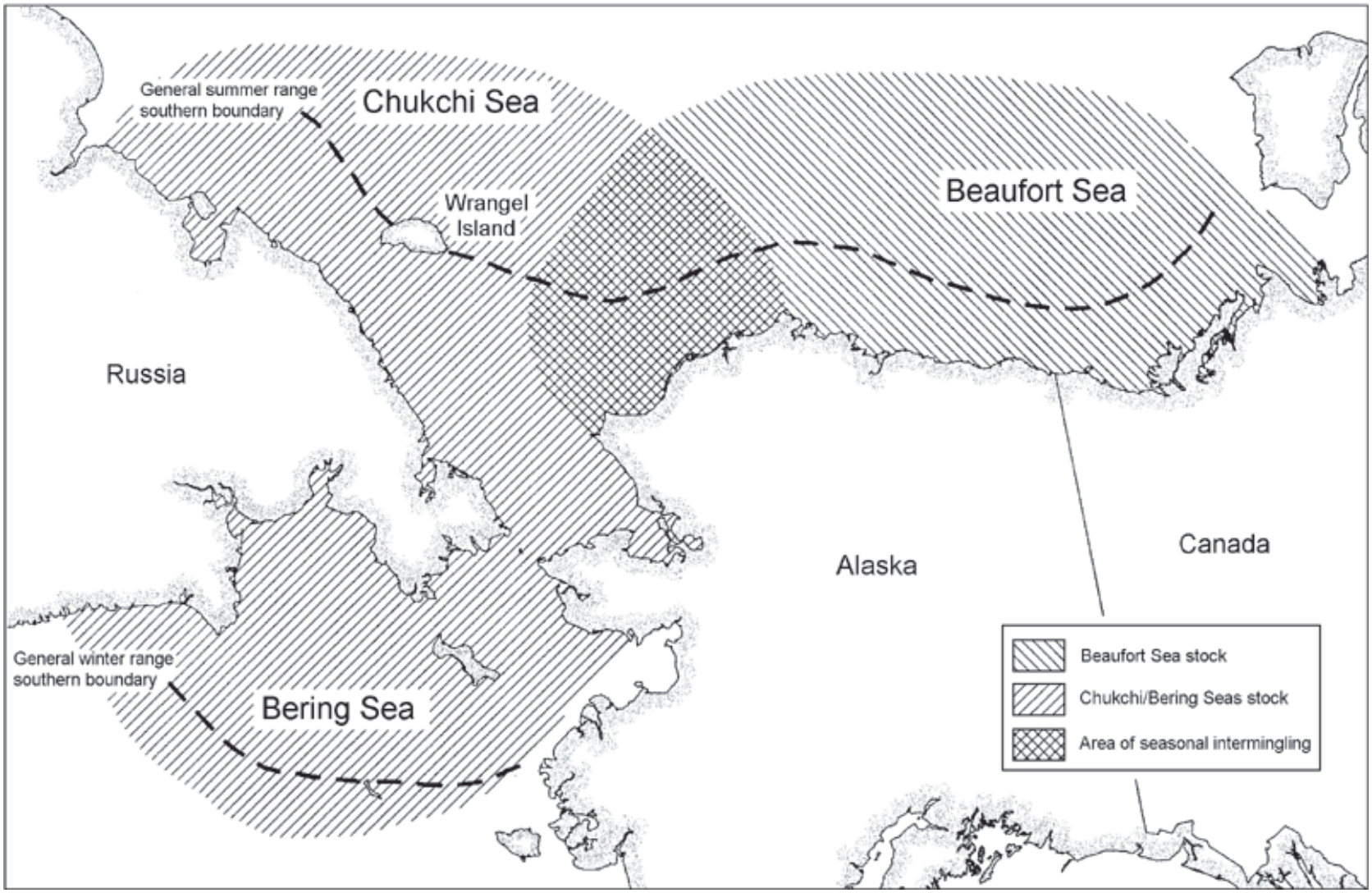


Figure 3.3.4.2-2 Kittlitz's Murrelet Offshore Observations and Nesting Information. Potential nesting area based on Day et al. (1990). Nest locations based on USDOI (2004). Offshore observations are designated as blocks (24 Aug-22 September) and dots (22 September-17 October) (Divoky 1987).



Source: USDOI, FWS, Region 7 (www.r7.fws.gov/fisheries/mmm/polarbear)

Figure 3.3.4.3-1 Distribution of the Chukchi/Bering Sea and Southern Beaufort Sea stocks of polar bear, from USFWS 2008.