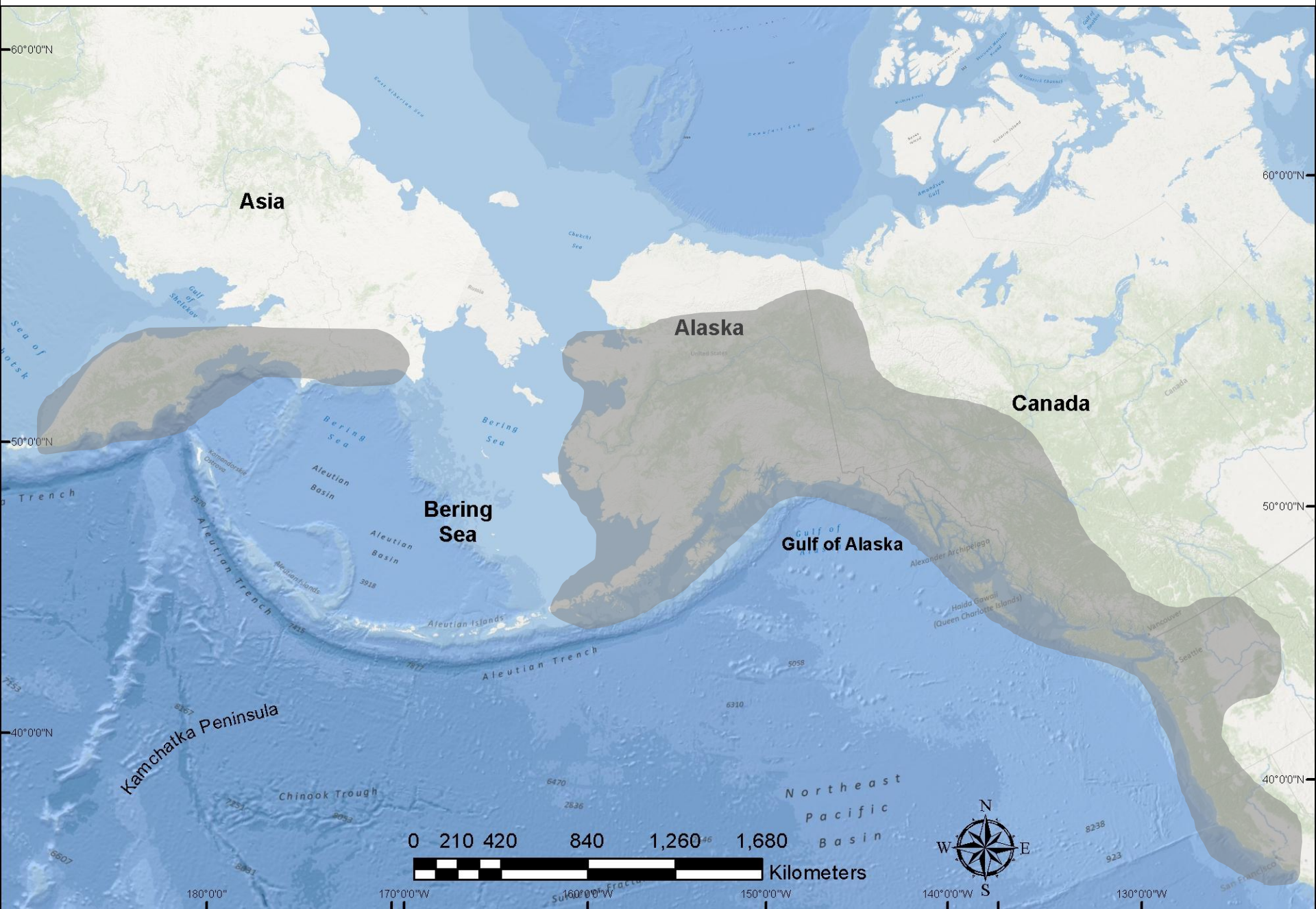


Genetic information for management of Alaska Chinook salmon: Current capabilities and outlook

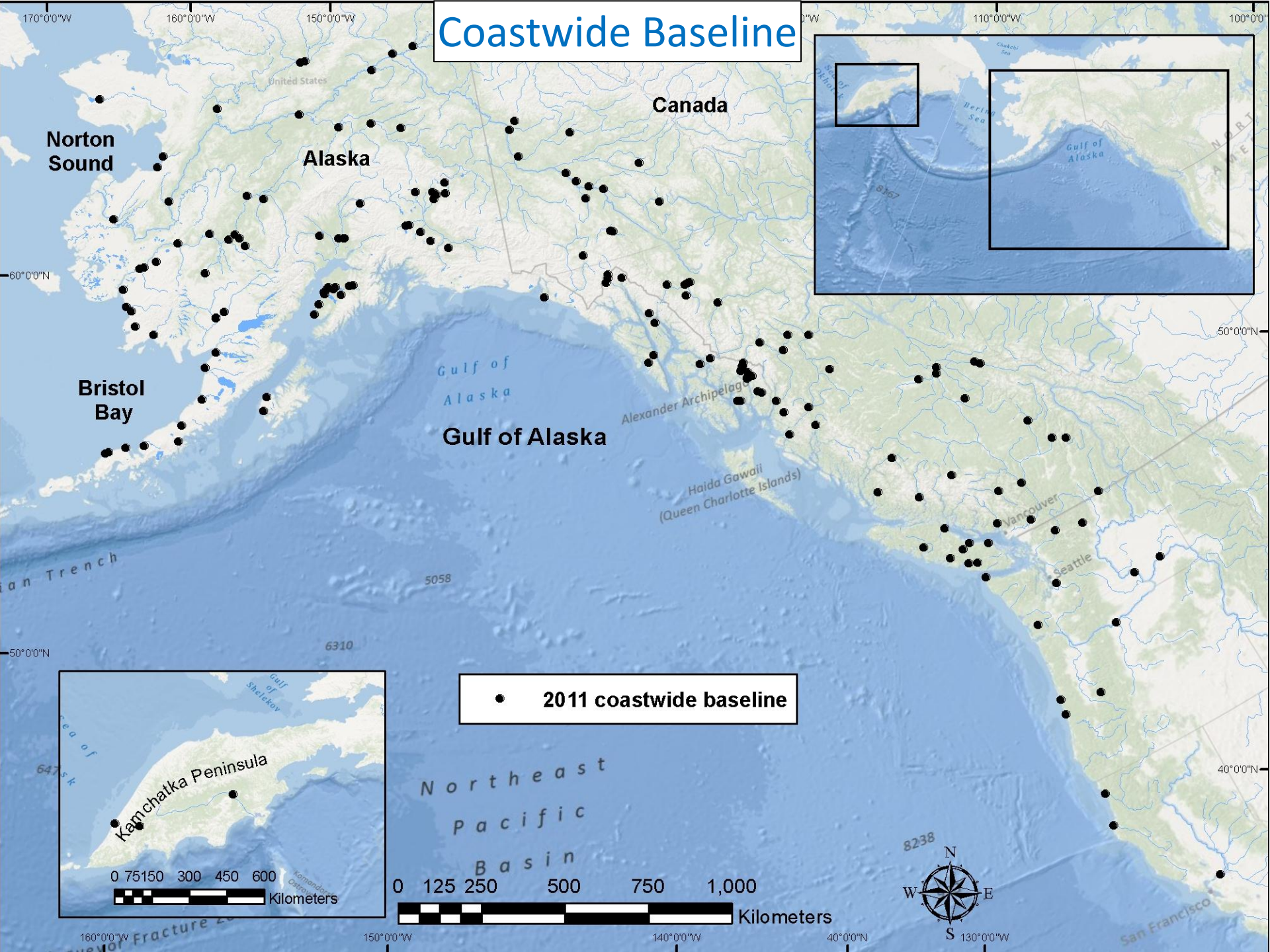
Gene Conservation Laboratory
Alaska Department of Fish and Game



Chinook Salmon Distribution



Coastwide Baseline



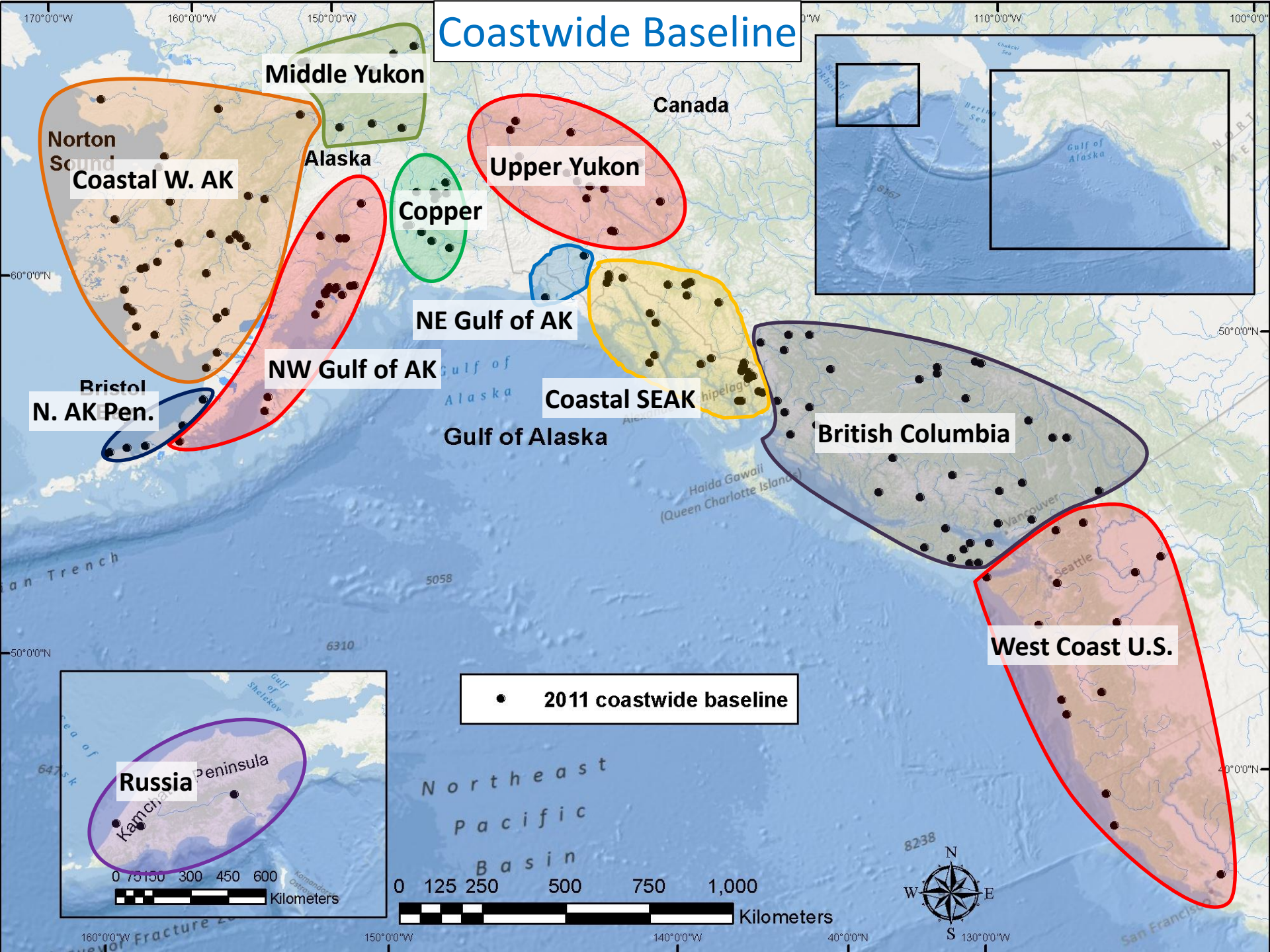
● 2011 coastwide baseline

0 75 150 300 450 600
Kilometers

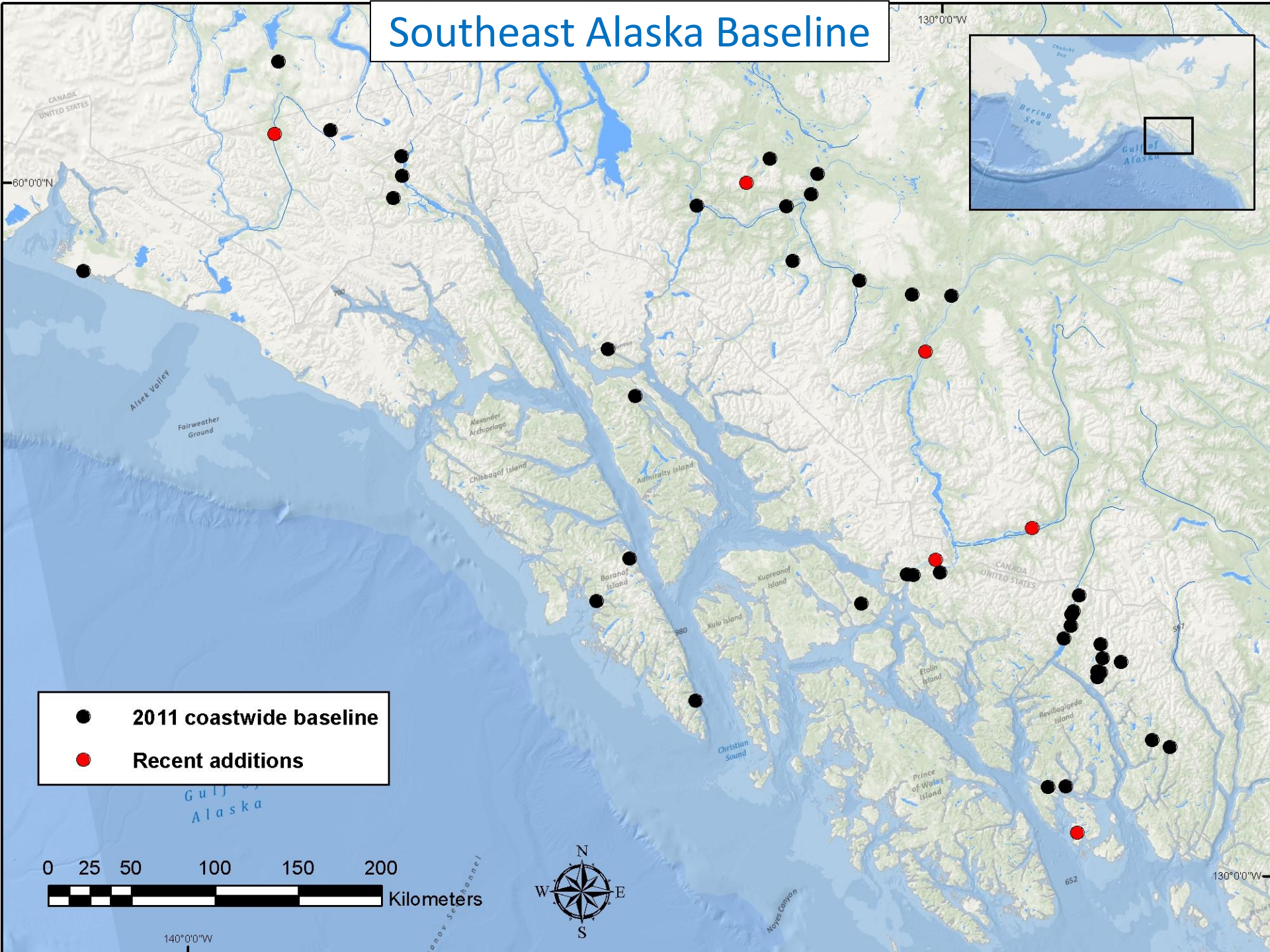
0 125 250 500 750 1,000
Kilometers



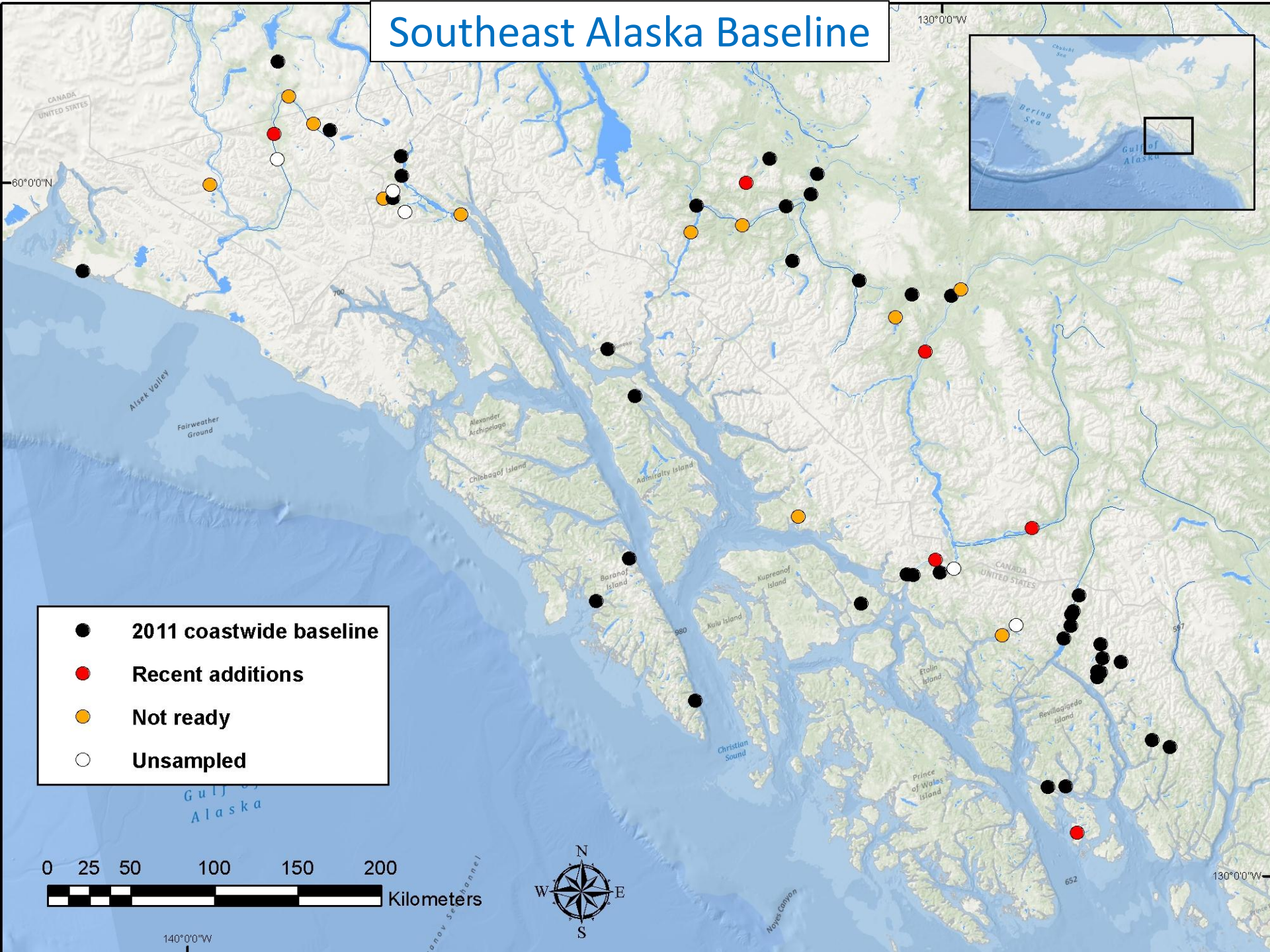
Coastwide Baseline



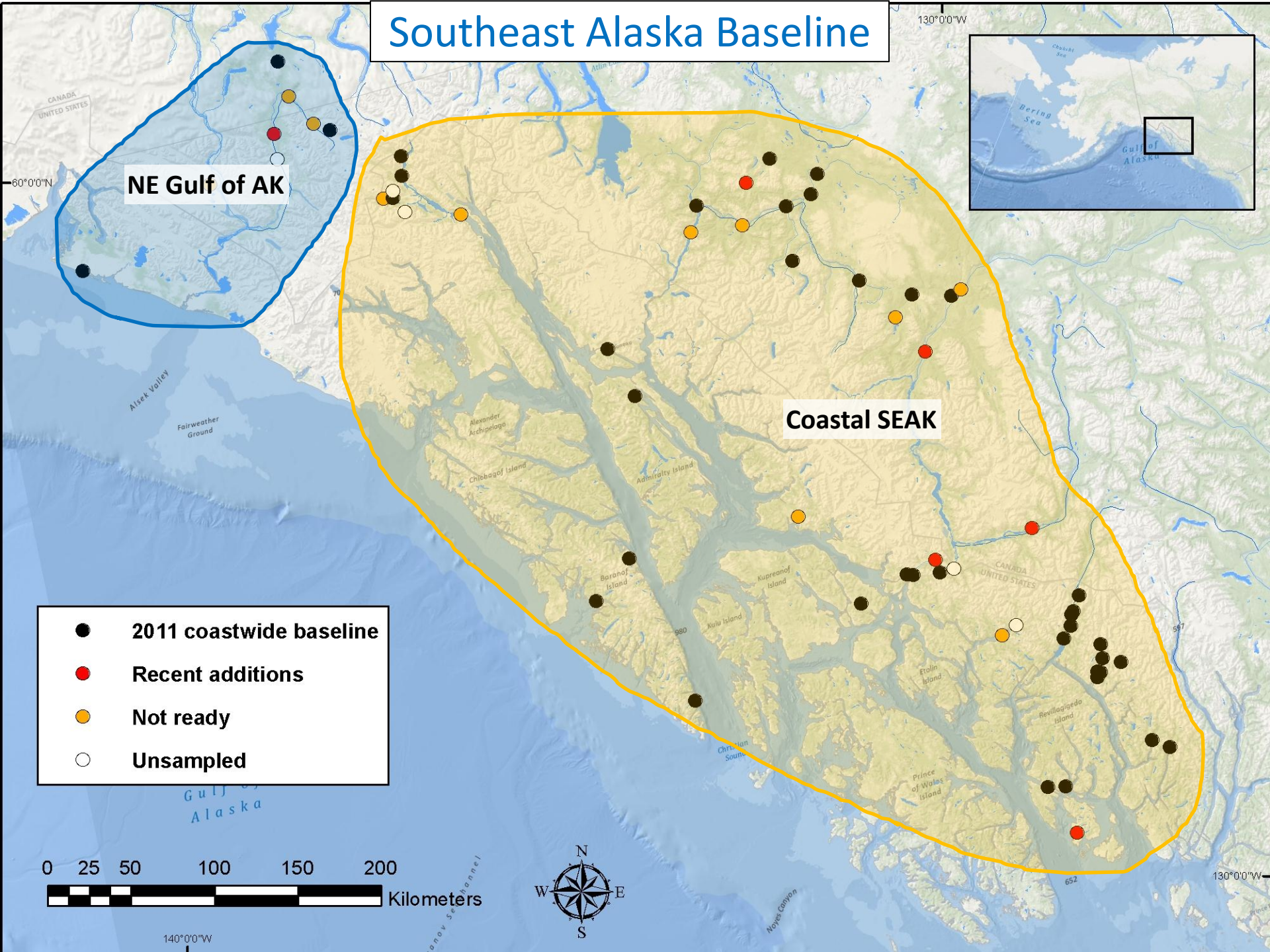
Southeast Alaska Baseline



Southeast Alaska Baseline



Southwest Alaska Baseline



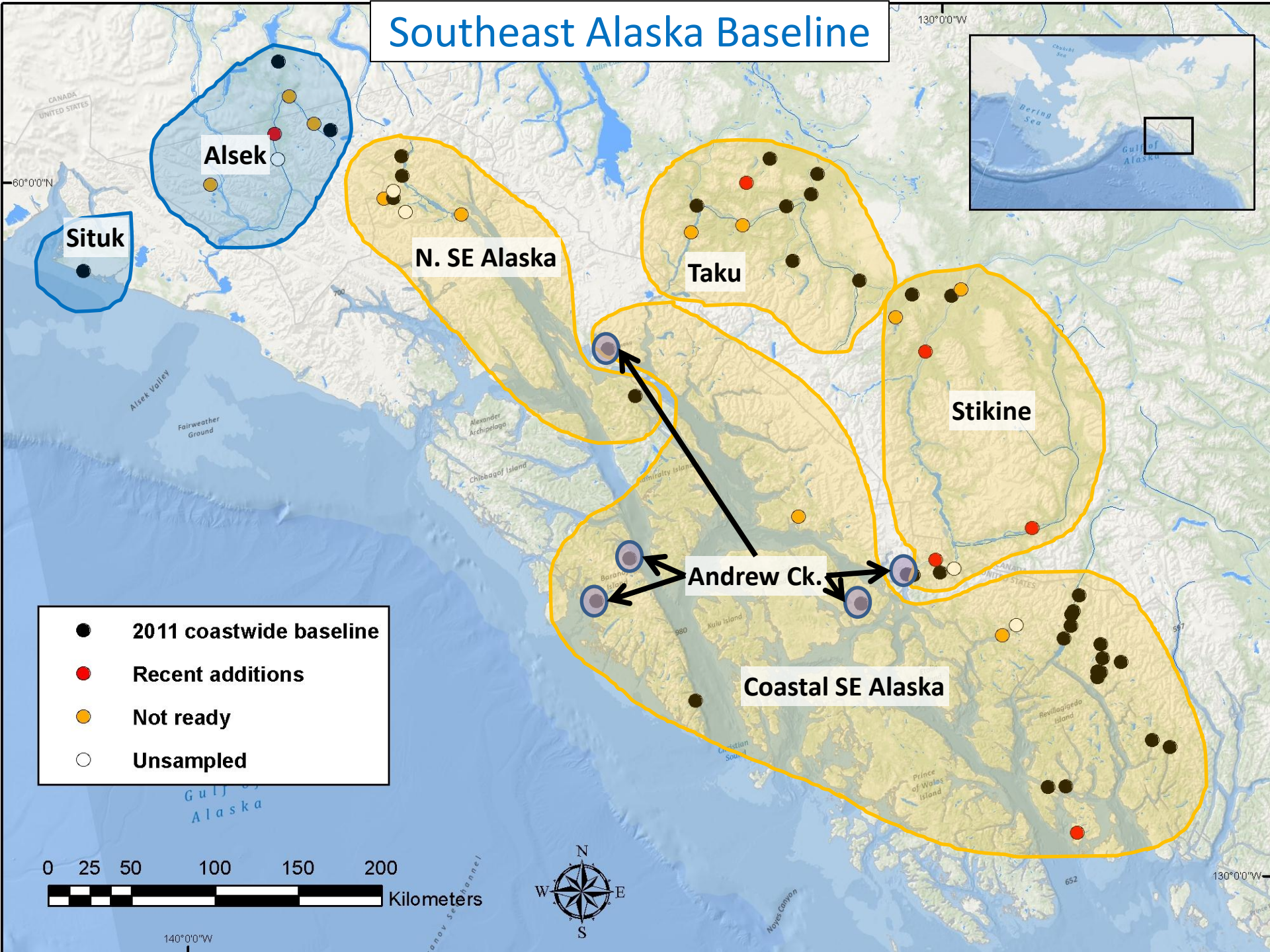
NE Gulf of AK

Coastal SEAK

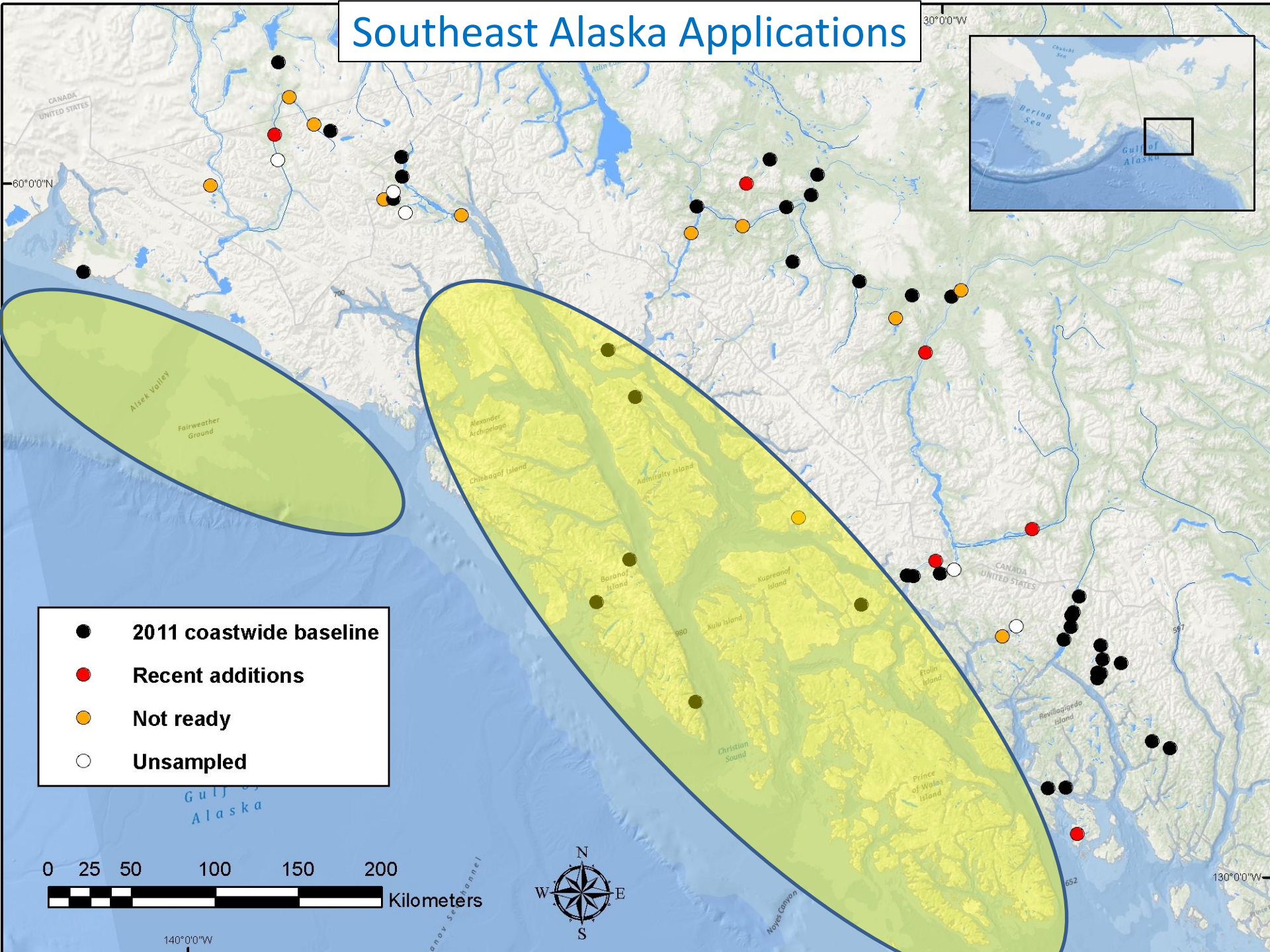
- 2011 coastwide baseline
- Recent additions
- Not ready
- Unsampled



Southeast Alaska Baseline



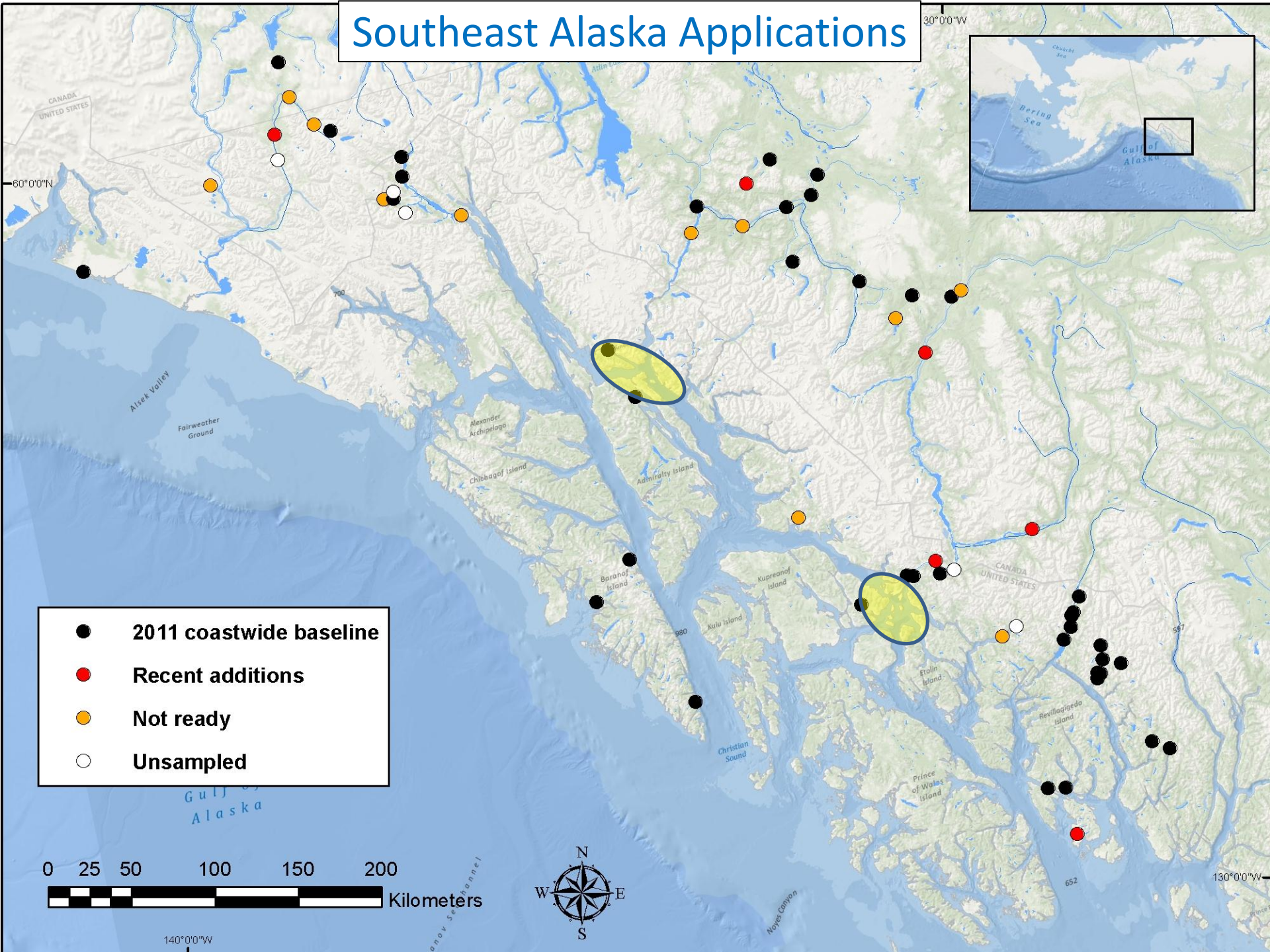
Southwest Alaska Applications



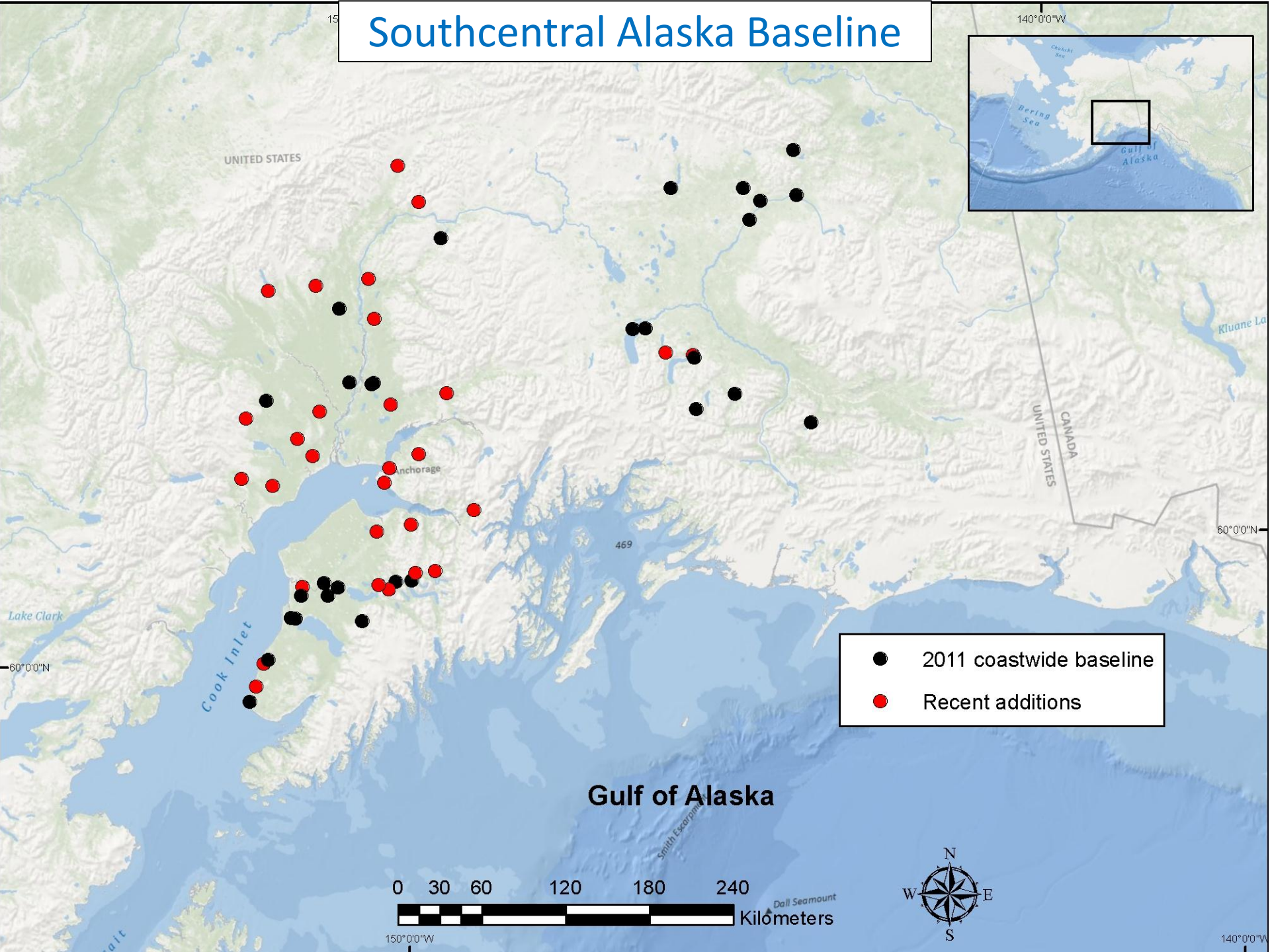
- 2011 coastwide baseline
- Recent additions
- Not ready
- Unsampled



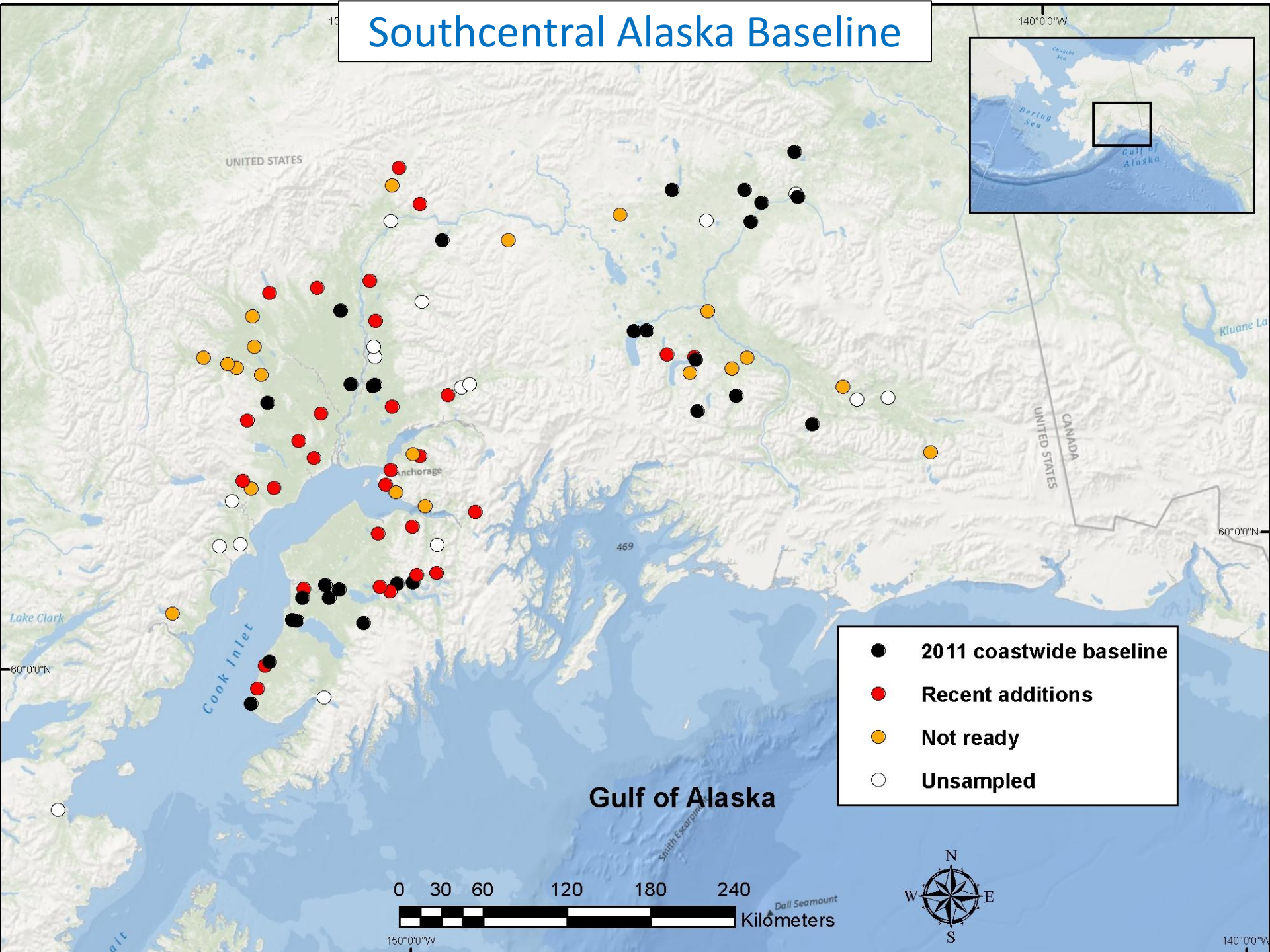
Southwest Alaska Applications



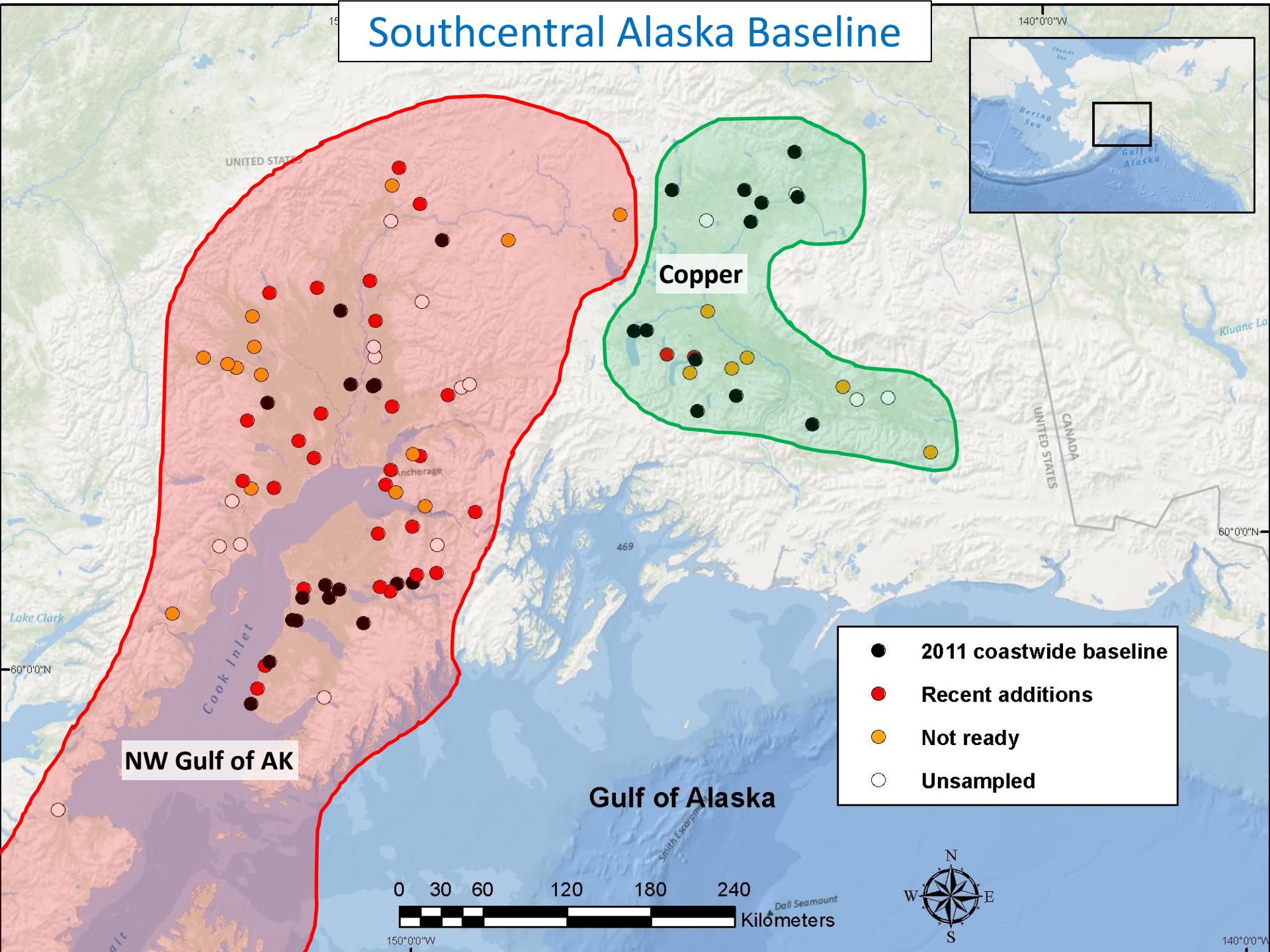
Southcentral Alaska Baseline



Southcentral Alaska Baseline



Southcentral Alaska Baseline

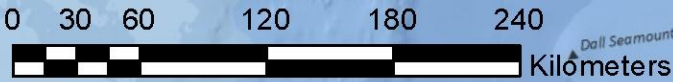


- 2011 coastwide baseline
- Recent additions
- Not ready
- Unsampled

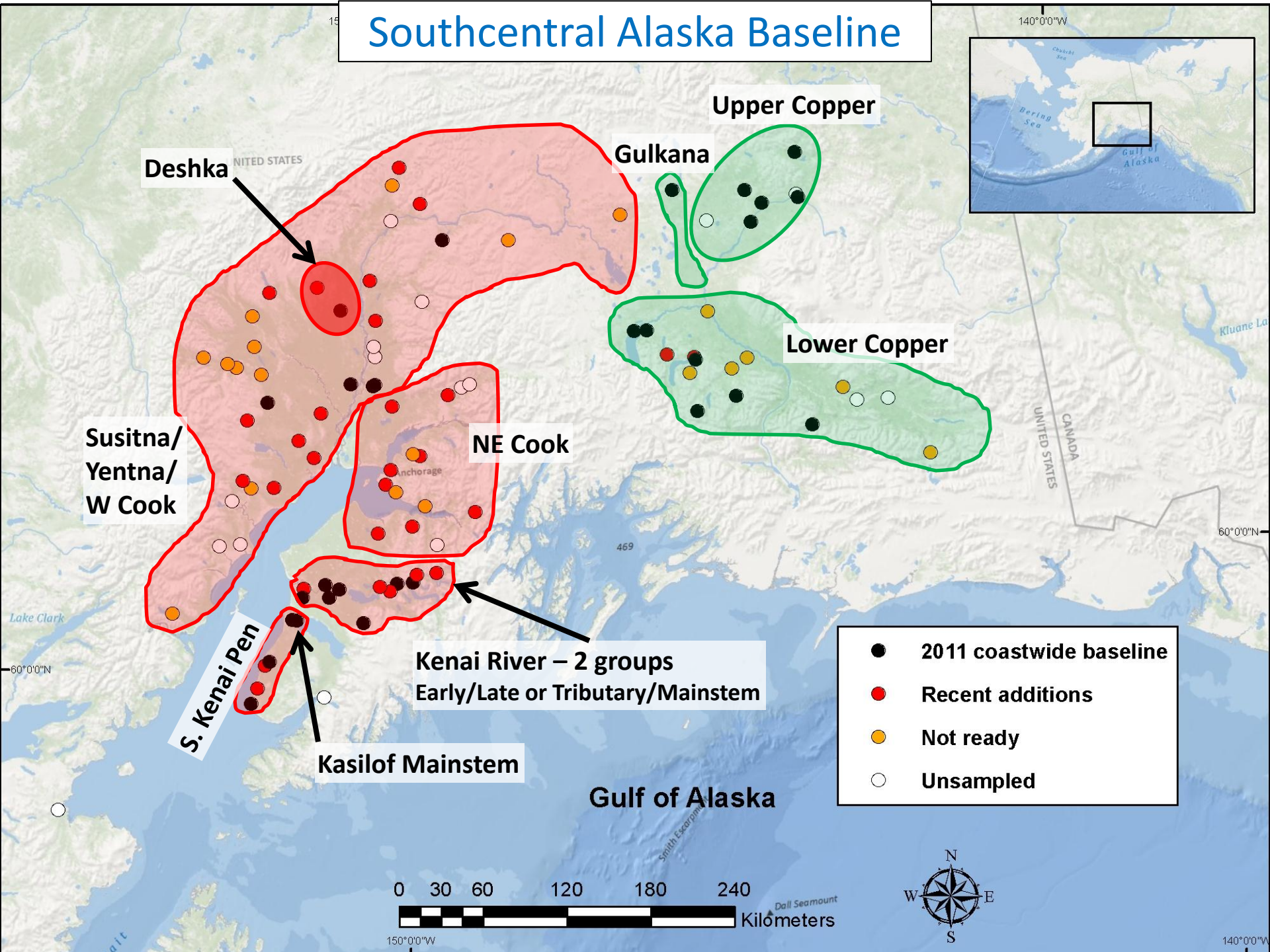
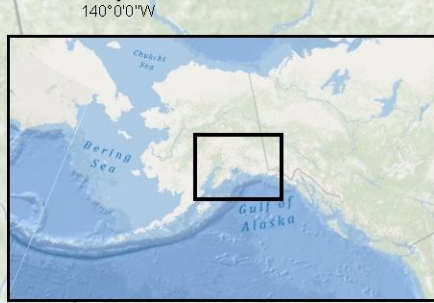
NW Gulf of AK

Copper

Gulf of Alaska



Southcentral Alaska Baseline



Deshka

Upper Copper

Gulkana

Lower Copper

Susitna/
Yentna/
W Cook

NE Cook

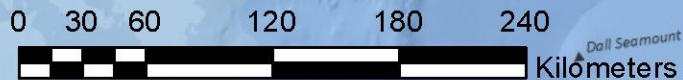
S. Kenai Pen

Kenai River – 2 groups
Early/Late or Tributary/Mainstem

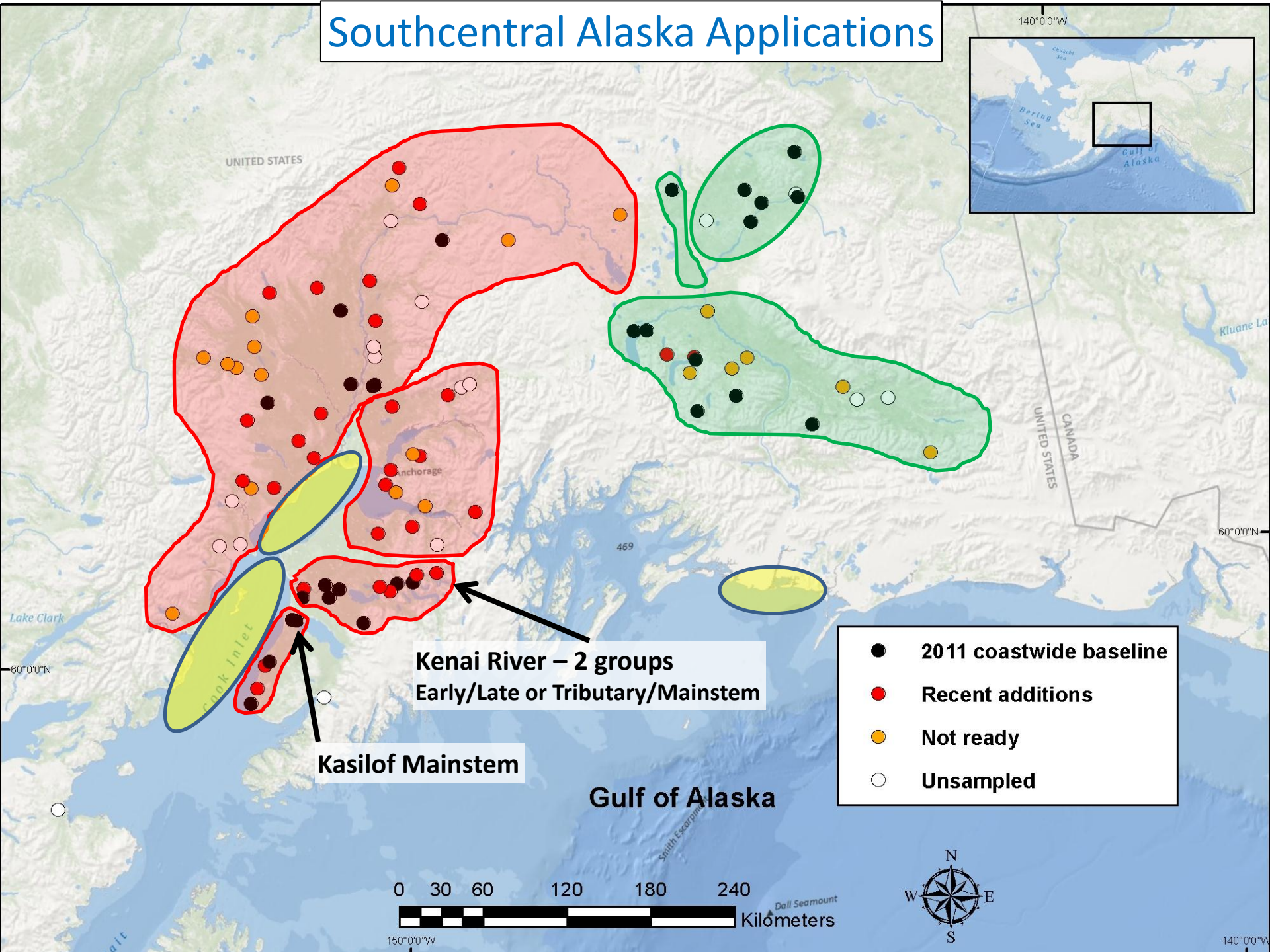
Kasilof Mainstem

Gulf of Alaska

- 2011 coastwide baseline
- Recent additions
- Not ready
- Unsampled



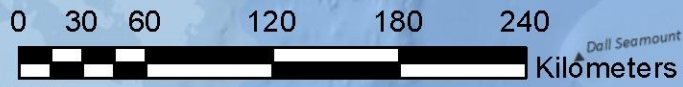
Southcentral Alaska Applications



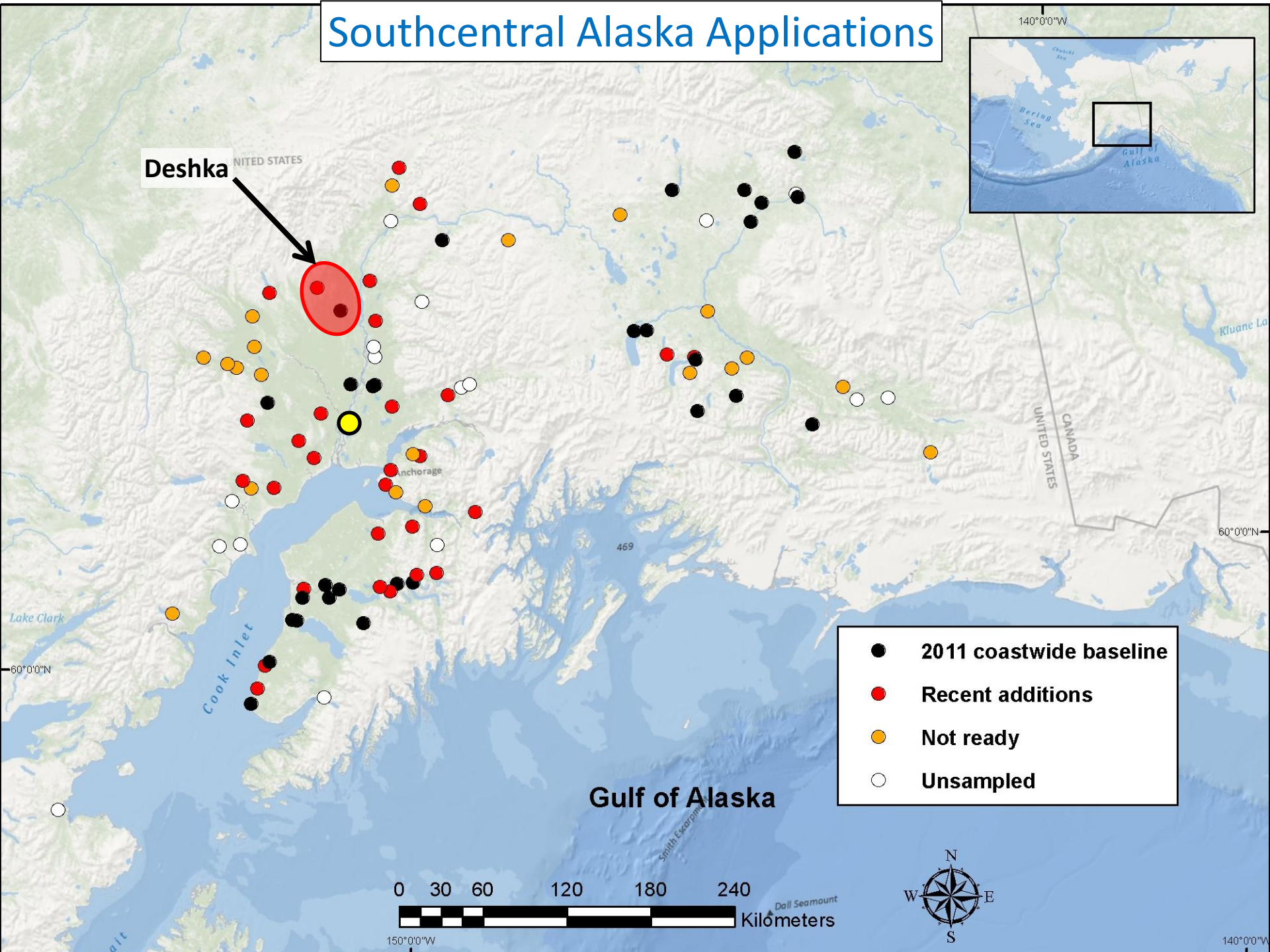
- 2011 coastwide baseline
- Recent additions
- Not ready
- Unsampld

Kenai River – 2 groups
Early/Late or Tributary/Mainstem

Kasilof Mainstem



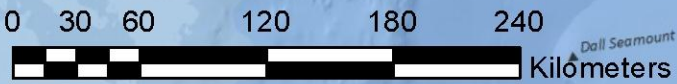
Southcentral Alaska Applications



Deshka



- 2011 coastwide baseline
- Recent additions
- Not ready
- Unsampled



Southwest Alaska Baseline



Bristol Bay

Bristol Bay

Gulf of Alaska



- 2011 coastwide baseline
- Recent additions



160°0'0"W

Shumagin Bank

Southwest Alaska Baseline



Bristol Bay

Bristol Bay

Gulf of Alaska

- 2011 coastwide baseline
- Recent additions
- Not ready
- Unsampled



160°0'0"W

Southwest Alaska Baseline

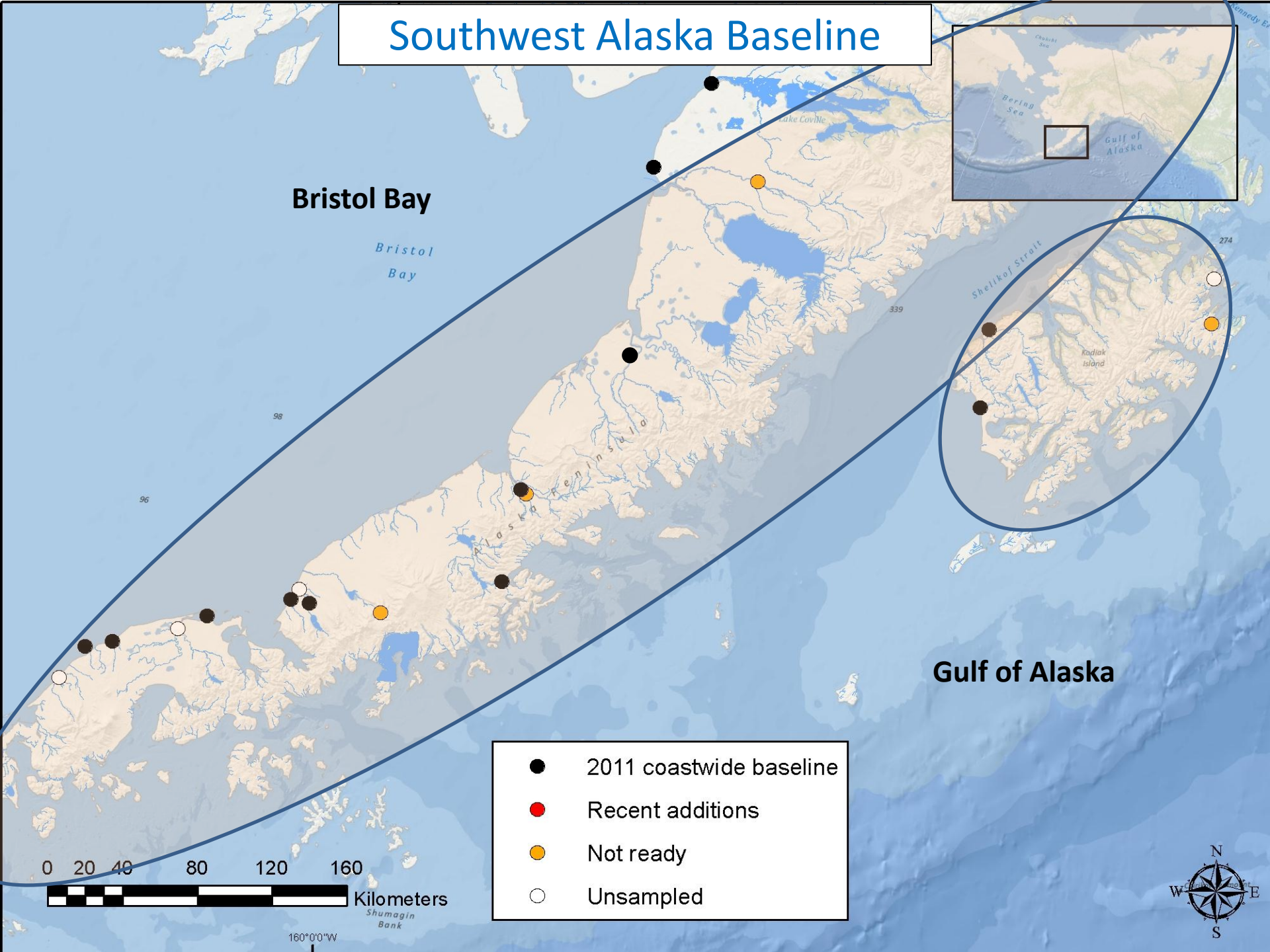


Bristol Bay

Bristol Bay

Gulf of Alaska

- 2011 coastwide baseline
- Recent additions
- Not ready
- Unsampled



Southwest Alaska Baseline

Coastal W. AK

Bristol Bay

N. AK Pen.

NW Gulf of AK

Gulf of Alaska



- 2011 coastwide baseline
- Recent additions
- Not ready
- Unsampled



160°0'0"W



Southwest Alaska Baseline

Coastal W. AK

Bristol Bay

N. AK Pen.

Chignik

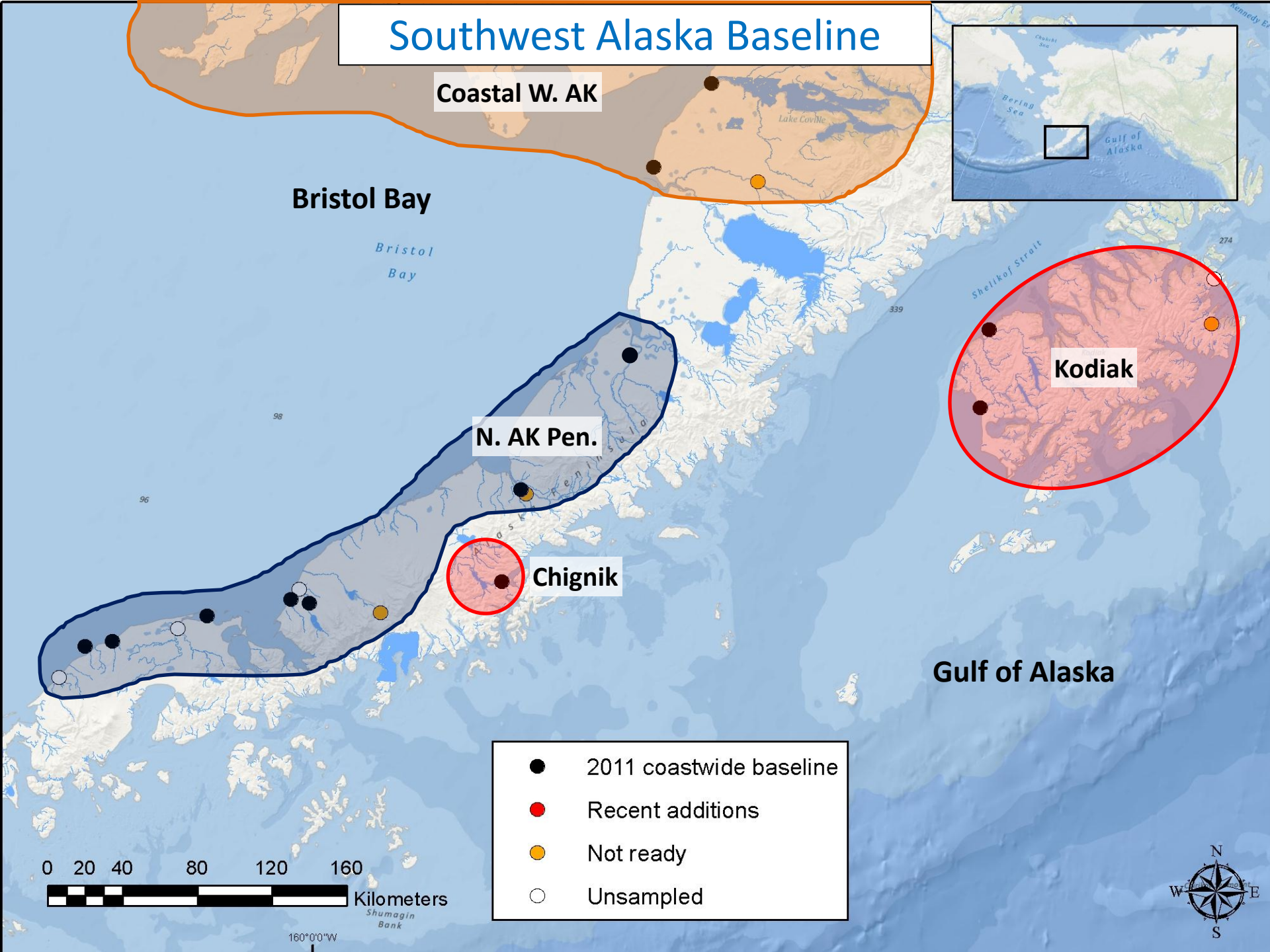
Kodiak

Gulf of Alaska

- 2011 coastwide baseline
- Recent additions
- Not ready
- Unsampled



160°0'0"W



Southwest Alaska Applications



Bristol Bay

Bristol Bay



Gulf of Alaska

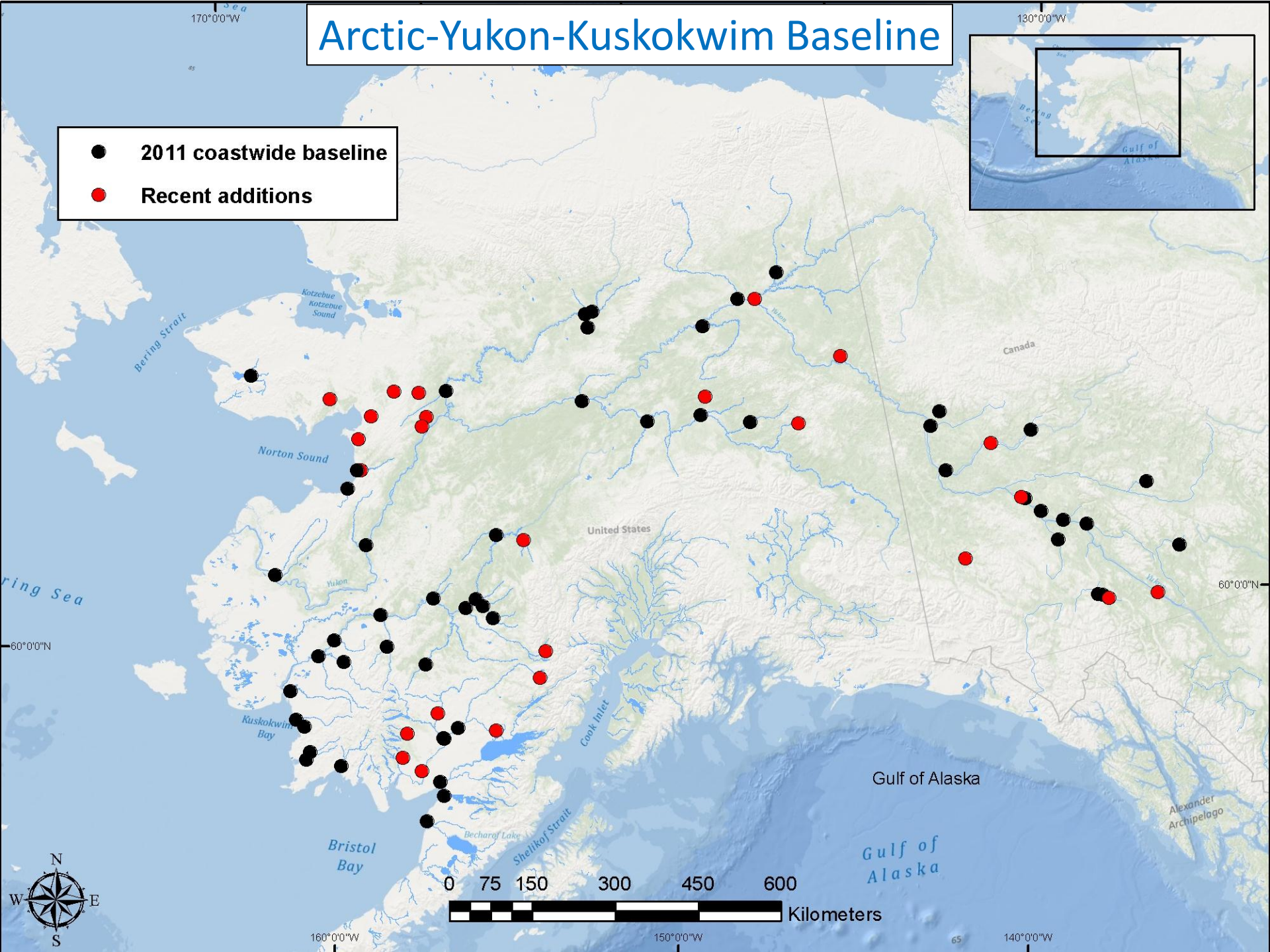
- 2011 coastwide baseline
- Recent additions
- Not ready
- Unsampled



160°0'0"W

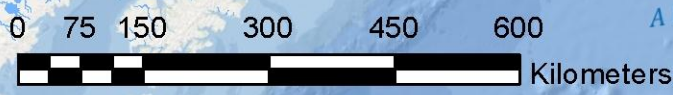
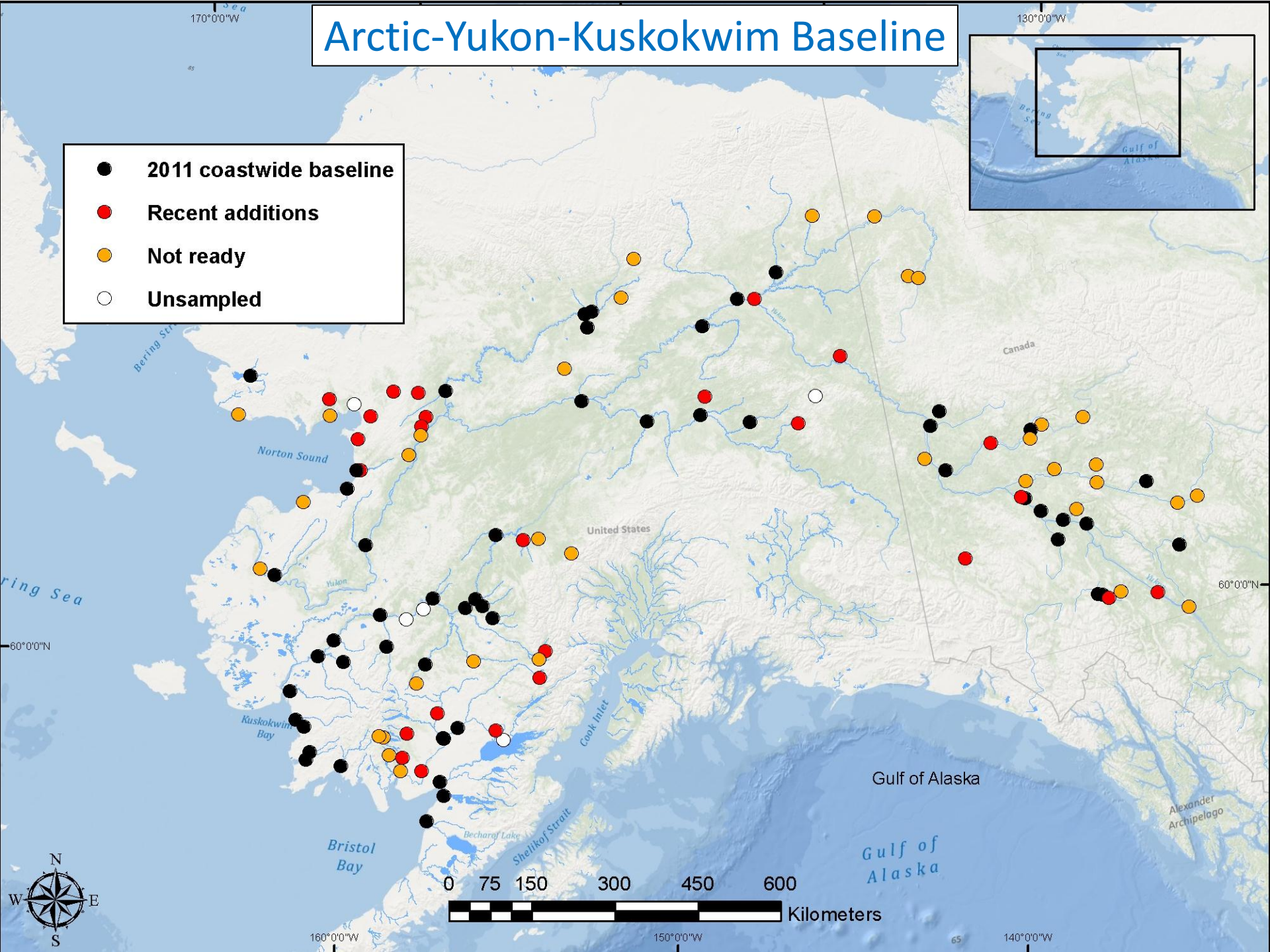
Arctic-Yukon-Kuskokwim Baseline

- 2011 coastwide baseline
- Recent additions



Arctic-Yukon-Kuskokwim Baseline

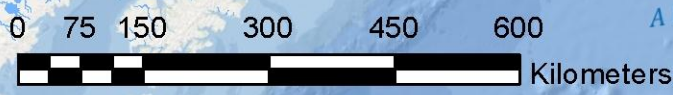
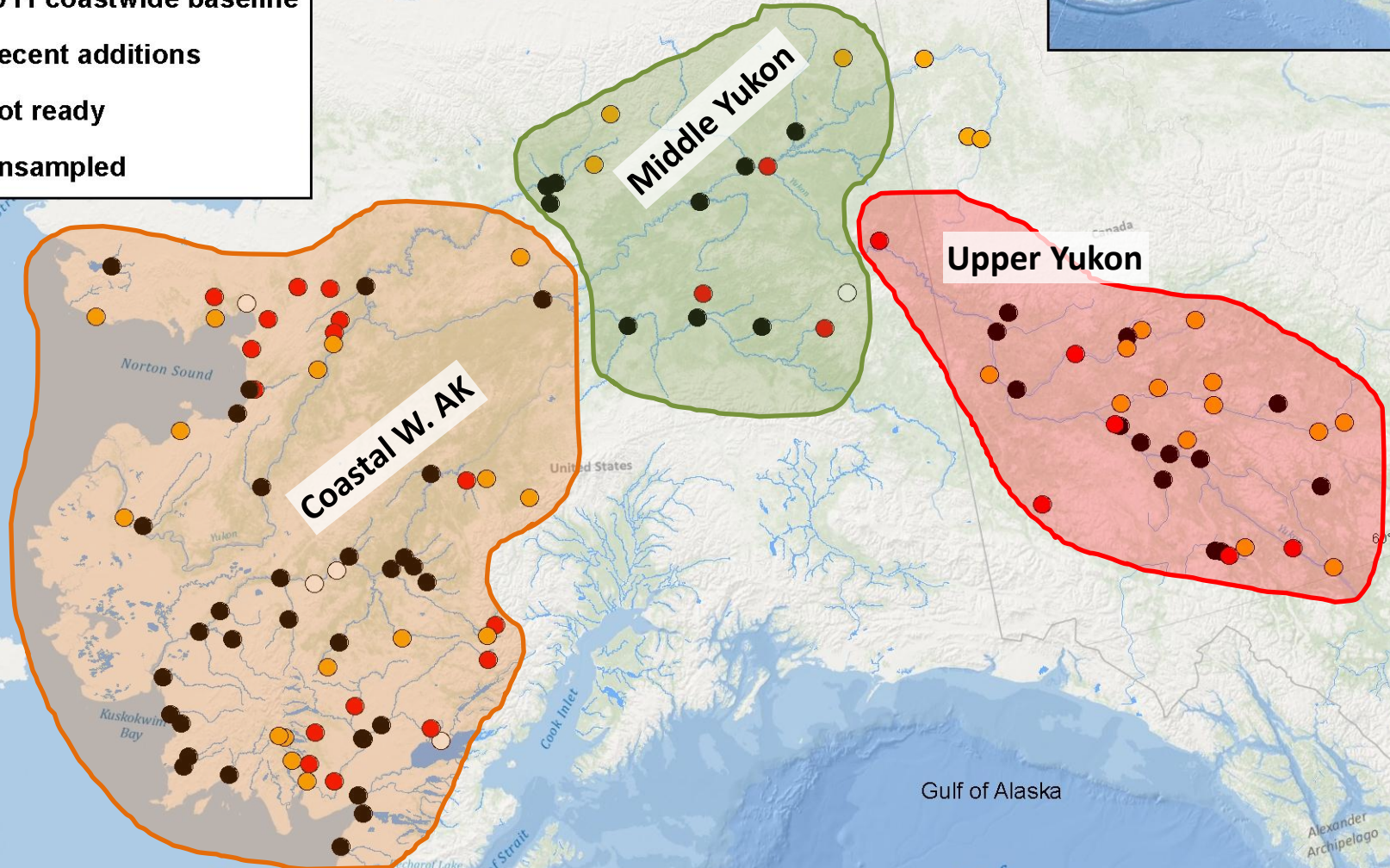
- 2011 coastwide baseline
- Recent additions
- Not ready
- Unsampled



Arctic-Yukon-Kuskokwim Baseline



- 2011 coastwide baseline
- Recent additions
- Not ready
- Unsampled



60°00'N

60°00'N

170°00'W

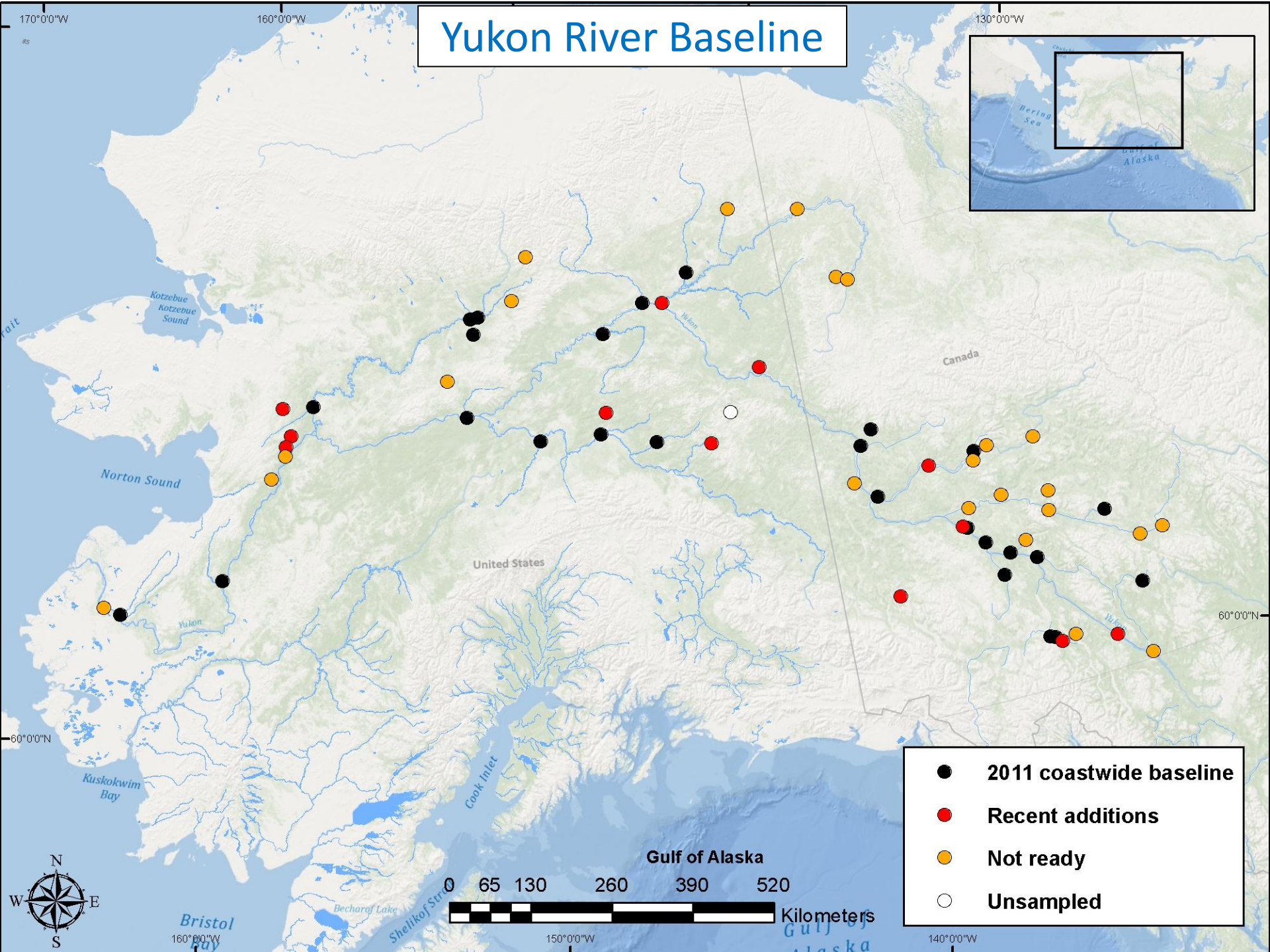
130°00'W

160°00'W

150°00'W

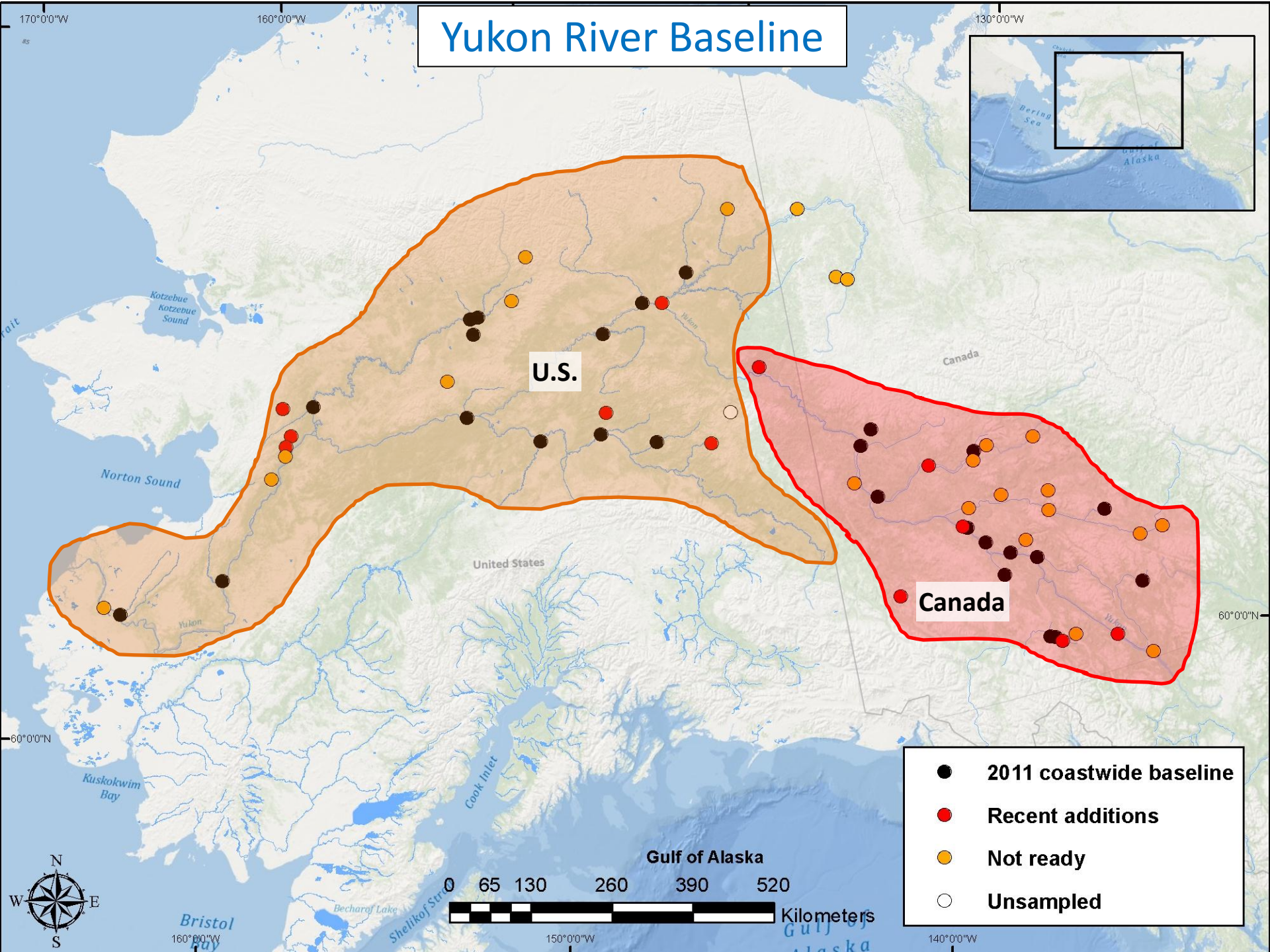
140°00'W

Yukon River Baseline



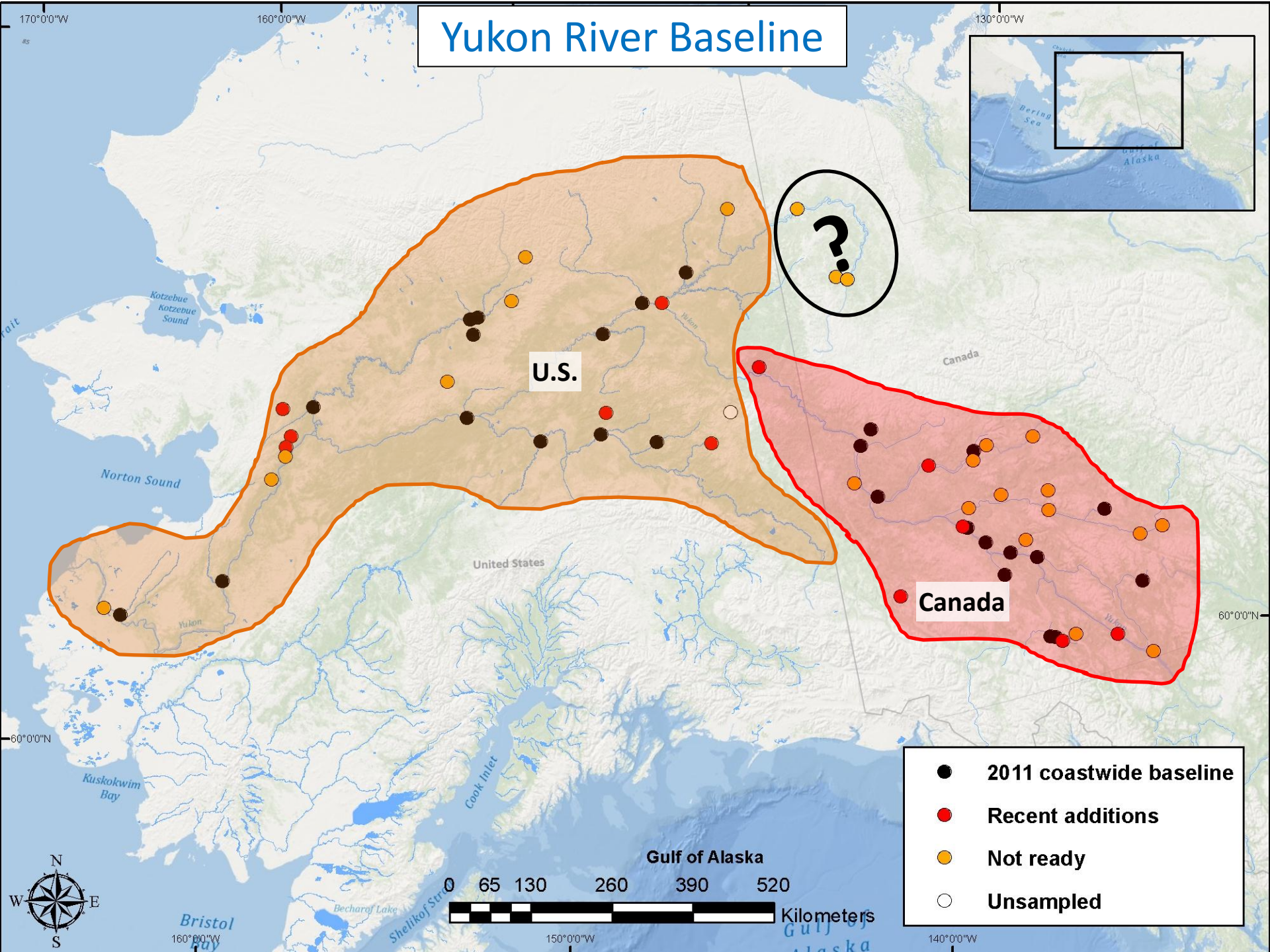
- 2011 coastwide baseline
- Recent additions
- Not ready
- Unsampled

Yukon River Baseline



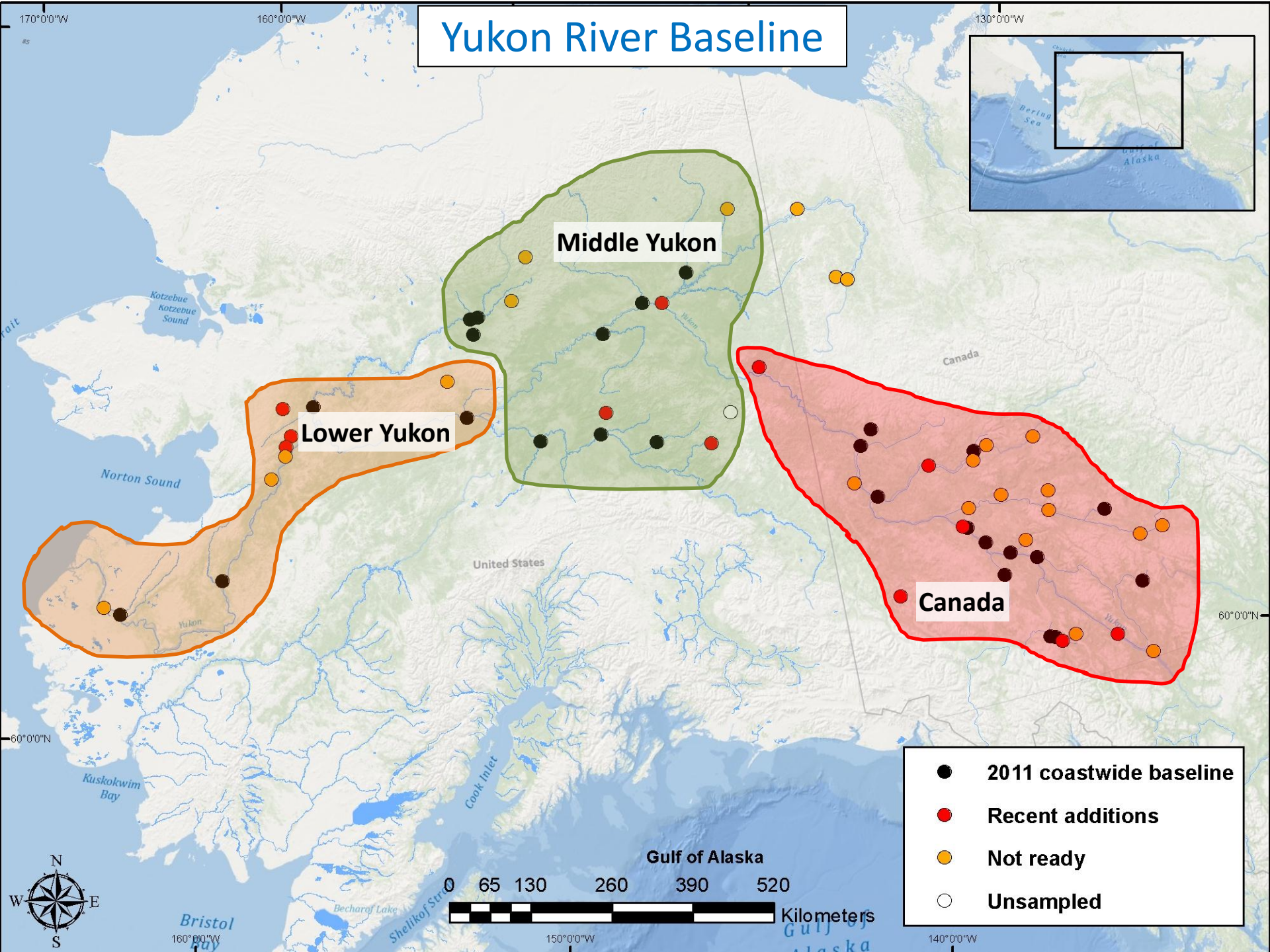
- 2011 coastwide baseline
- Recent additions
- Not ready
- Unsampled

Yukon River Baseline



- 2011 coastwide baseline
- Recent additions
- Not ready
- Unsampled

Yukon River Baseline



Lower Yukon

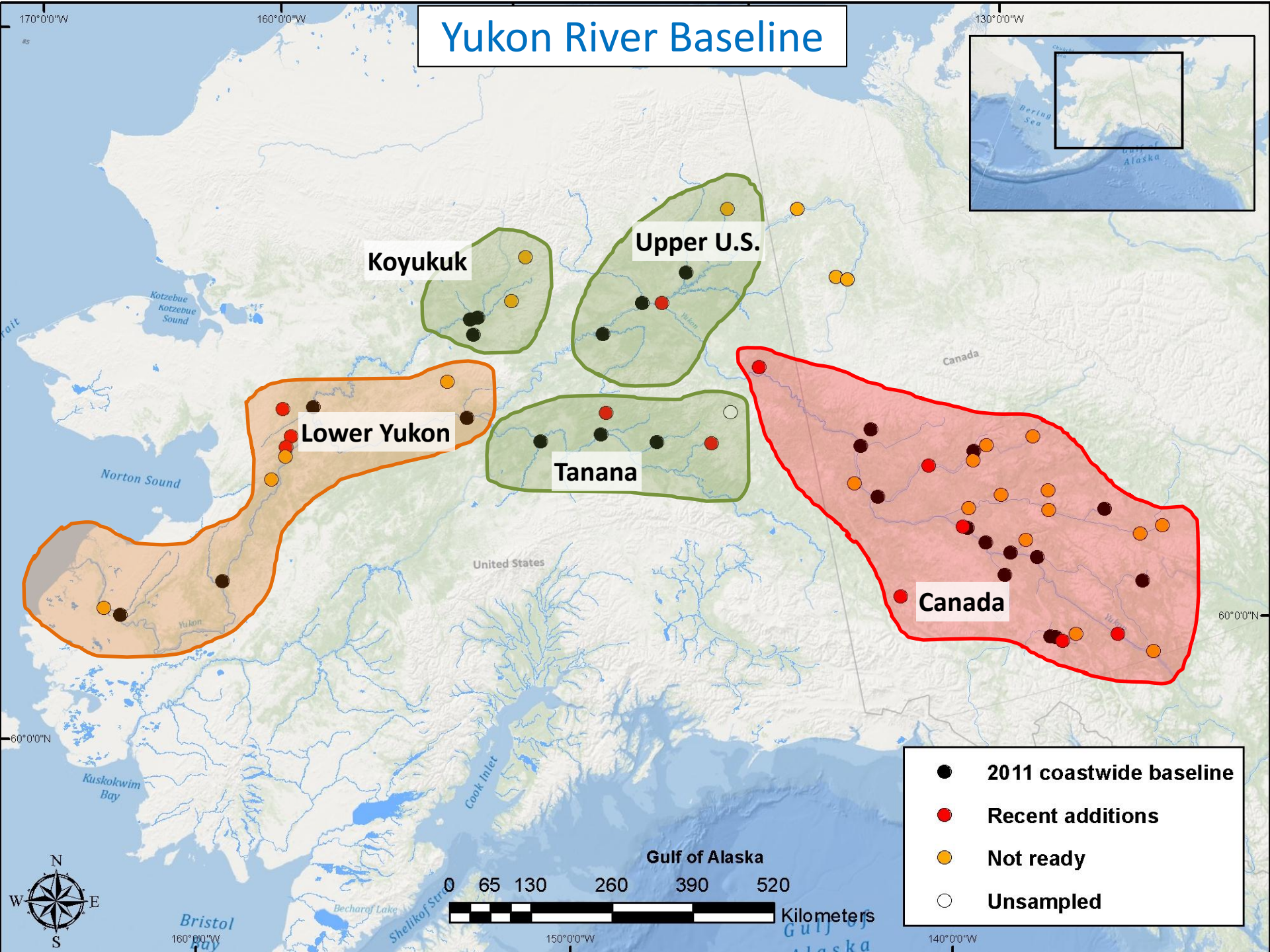
Middle Yukon

Canada

- 2011 coastwide baseline
- Recent additions
- Not ready
- Unsampled



Yukon River Baseline



Koyukuk

Upper U.S.

Lower Yukon

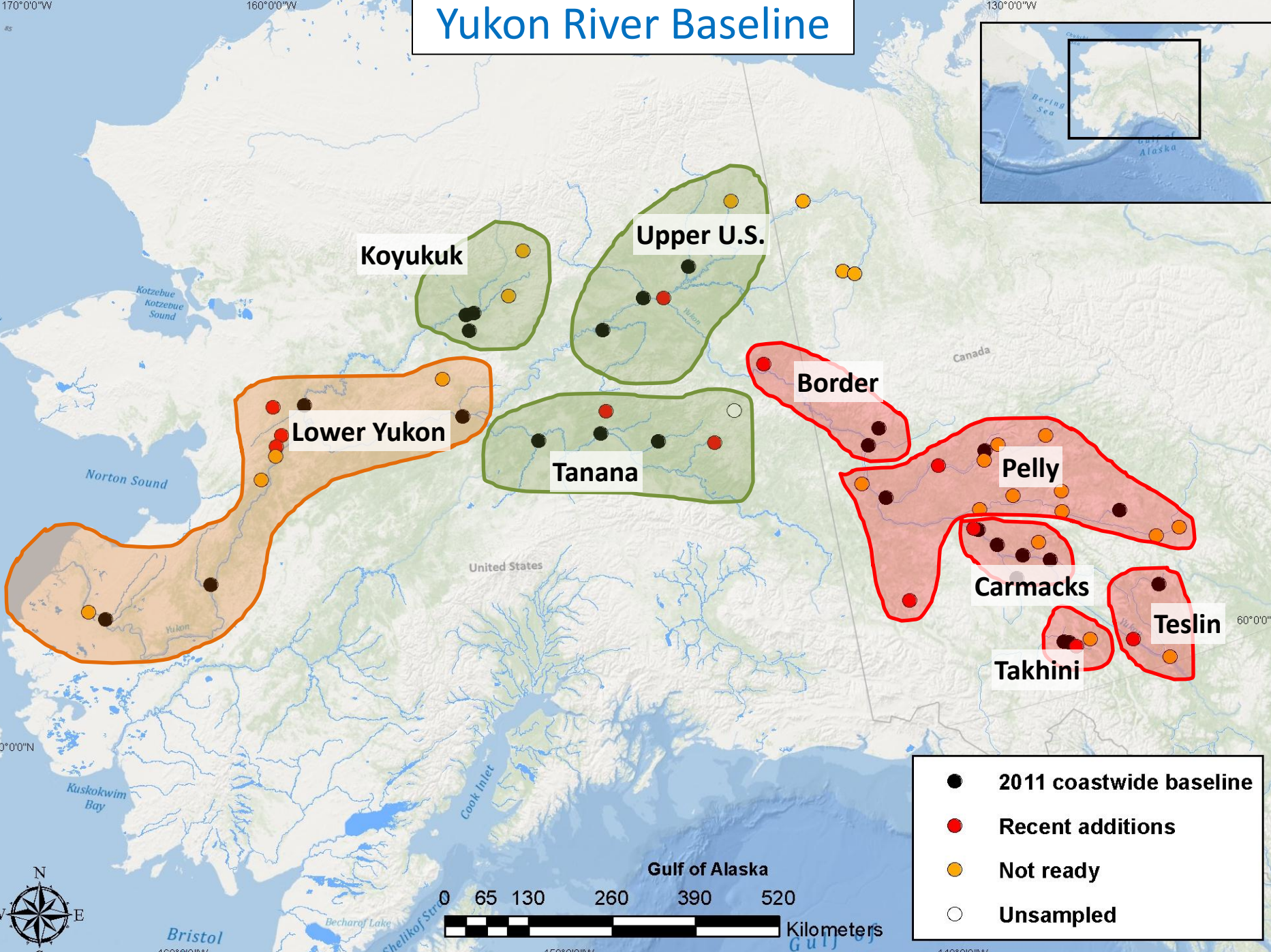
Tanana

Canada

- 2011 coastwide baseline
- Recent additions
- Not ready
- Unsampled

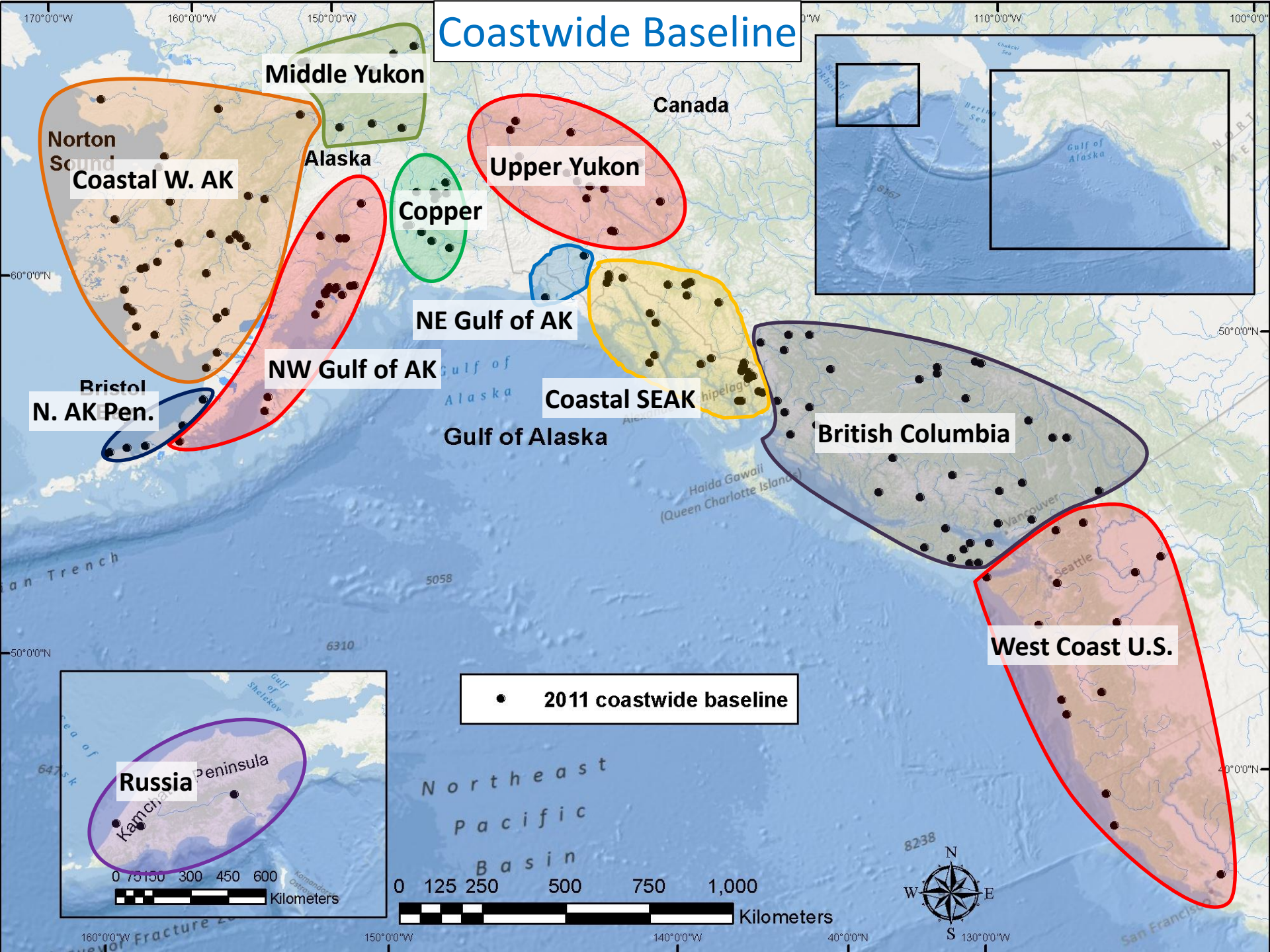


Yukon River Baseline

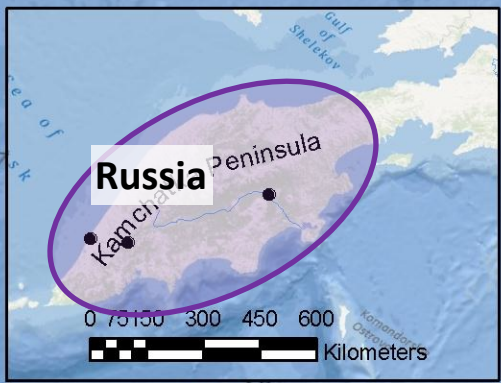


- 2011 coastwide baseline
- Recent additions
- Not ready
- Unsampled

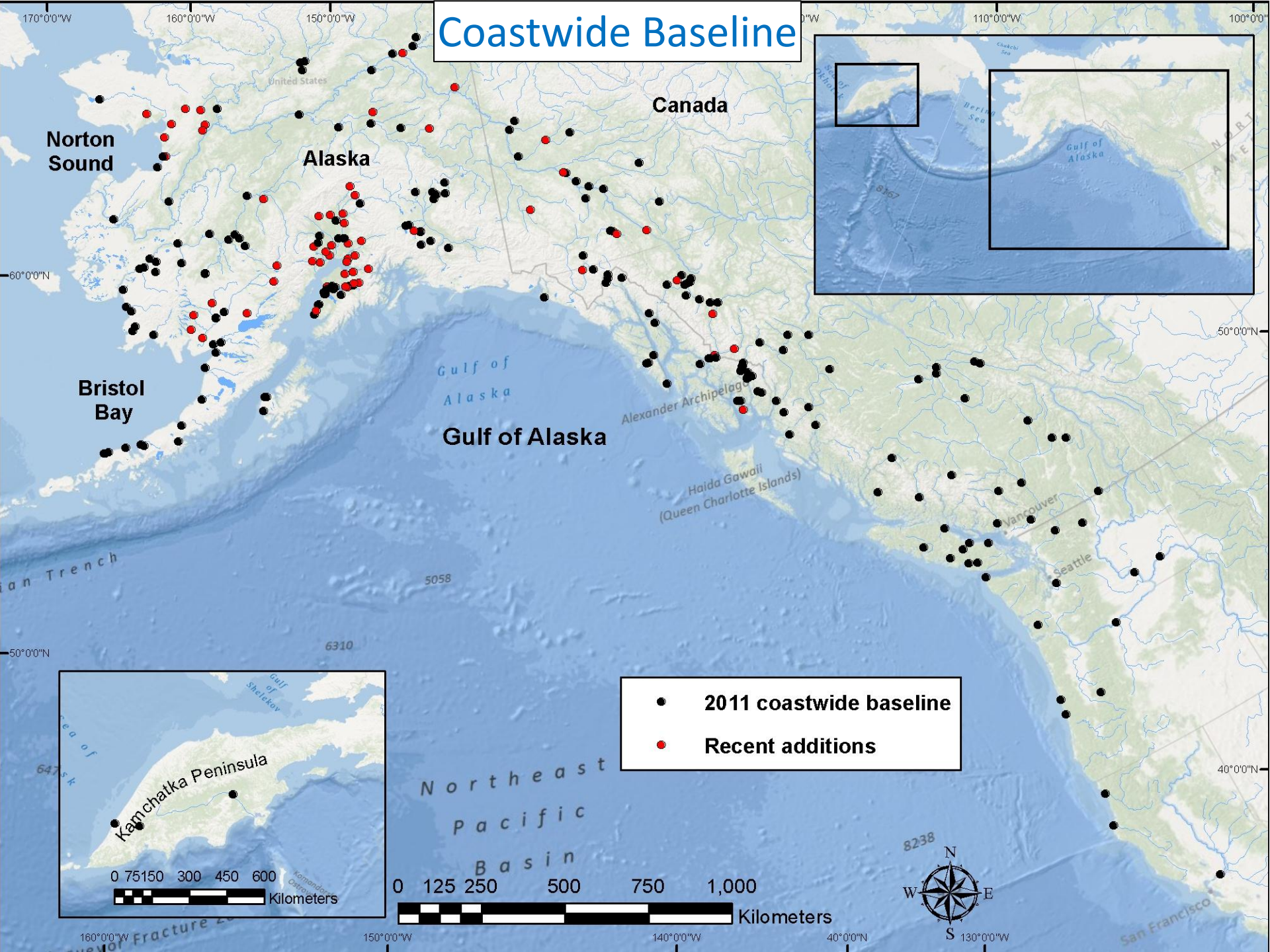
Coastwide Baseline



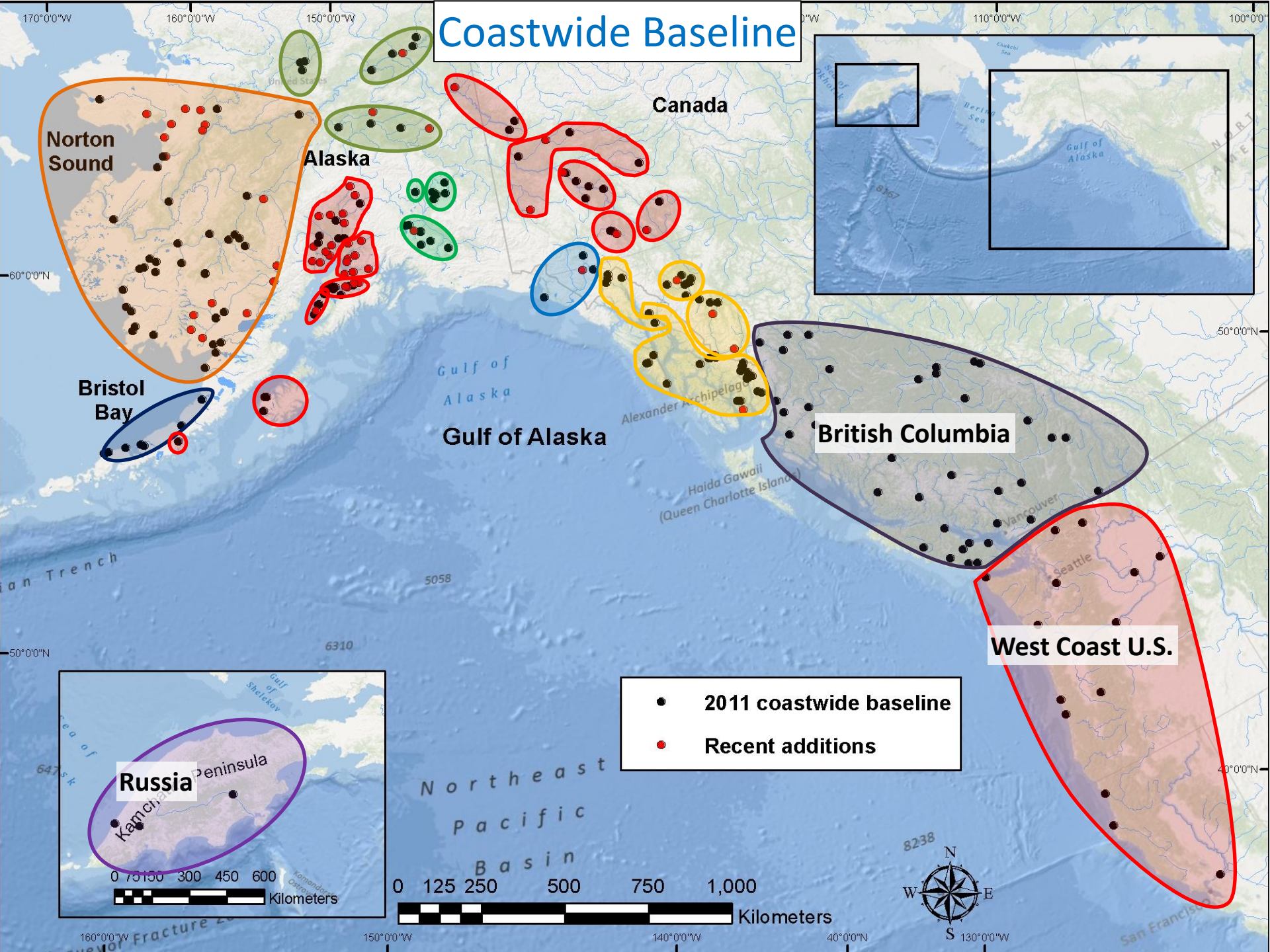
● 2011 coastwide baseline



Coastwide Baseline



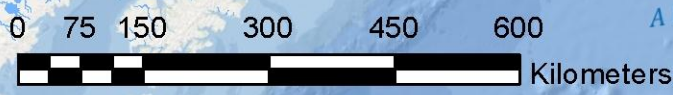
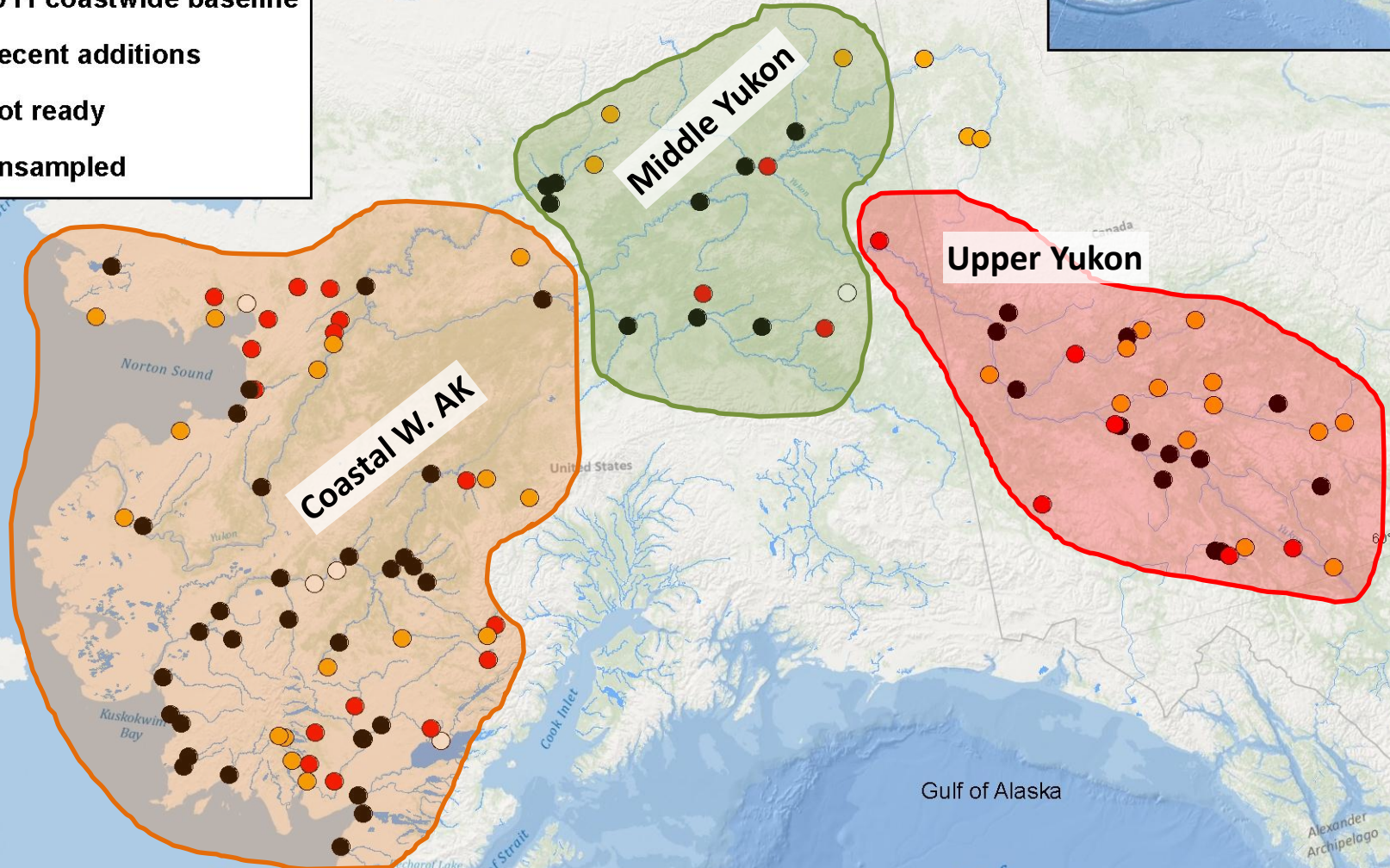
Coastwide Baseline



Arctic-Yukon-Kuskokwim Baseline



- 2011 coastwide baseline
- Recent additions
- Not ready
- Unsampled



60°00'N

170°00'W

160°00'W

150°00'W

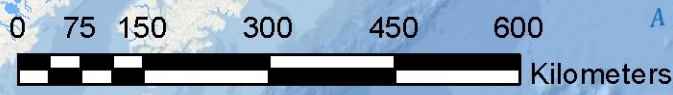
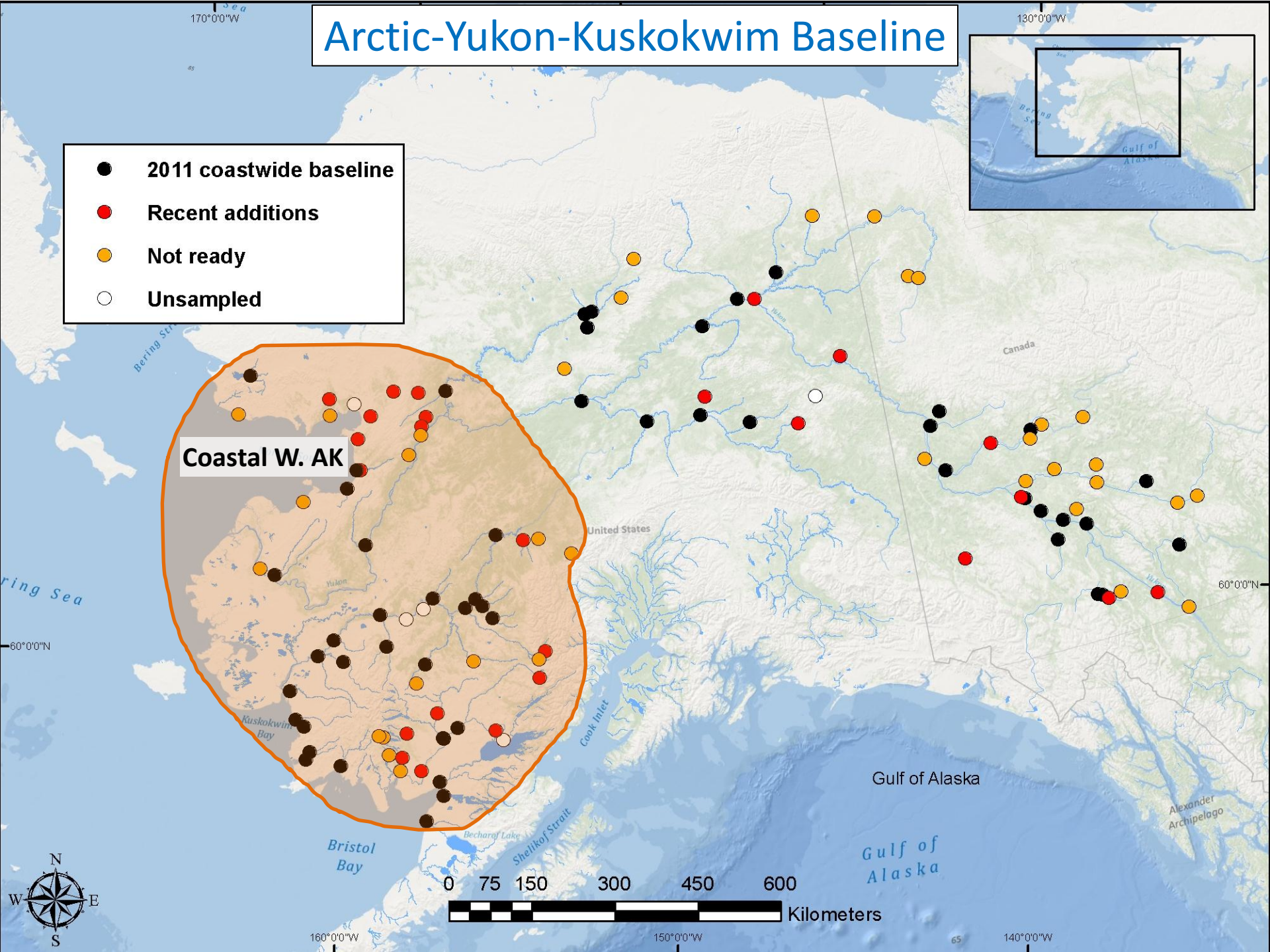
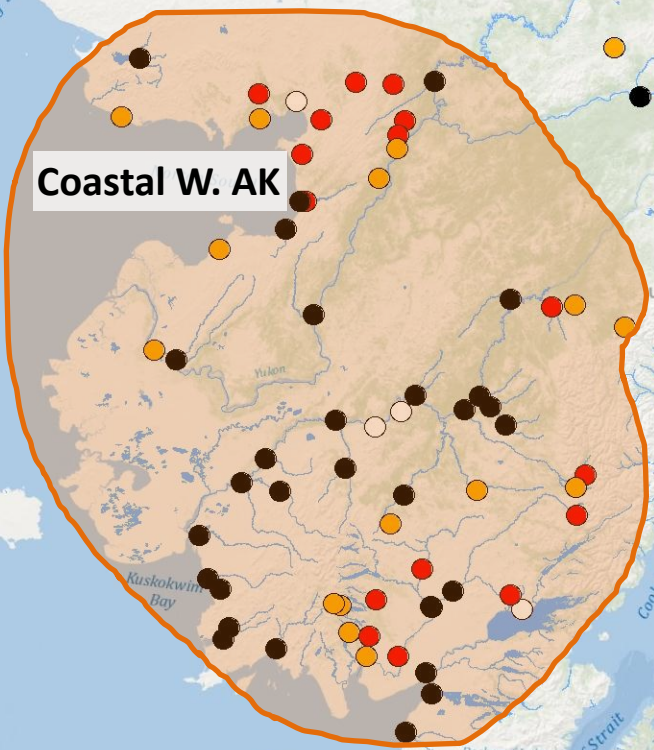
65°

140°00'W

130°00'W

Arctic-Yukon-Kuskokwim Baseline

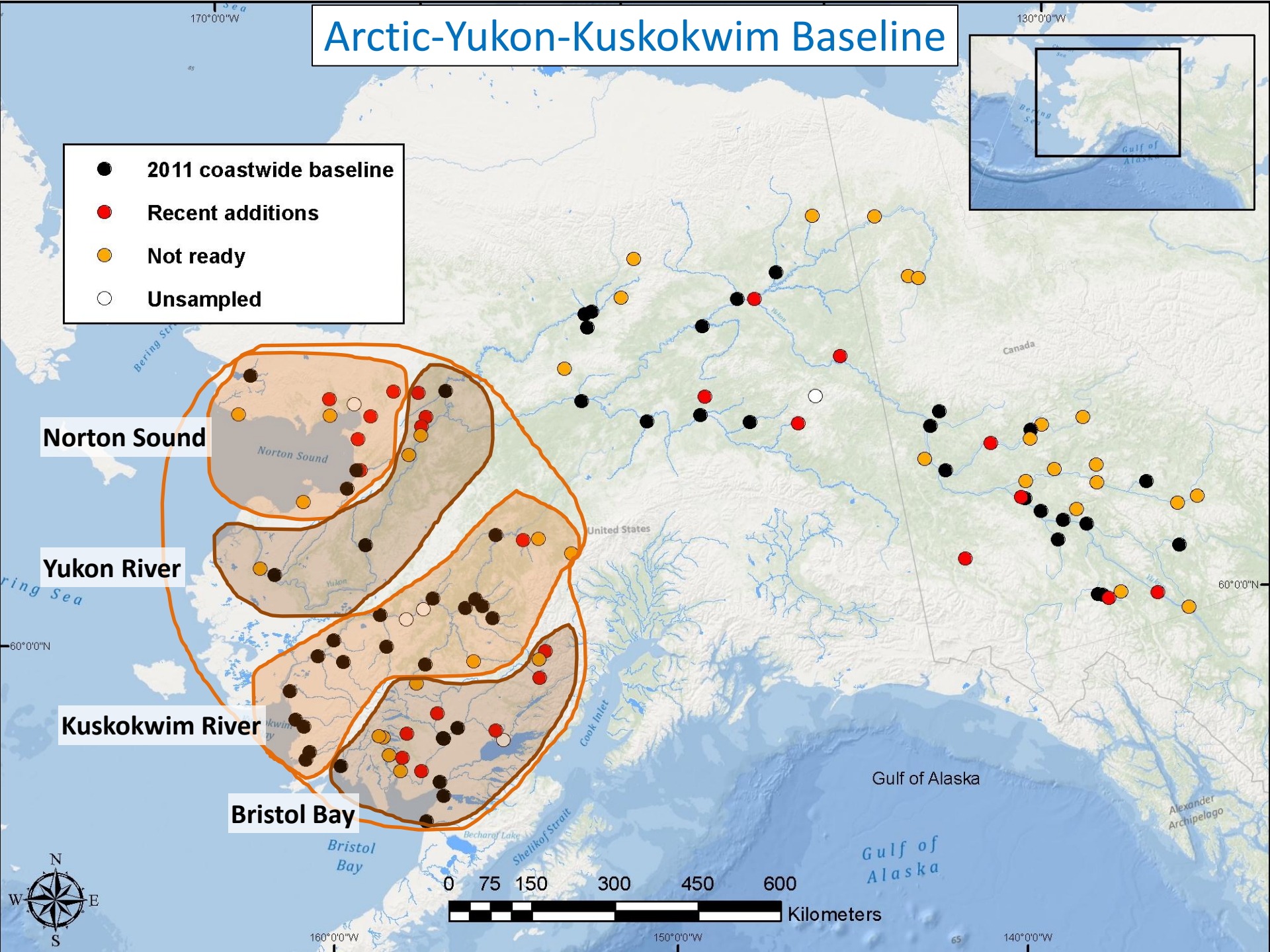
- 2011 coastwide baseline
- Recent additions
- Not ready
- Unsampled



Arctic-Yukon-Kuskokwim Baseline



- 2011 coastwide baseline
- Recent additions
- Not ready
- Unsampled

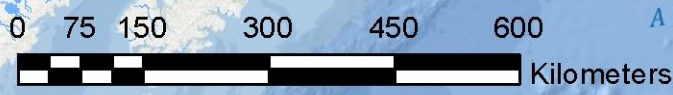


Norton Sound

Yukon River

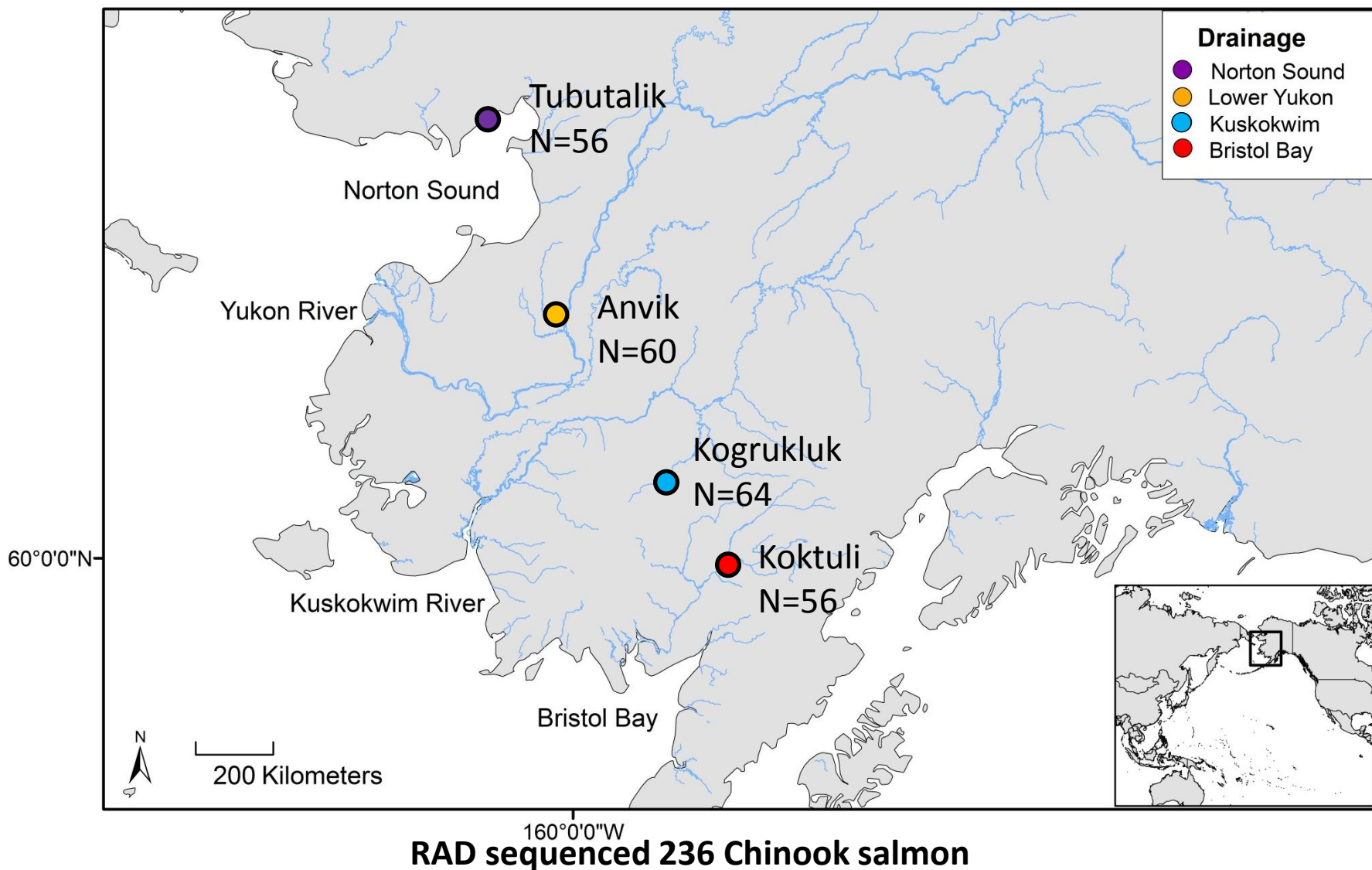
Kuskokwim River

Bristol Bay



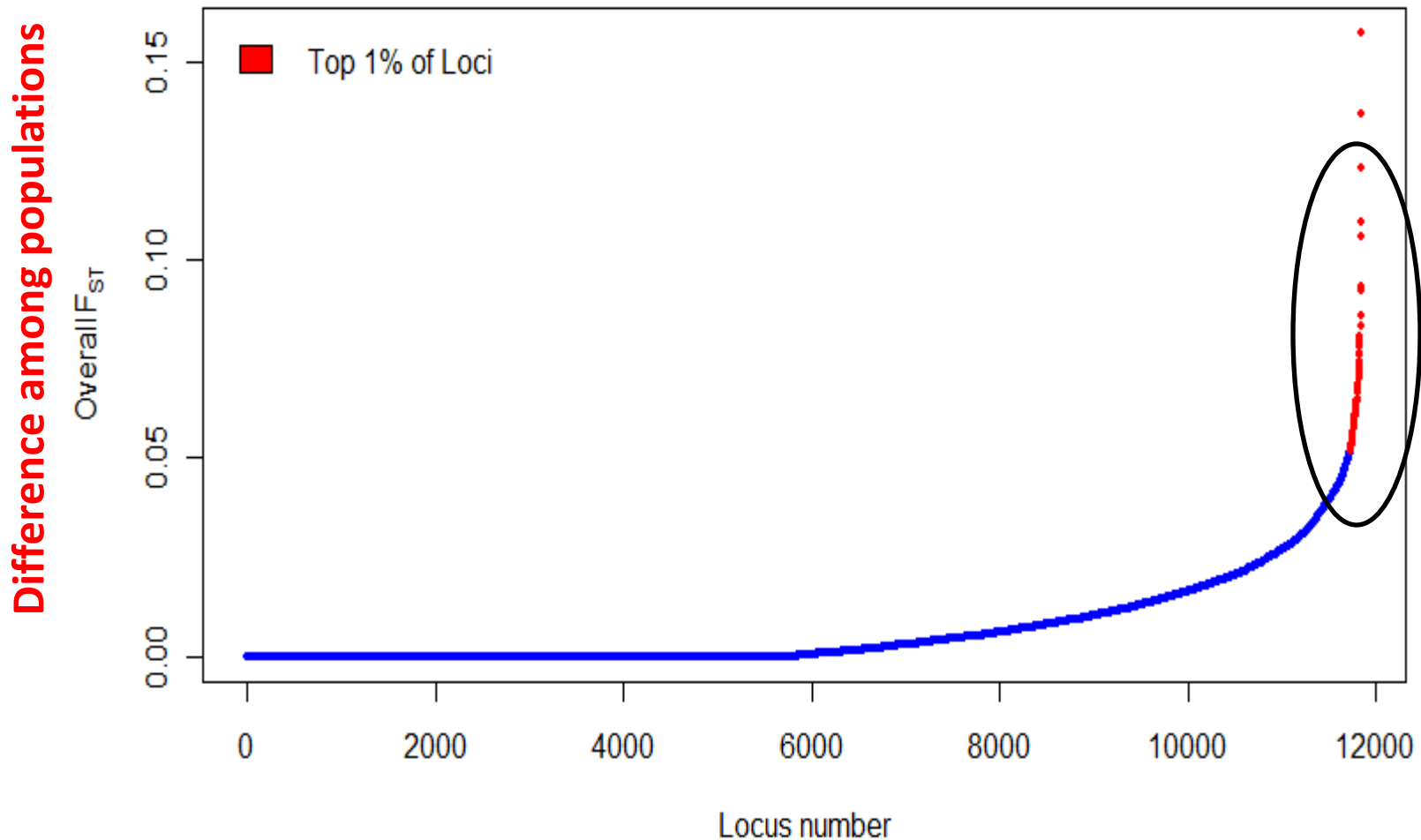
Looking for Genetic Markers

Ascertainment Populations



Looking for Genetic Markers

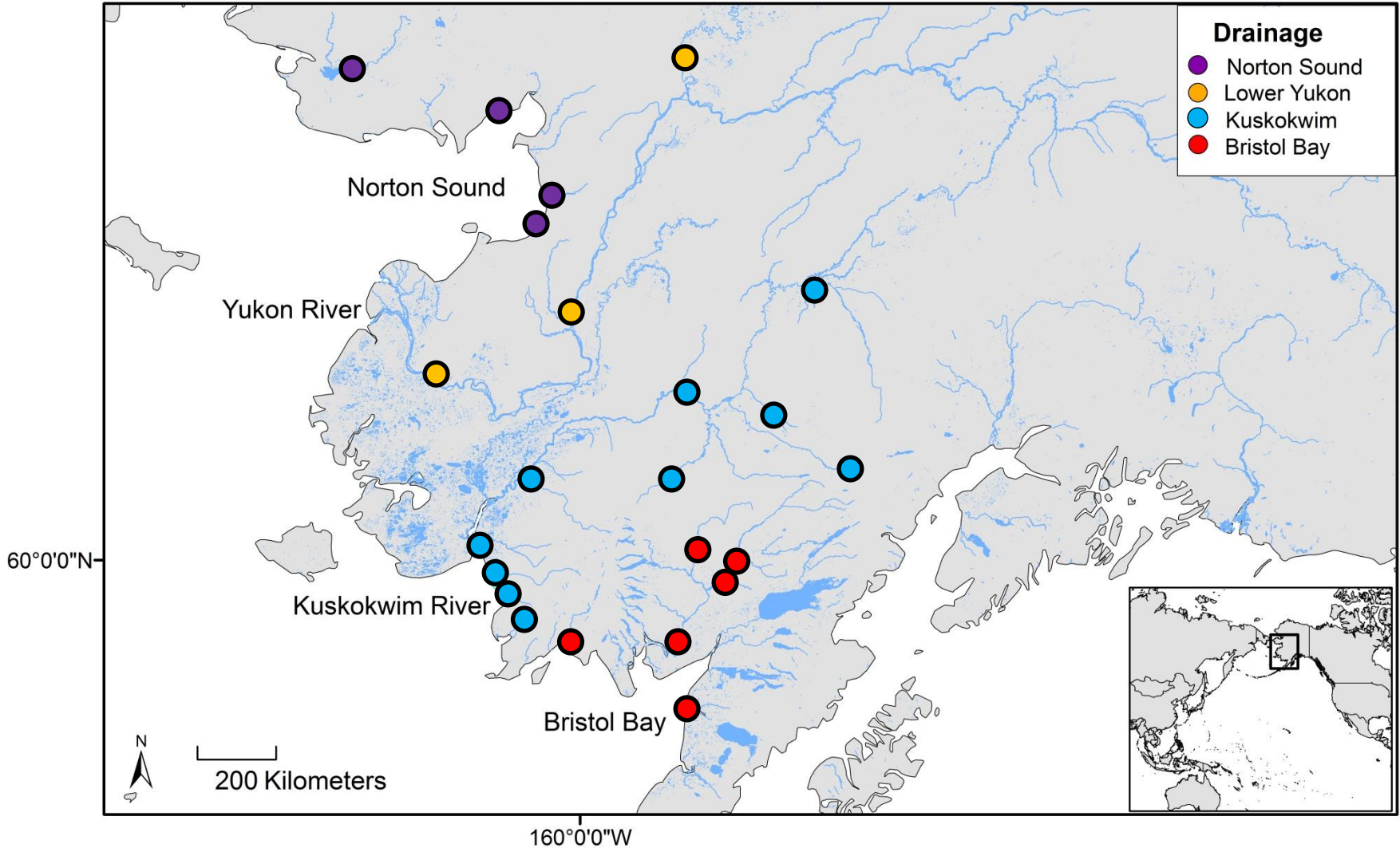
Selecting High-resolution Markers



Need to ensure observed differences are real rather than a product of sampling error

Looking for Genetic Markers

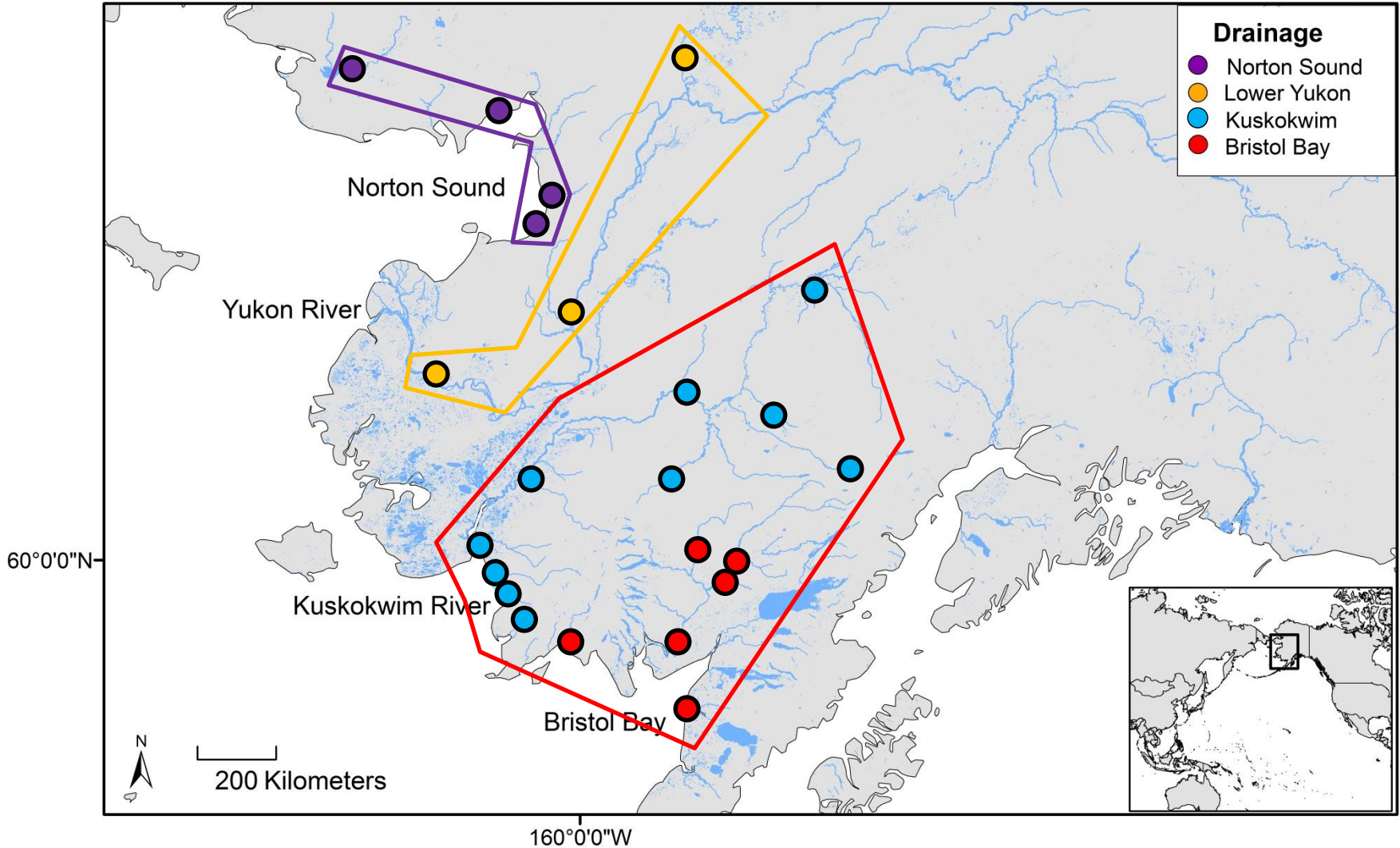
Screening Populations



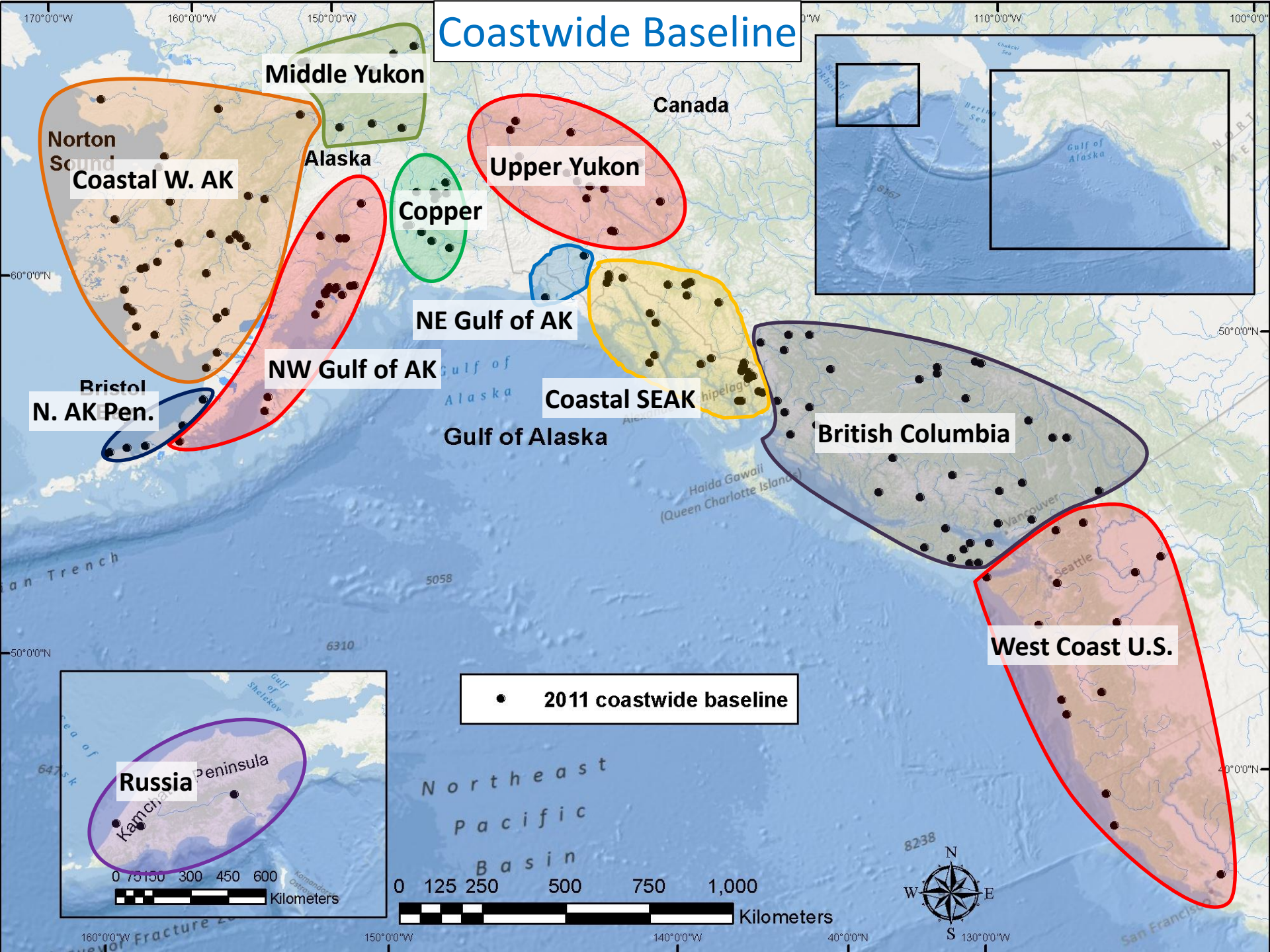
Genotyped 24 populations (~2,000 individuals) at 287 SNPs

Looking for Genetic Markers

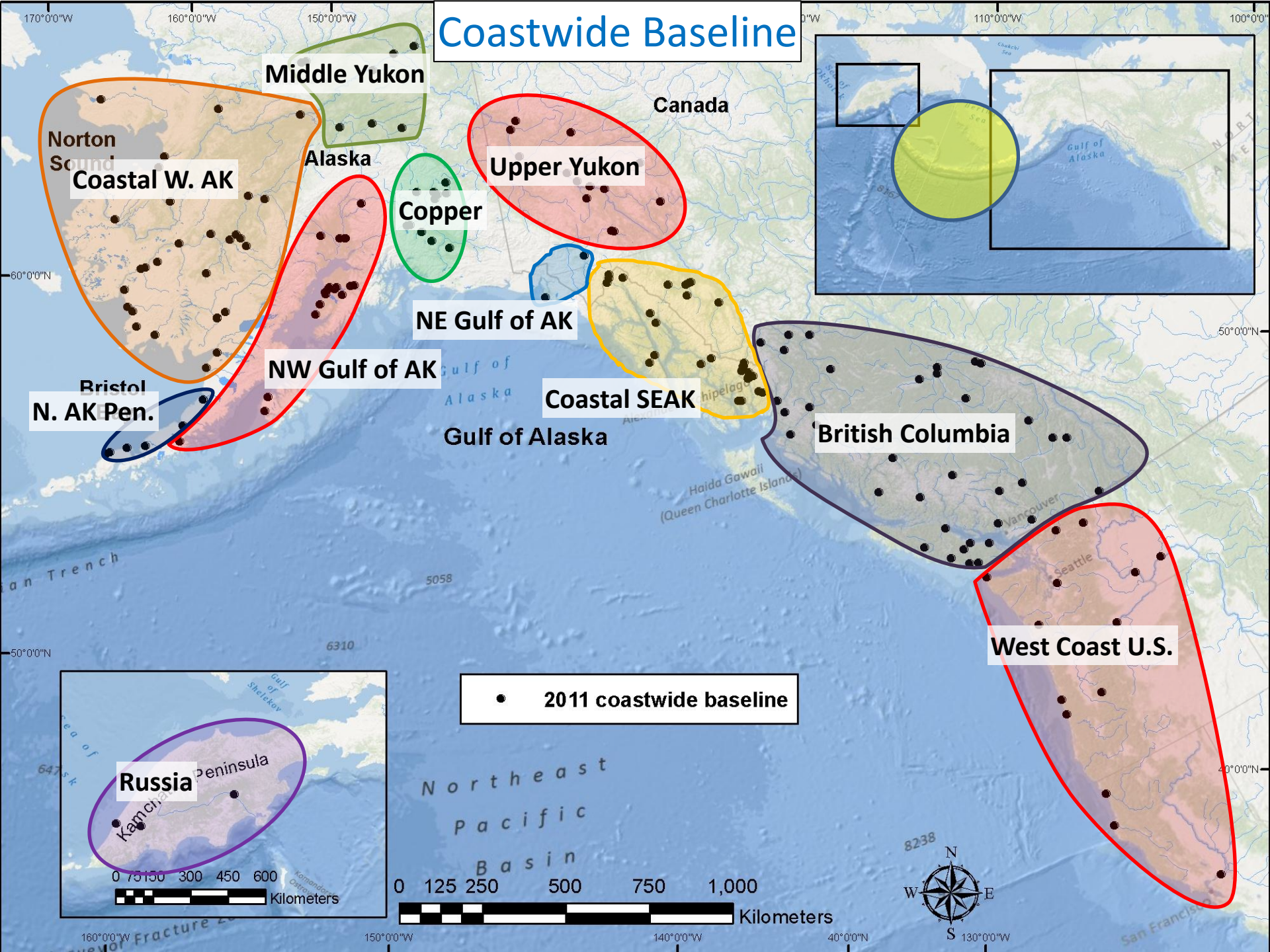
Measures of Success



Coastwide Baseline

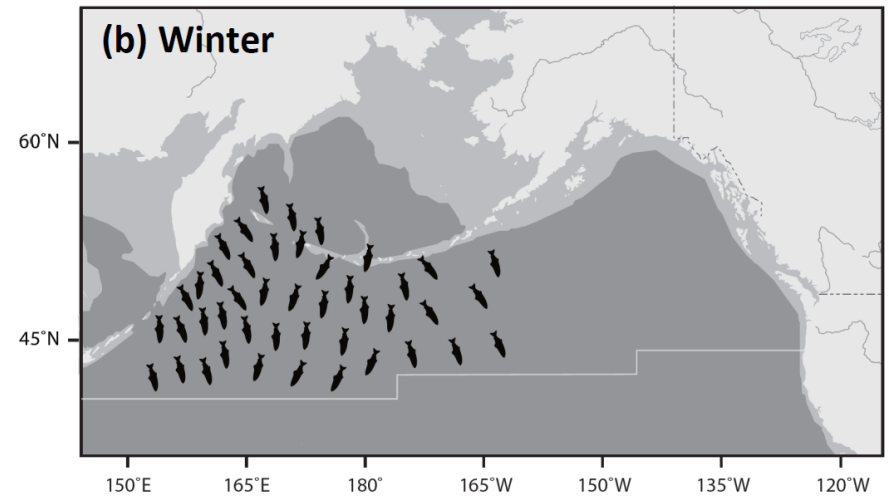
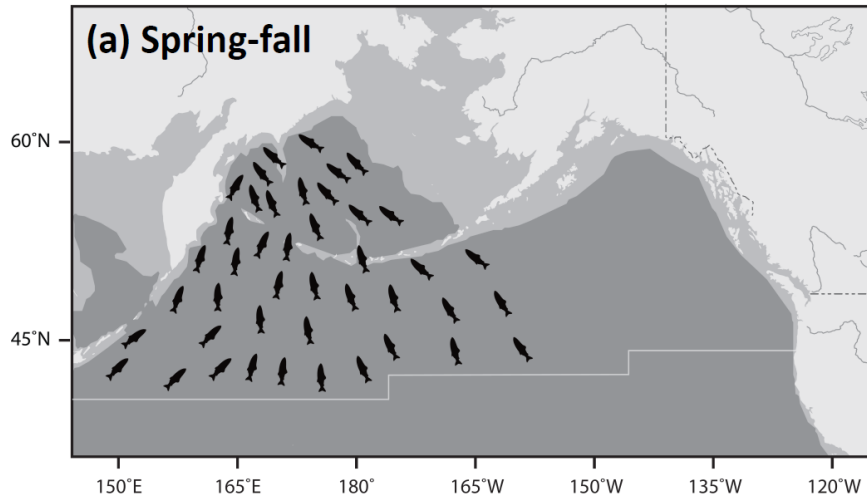


Coastwide Baseline

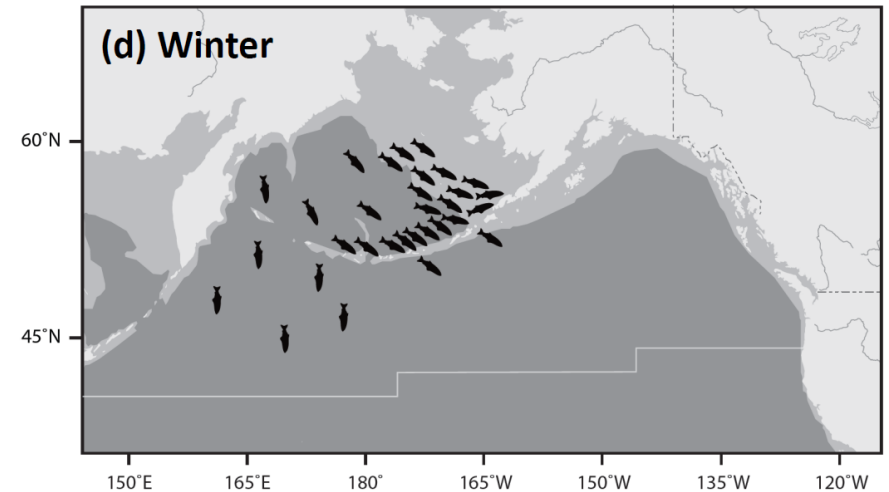
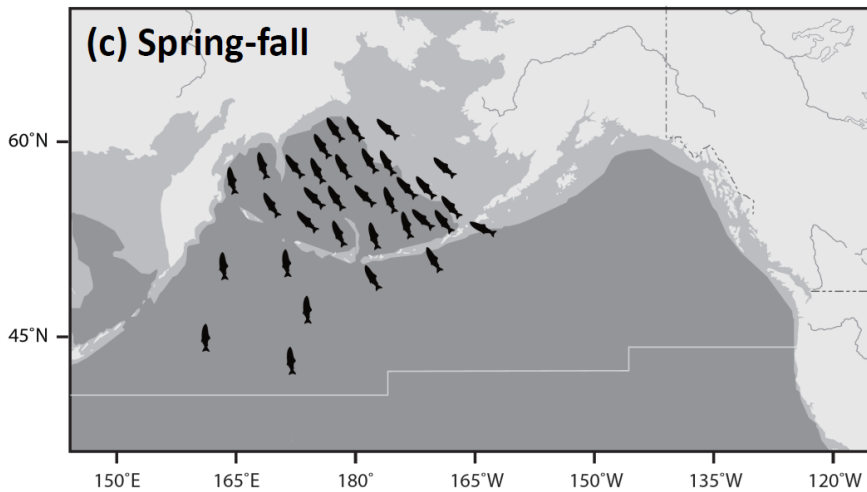


Seasonal Migration Patterns of Chinook Salmon

Russian Stocks



Western Alaska and Yukon River Stocks



Conclusions

- **Baseline representation**
 - Adequate for most applications
 - Continuous improvement by adding populations & markers
 - Improved resolution needed: Coastal W. Alaska & W. Cook Inlet
 - Additional collections needed
 - ✓ Alaska Peninsula/Kodiak
 - ✓ Bristol Bay
 - ✓ West Cook Inlet/Yentna River
 - ✓ Chitina River
 - ✓ Hatcheries and Transboundary Rivers
- **Applications**
 - Established in SE Alaska, Kenai River, Yukon River, and Bycatch
 - Potential in Copper River, Cook Inlet, Kodiak and Chignik
 - Marine life history studies
 - Mark recapture studies

Where did they go?

