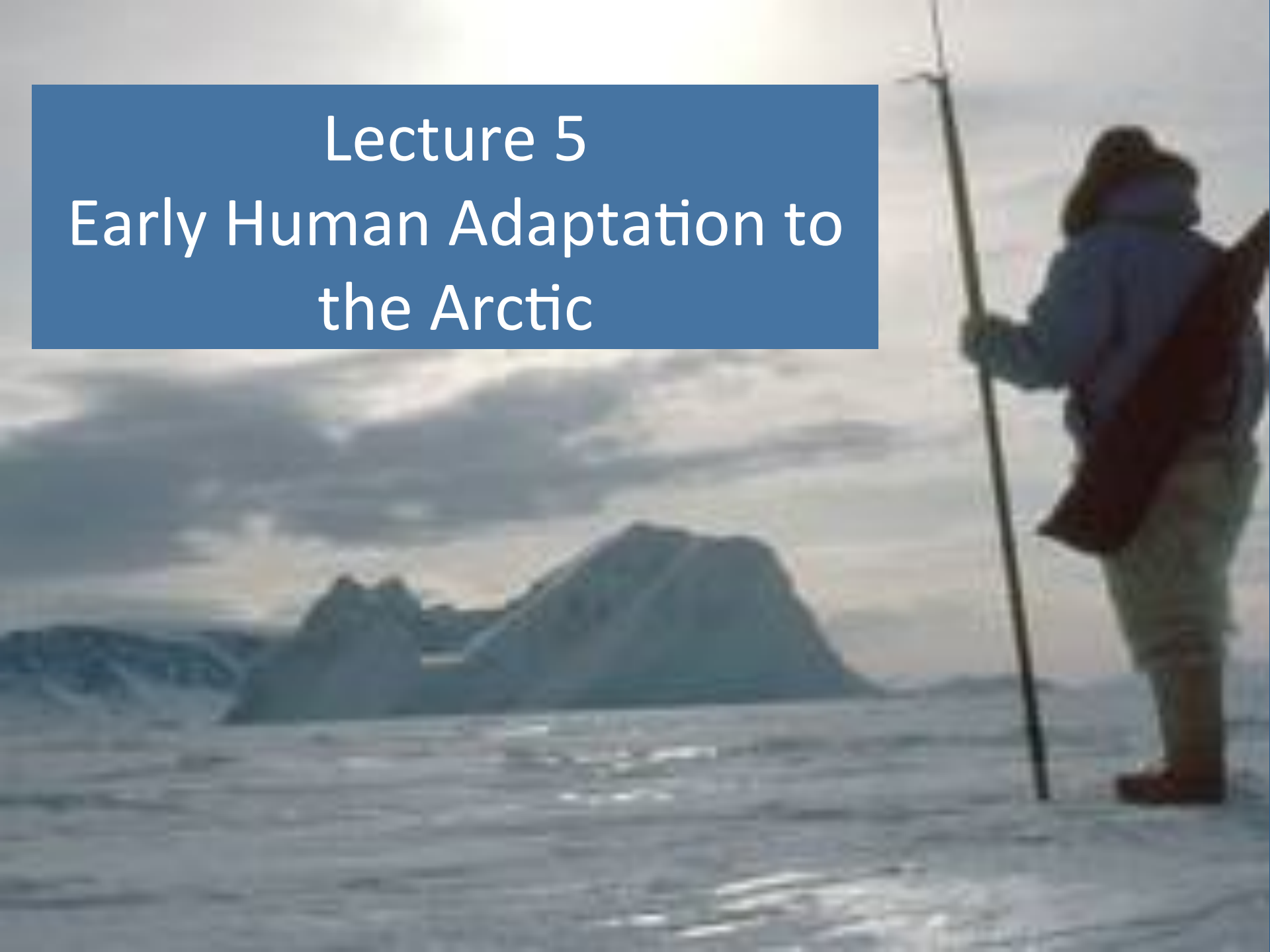


# Lecture 5

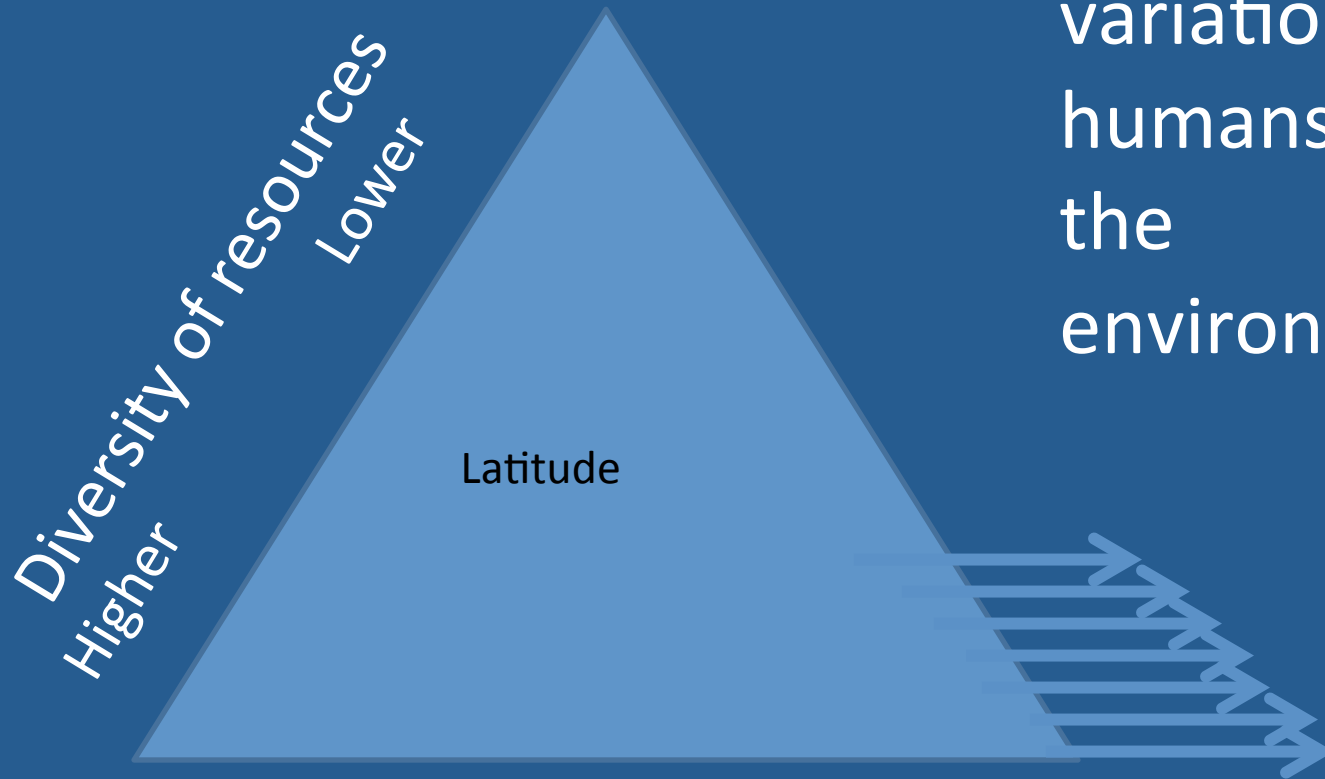
## Early Human Adaptation to the Arctic



# Human Culture Linked to Environment

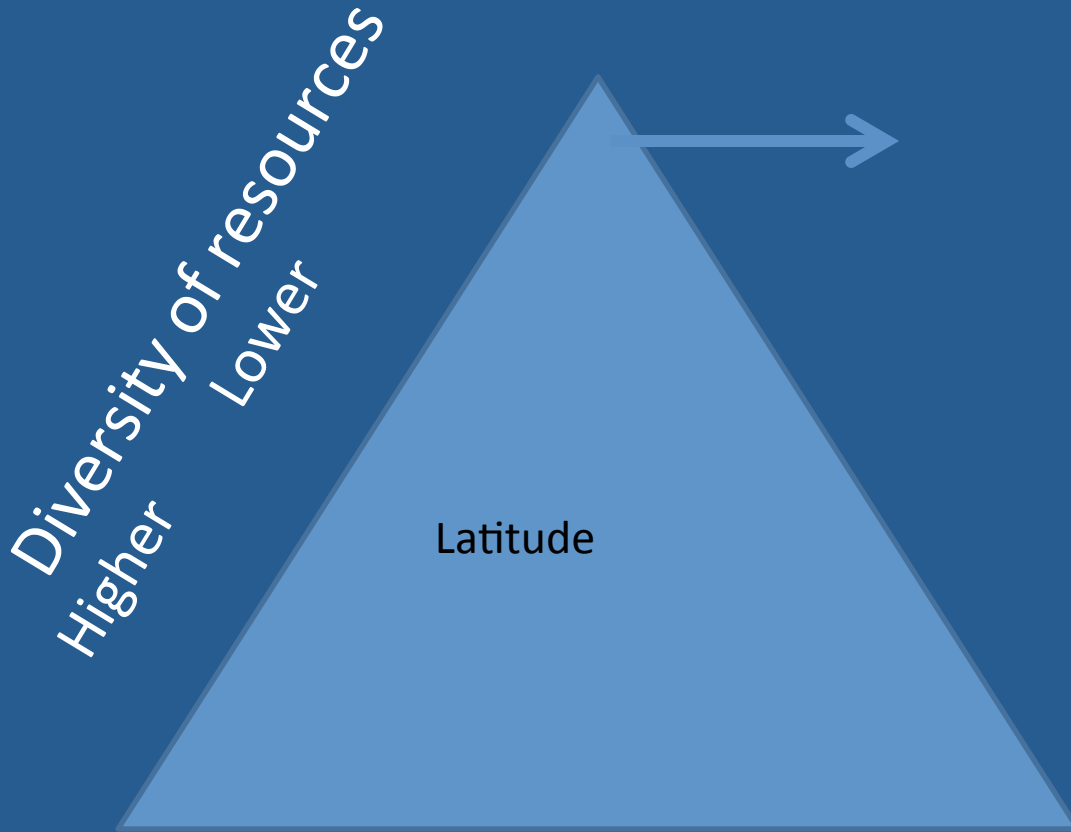
At low latitudes there are lots of resources:

Expect lots of cultural variation in how humans exploit the environment



# Arctic is Harsh

Expect very few  
cultural  
responses  
where  
environmental  
choices are few



# Today

- Explore what humans did to adapt to the Arctic environment
- Consider how much the environmental limits constrain culture
  - Is there only one way to survive the Arctic?

# Outline

- Part 1 Introduction
- Part 2 First Arctic Cultures in North America
  - Arctic Small Tool tradition (ASTt)
    - Denbigh (Alaska) gave rise to: Independence I and II, Saqqaq in Greenland, Pre-Dorset and Dorset in Canada
- Part 3 Thule Culture (developed from ASTt Norton in Alaska)
- Part 4 Inuit Culture (developed from Thule)
- Part 5 Conclusion
  
- Culture changes caused by environmental change and adaptation to local conditions



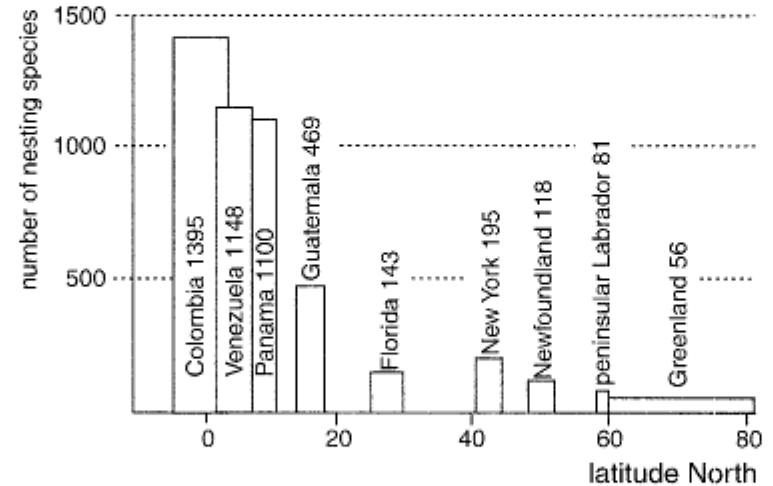
# Part 1 Introduction



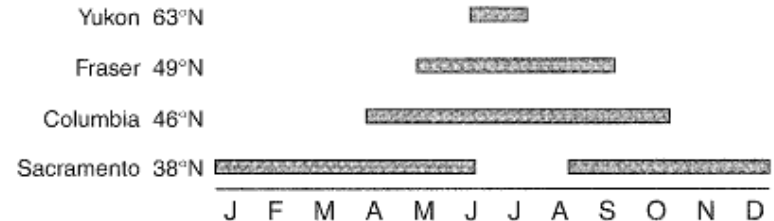
# The Arctic Environment

- Cold climate means fewer species of all groups of animals (ex. Birds, mammals)
- Plankton (base of marine food chain) only seasonally productive
- Larger animals (ex. Salmon, caribou) are often migratory
- But these few species often have very high numbers

A. NESTING BIRDS



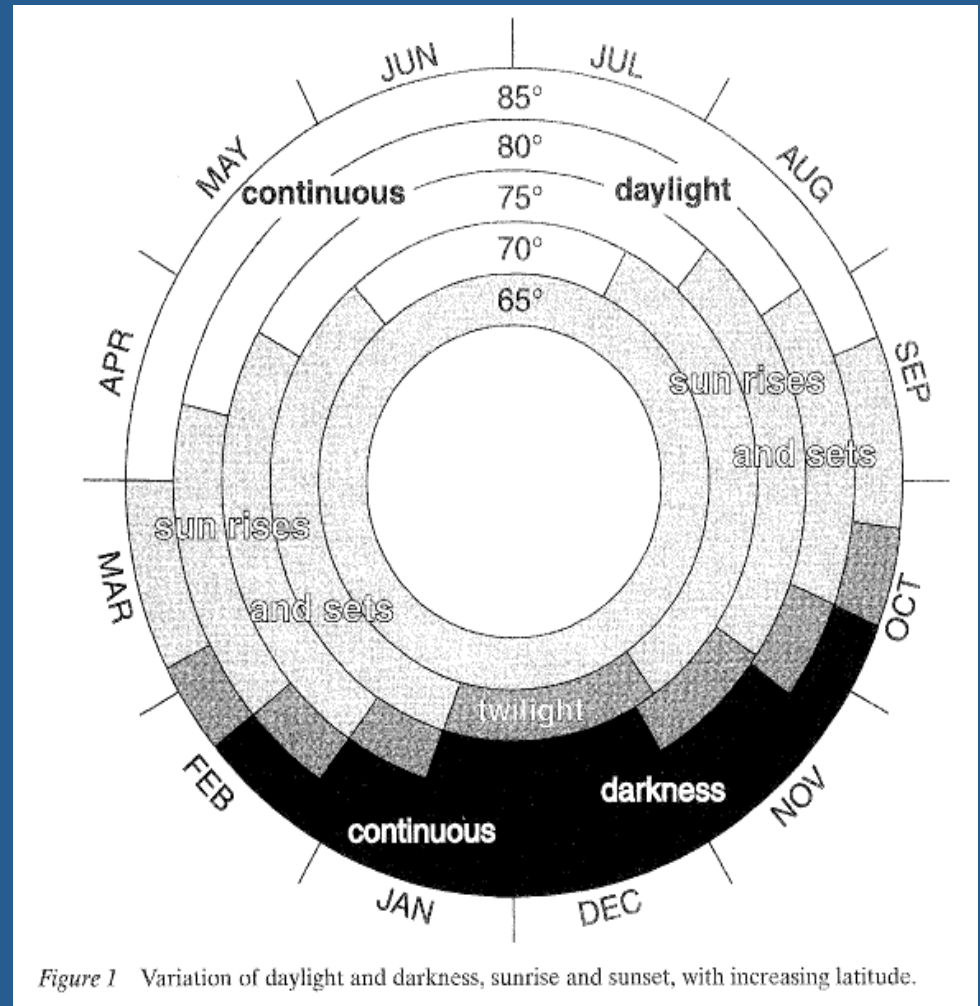
B. CHINOOK SALMON



Monthly availability of Chinook salmon

# The Arctic Environment for People

- Cool summers
- Very cold and dark winters
- Food storage is important (luckily the seasonally-available species are often plentiful)







# Historic Arctic Tool Kit

- Includes:
  - Kayak
  - Stone lamps to burn oil from sea mammals
  - Toggling harpoons
  - Warm clothes, waterproof clothes
  - Dog teams
  - Igloos



- When, why and how did these emerge?

- Inuit are mainly found on the coast today

How did people populate the Arctic and develop a maritime hunting tradition?



# After last ice age...

- As mammoths disappeared, humans hunted reindeer and marine mammals
- Marine hunting is 10-15 x more productive than forest hunting







© BBC 2011

## Part 2: Development of First Arctic Cultures





# Origins of First Maritime-Adapted North Americans

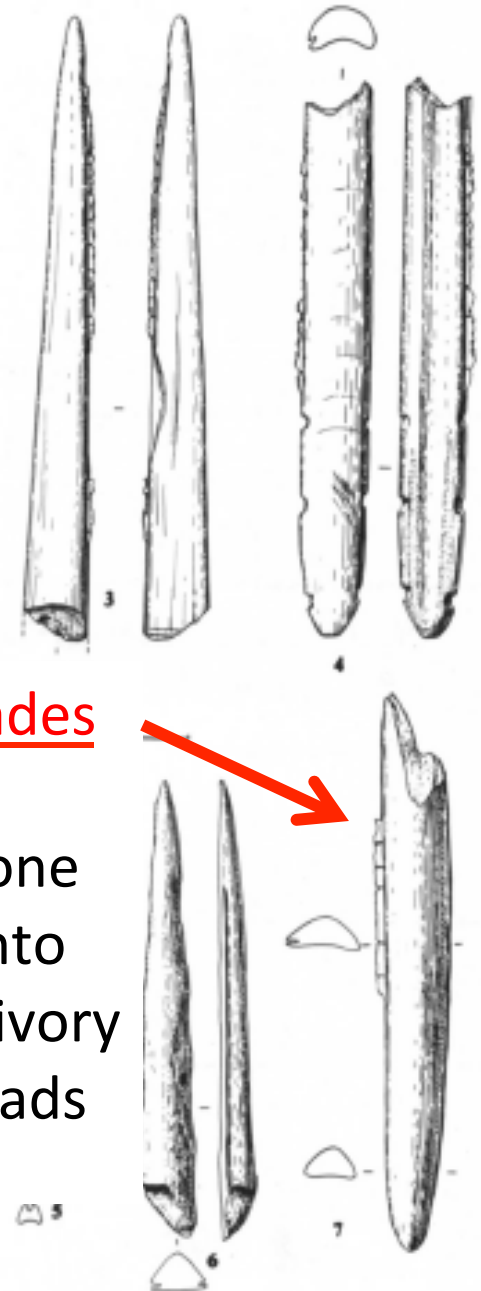
- Evidence of sea mammal hunting at Zhokov Island, 8000 BP

*Pitul'ko & Kasparov: Ancient Arctic Hunters*



**Figure 2.** Excavations at the Zhokov site, 1990. View from the south, looking toward the central part of the excavated area (sections 23, 24, 27, and 28), showing abundant fragments of wood.

- Used ivory to make spears
- Note the microblade inserts along the point
- Generalized hunting economy
- Reindeer important, polar bears hunted here, other species including seal and walrus



Microblades are tiny sharp stone inserts into bone or ivory spear heads

# First N.A. Arctic Peoples: Arctic Small Tool tradition (ASTt)

- ~ 5500-4000 BP climate warmer than now
- ~ 4500 BP Siberian people arrived in Alaska
- Crossed open water to do so
- Subsistence: Fish, caribou, muskoxen, ringed and bearded seals
- No pottery or a burin-drill that had in Siberia  
(lost some technology)

# Arctic Small Tool tradition (4500-2800 BP)

- Denbigh first Arctic culture in N.A.
- Denbigh culture spread out eastward
- Later cultures from Denbigh (ASTt) = Independence I and II, Saqqaq (in Greenland); Pre-Dorset and Dorset (in Canada)
- Norton culture (also ASTt) stayed in Alaska, is ancestral culture to Thule and modern Inuit (more later...)

# Canadian/Greenlandic Arctic Cultural Timeline

Alaska

Denbigh: Migration 1  
(4500-4000 BP)

Norton: Migration 2 (1400-1000 BP)

Arctic Small Tool Tradition  
(manifested differently in  
different areas as...)

Denbigh

Independence I and II

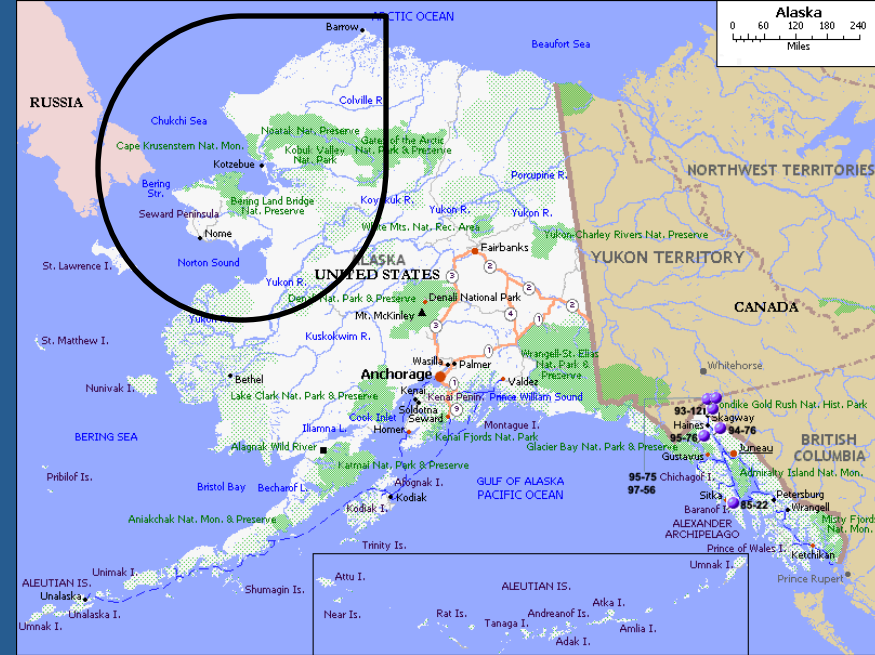
Pre-Dorset

Saqqaaq

Dorset

Thule  
Inuit

# Denbigh Flint Complex (~4500 BP)



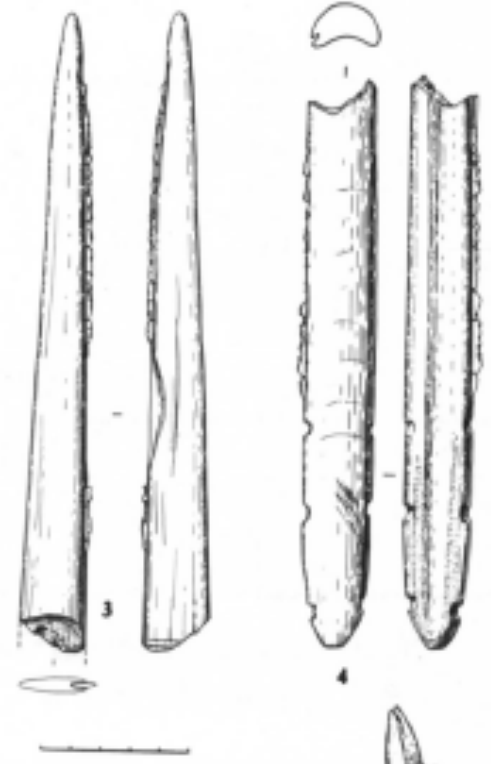
- Ancestors to earliest Arctic Canadians
- Stone tools similar to Bel'kachi
- Later we see evidence that similar tools used for harpoons
- Sites indicate summer sea hunting, winter caribou hunting



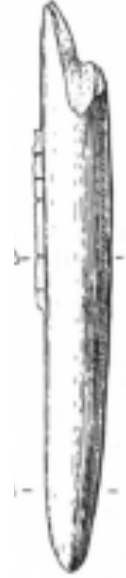
- Probably caribou hunting during migration and seals in spring and early summer
- No specific tools for maritime hunting
- Heating was with seal bones, fat and wood
- (Inland Alaska occupied by people from previous migration)



Denbigh tent ring



Microblades  
are tiny  
inserts into  
bone or ivory  
spear heads



# Independence I ~ 4000- 3300 BP

- People quickly spread to Greenland and Labrador
- Ate mainly muskoxen, only few seals and walrus
- No lamps
- Heat from hearth boxes of bones, fat
- Basic, non-toggling harpoons
- Seem to disappear at 3300 BP





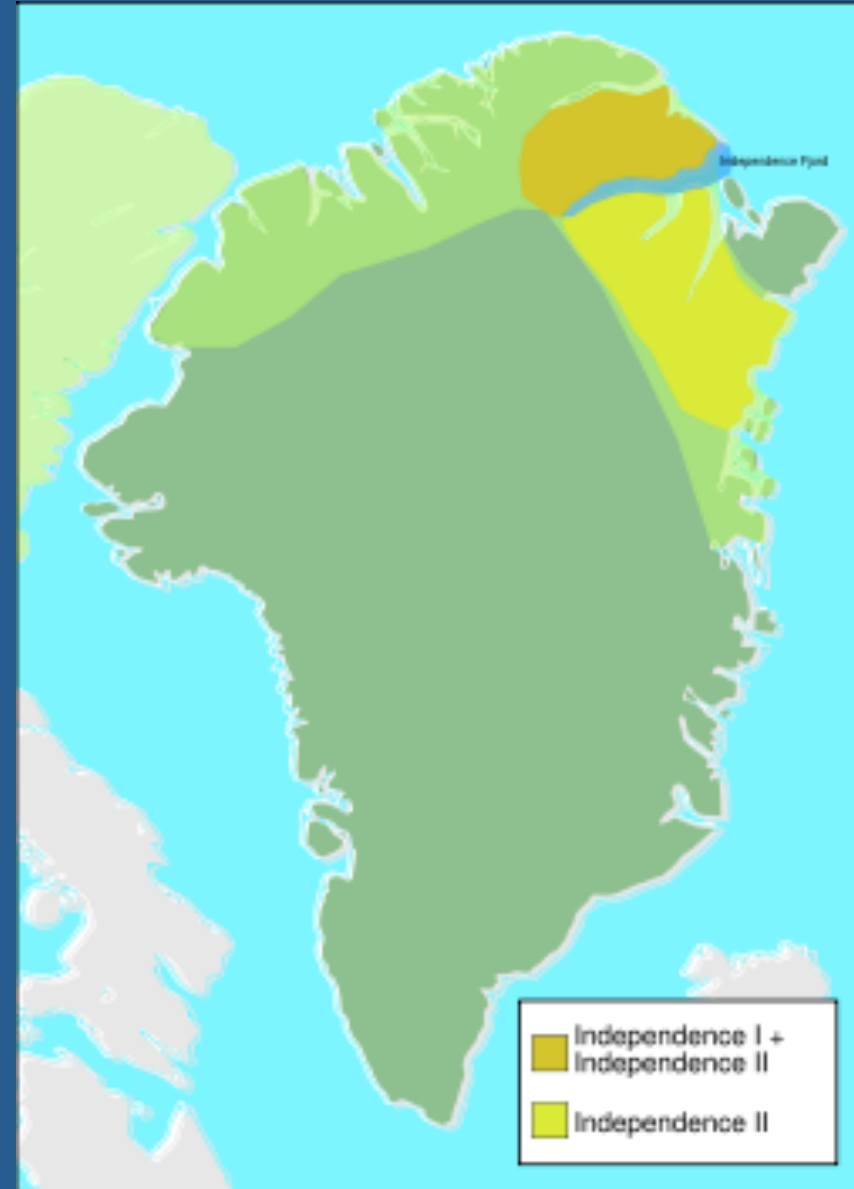
# Saqqaq 4000-2800 BP

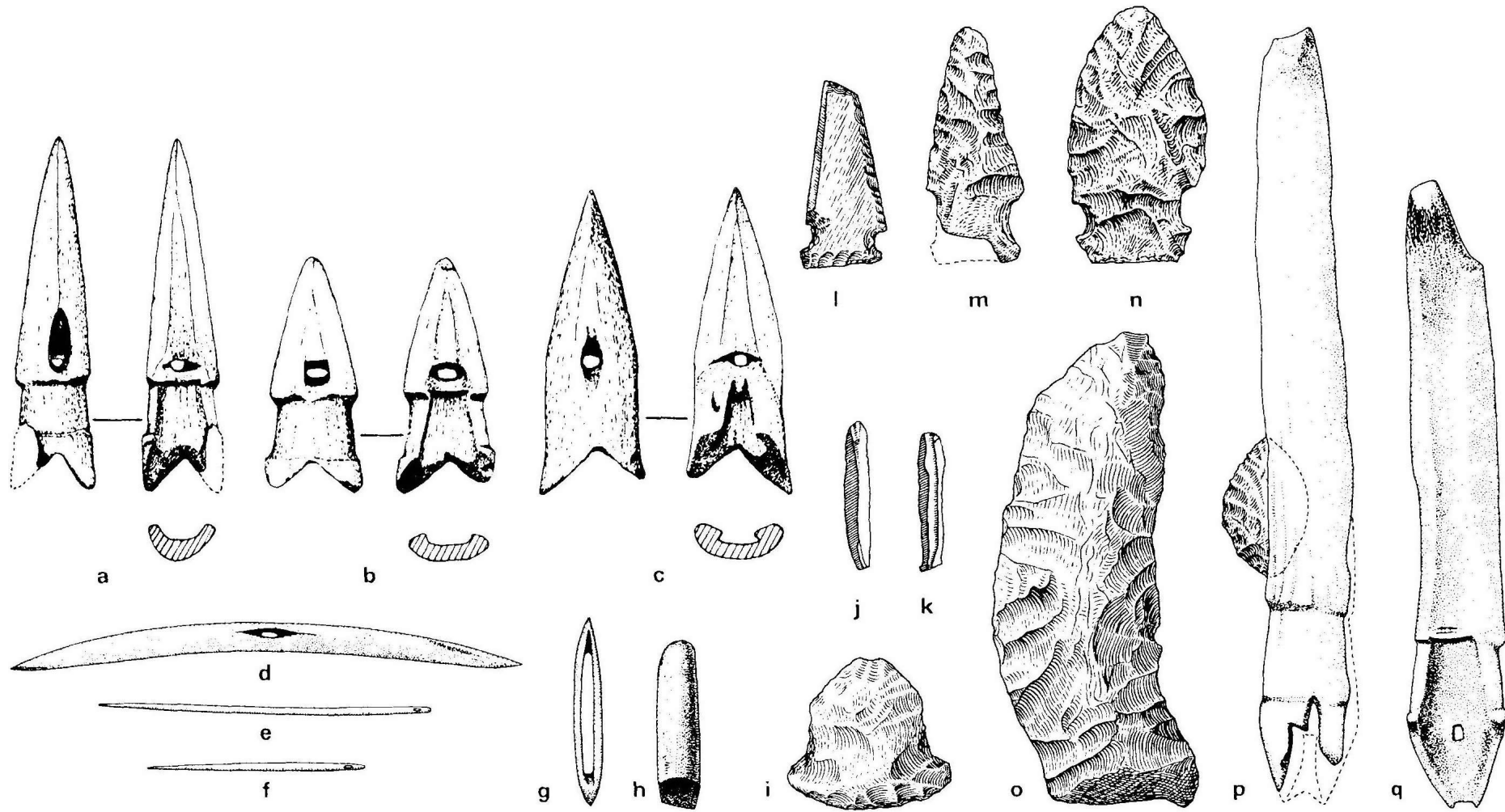
- West coast of Greenland
- Same time as Ind. I
- Initially tool kit like other ASTt groups
- Main foods: caribou, seals
- 3600 -3400 BP hunting walrus and maybe bowhead whales
- Soapstone pots/lamps starting ~3400 BP
- DNA sequence shows closest relatives are Siberian, not modern Inuit
  - This is evidence of rapid



# Independence II 3000 BP – 2500 BP

- Similar artifacts to Ind. I reappear after 3000 BP
- Devon Island and north to Pearyland
- Some influence of Pre-Dorset from Igloolik
  - especially in house design
- Have harpoon heads, non-toggling





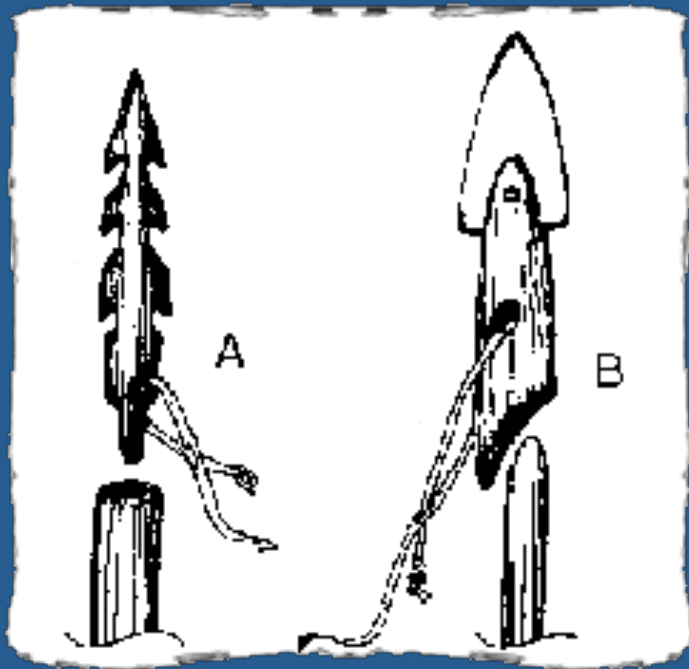
a-c, Knuth 1968:fig. 2; d-h, q, after Knuth 1968:2; i, o, after Knuth 1952:fig. 10; j-n, p, Knuth 1967:3.

Fig. 6. Independence II implements from Peary Land. a-b, harpoon heads with type A open socket; c, harpoon head with type B incised socket; d, bone gull hook or coarse needle; e-f, bone needles; g, bone buckle-like implement; h, bone flint-flaker point; i, flint end scraper; j-k, microblades; l, idealized burin-like tool; m-n, side-notched knives; o, asymmetric knife; p-q, "cloven-hoof" form of lance with sideblade. Length of a about 8.4 cm; rest same scale.



# Pre-Dorset 3500 BP - 2800 BP

- First true Arctic Maritime Economy!
- Use hearths and oil lamps
- Toggling harpoons



Harpoon head types:  
a) non-toggling head  
b) toggle head



13 000 BP	Younger Dryas cold event	
9-7000 BP	Atlantic Warm Period	Humans move into Siberian Arctic
4500		Independence I and II, Saqqaq, Pre Dorset
3000-2500 BP	Cooling trend	Dorset
1400-1000 BP	Warm	Thule expansion
500 BP	Little Ice Age	Inuit

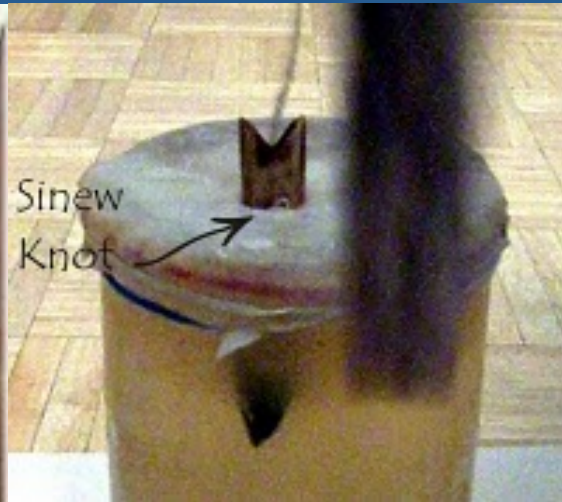
# Dorset ~3000 BP - 1000BP

- From Pre-Dorset culture
- Climatic cooling likely forced further adaptation to sea-ice
- Seals, walrus, beluga main foods, terrestrial foods as supplement
- Technology adapted to sea-ice
  - Bone sled shoes, snow knives,
  - Oil lamps, dog teams, microblades, ulus, kayaks

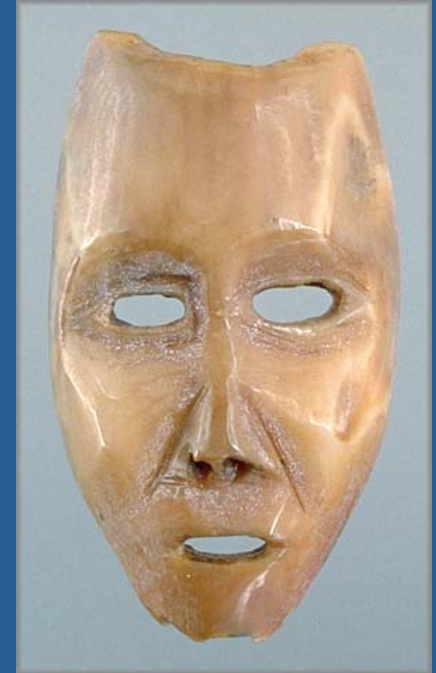


# Toggling Harpoons

- Needed for marine mammal hunting
- Appears in Pre-Dorset, Dorset and Thule



- Houses often have central paved walkway and hearth, sleeping platform
- Tiny carvings common – religious?









# Canadian/Greenlandic Arctic Cultural Timeline

Alaska

Denbigh: Migration 1  
(4500-4000 BP)

Norton: Migration 2 (1400-1000 BP)

Arctic Small Tool Tradition  
(manifested differently in  
different areas as...)

Denbigh

Independence I and II

Pre-Dorset

Saqqaaq

Dorset

Thule  
Inuit

# Part 3: Thule Culture





- Crossed the Bering Strait ~ 4500 BP
- Called Denbigh culture in Alaska
- Lost pottery technology, retained microblades

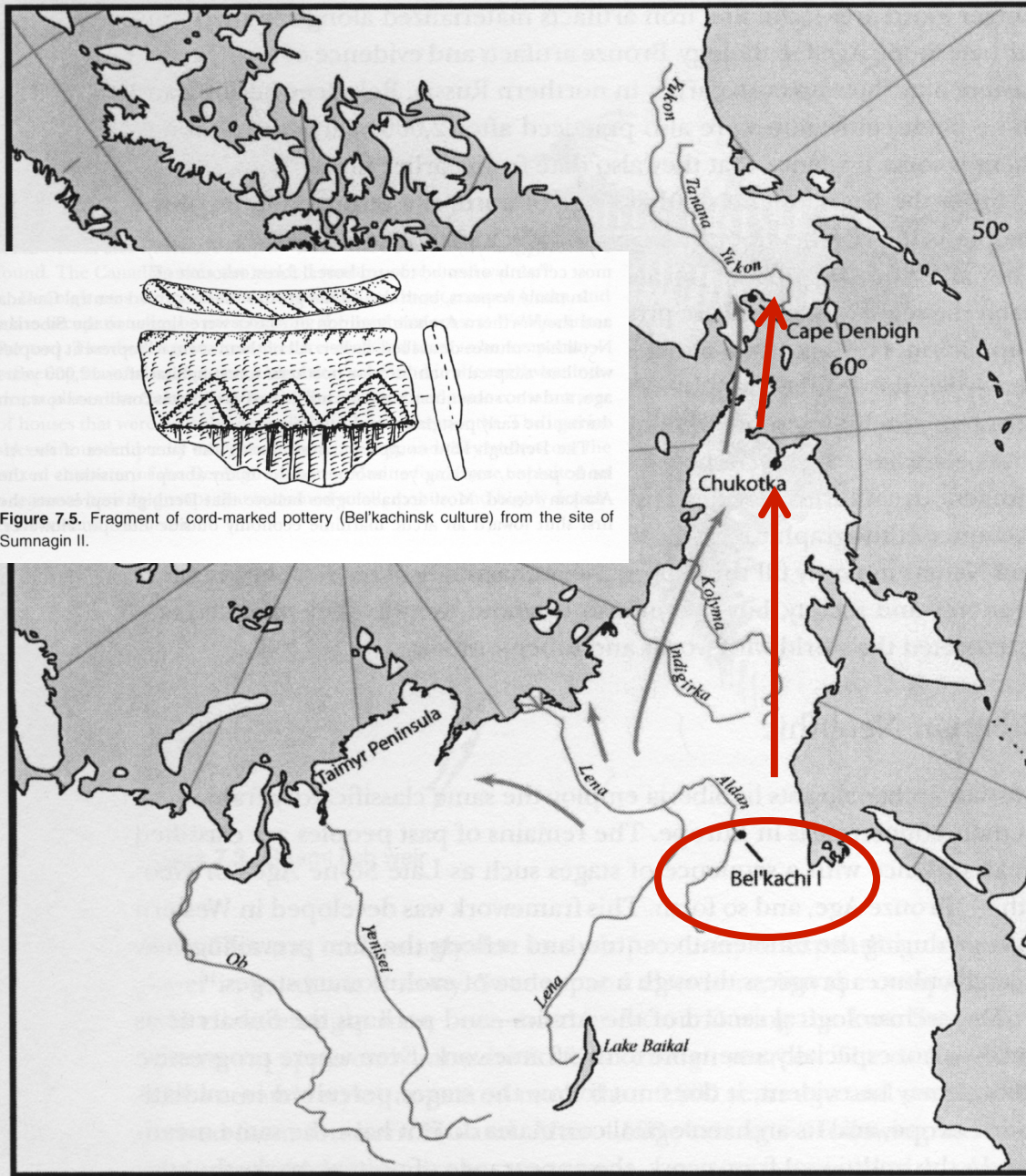


Figure 7.5. Fragment of cord-marked pottery (Bel'kachinsk culture) from the site of Sumnagin II.

Figure 7.4. Map of Siberian Neolithic sites in northern Siberia.

# Norton Culture

- Alaskan 3000 BP – 1200 BP
- Descendants of Arctic Small Tool tradition
- Closely related to Denbigh
- More marine oriented than Denbigh
- Lived in fairly permanent villages
- Technology: oil lamps, harpoons by 2000 BP
- Hunted caribou and marine mammals



# Norton development into Thule

- Around 1000 BP, major social and technological innovation!
- Became bowhead whale hunters



Note the  
inflated seal  
skin drag  
floats



Thule

Dorset

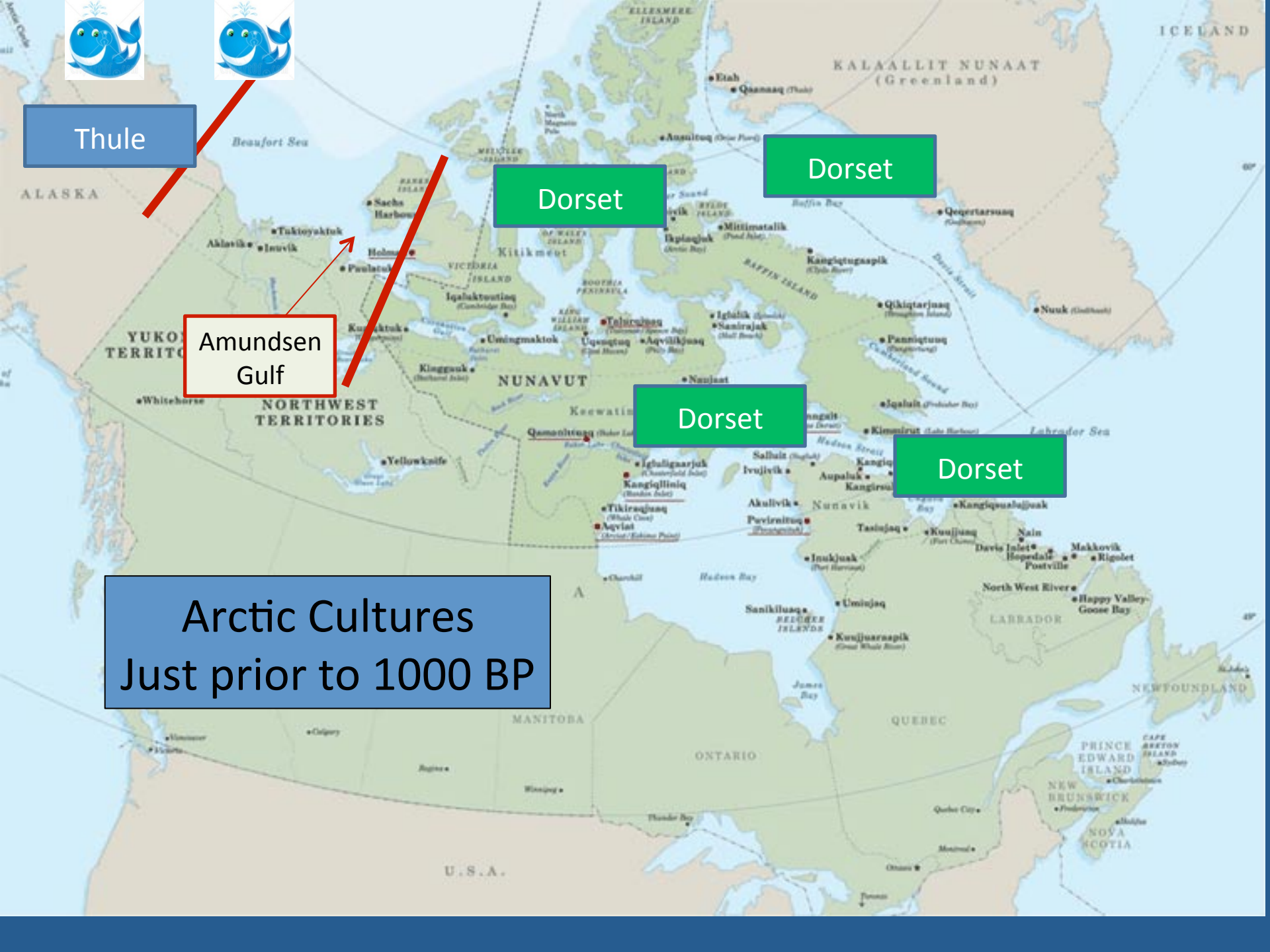
Dorset

Amundsen Gulf

Dorset

Dorset

Arctic Cultures  
Just prior to 1000 BP





Thule

Thule

Thule



Qaanaaq (Thule)

Dorset



Thule



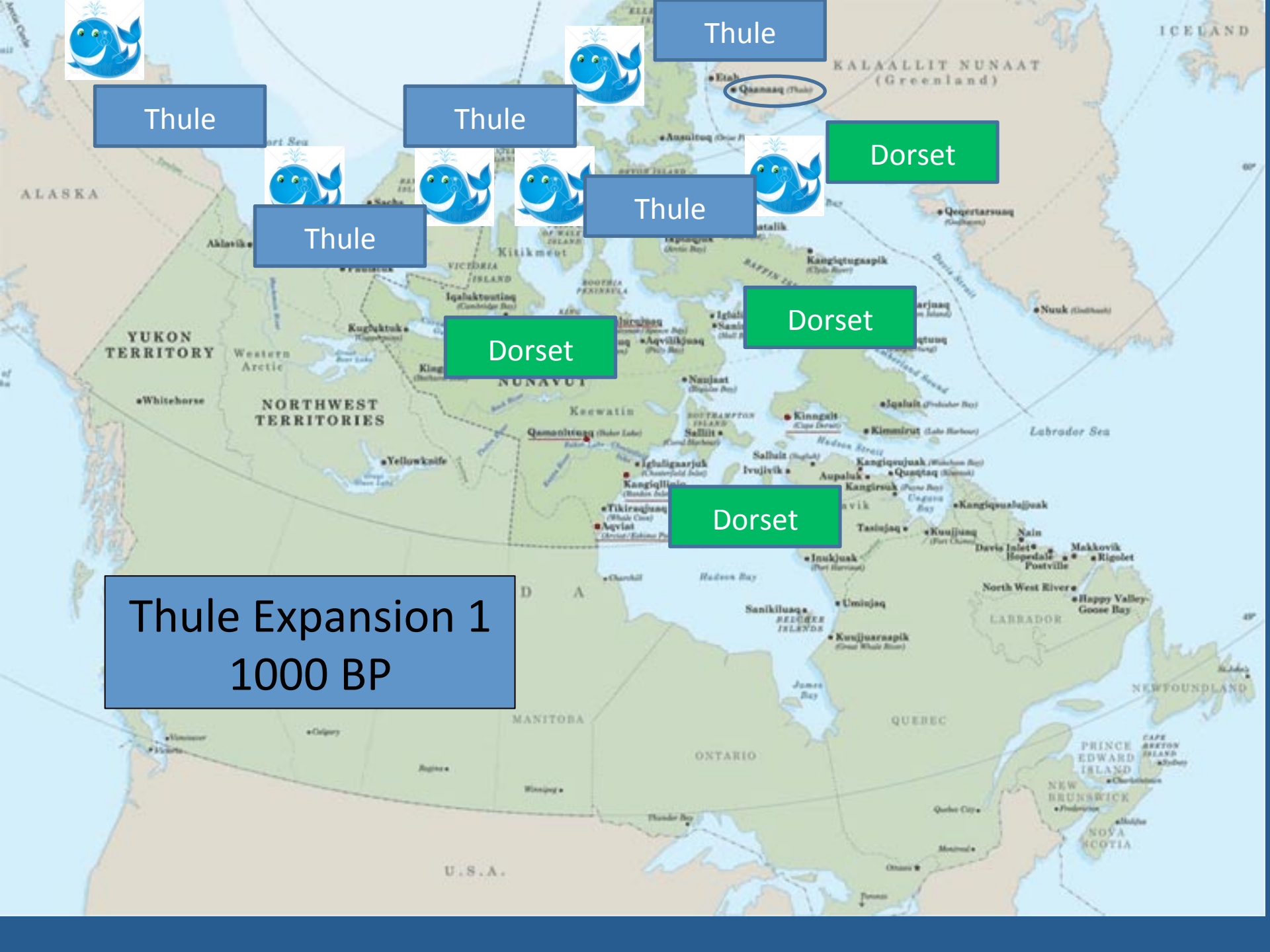
Thule

Dorset

Dorset

Dorset

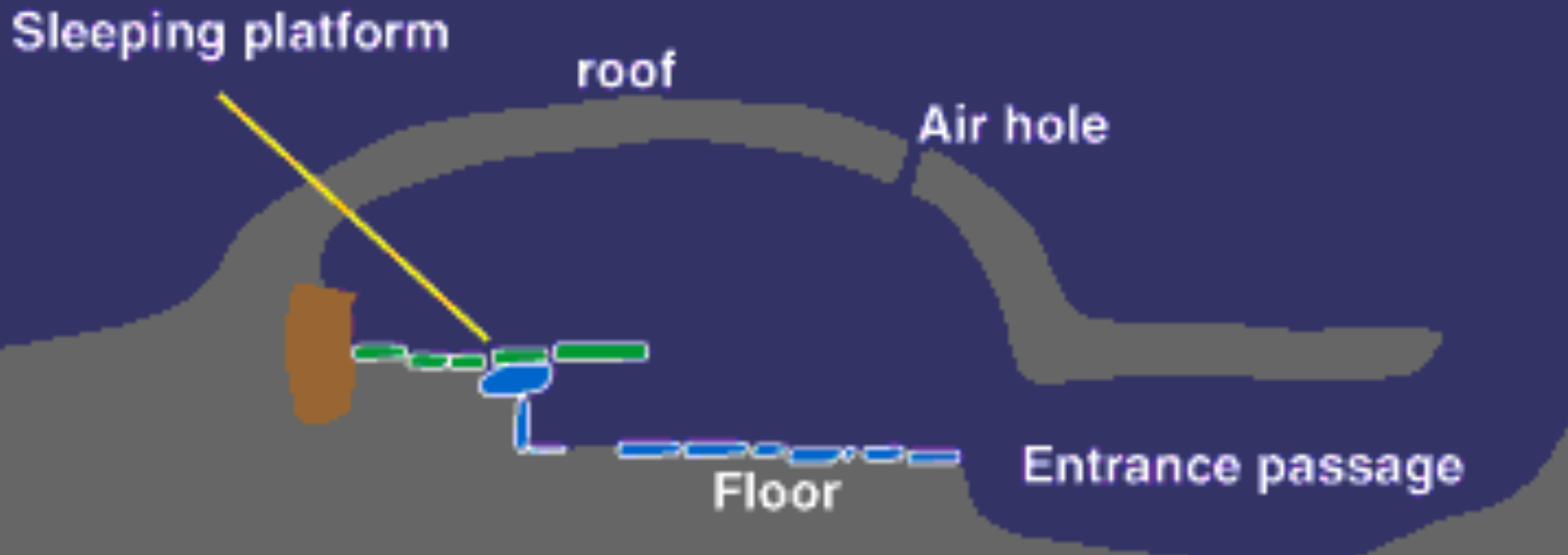
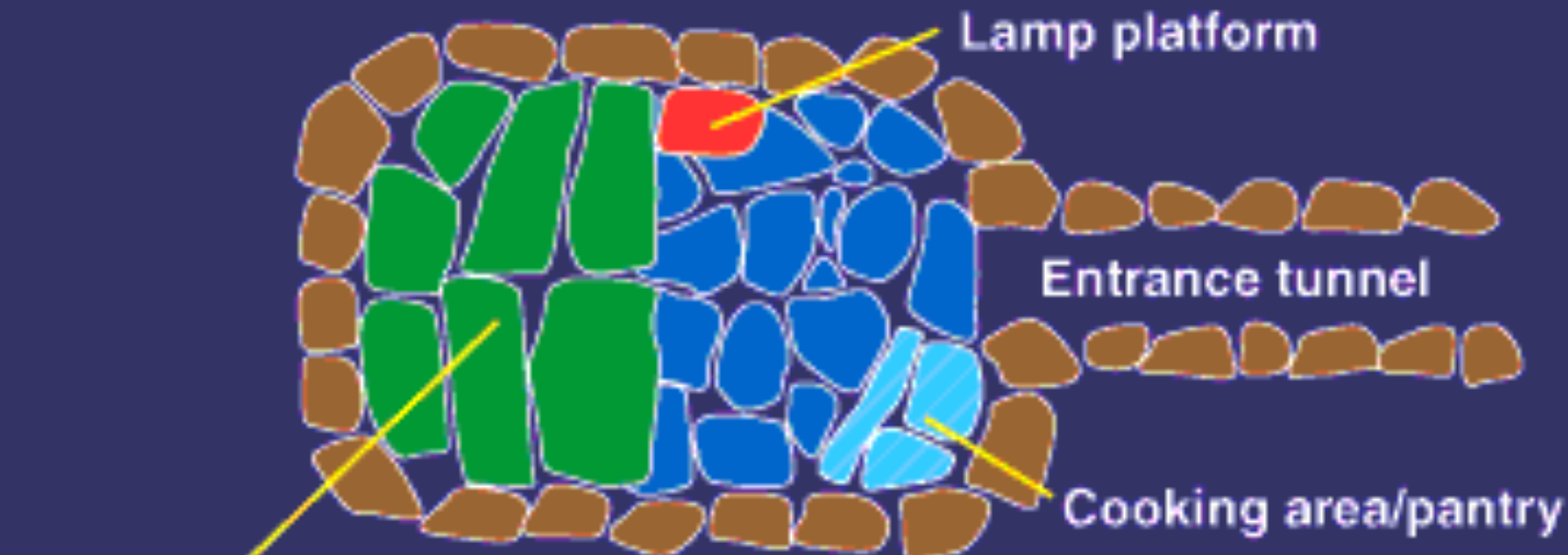
Thule Expansion 1  
1000 BP







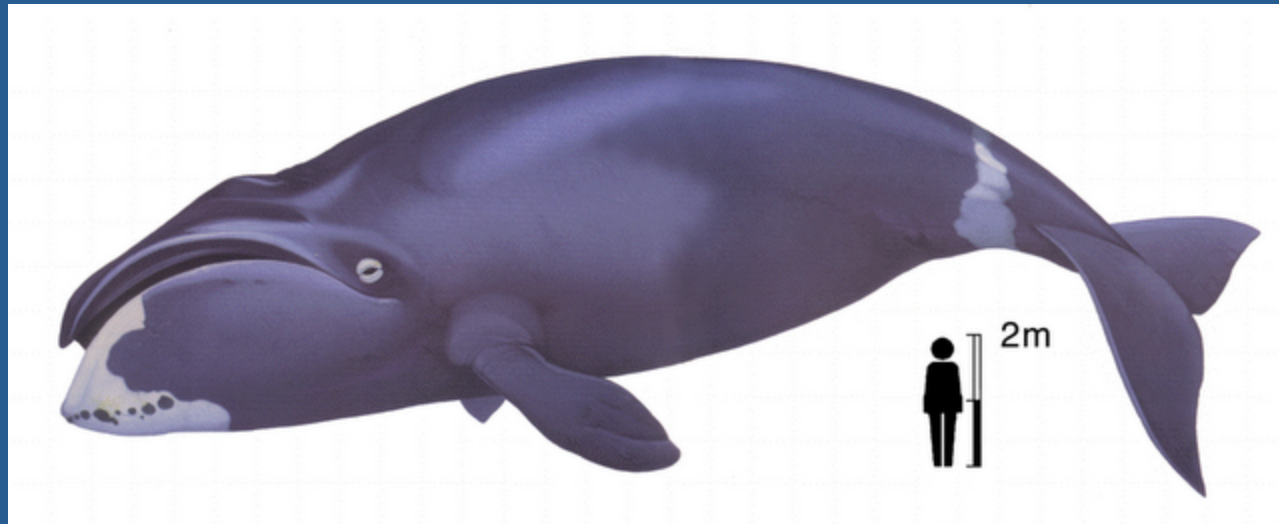






# Why and how did the Thule spread rapidly?

- Before 1000 BP, bowhead whales migrated through Bering strait, summered off Alaska
- Whales couldn't go further east due to ice
- Easy to sit and wait for them along the ice on the North Slope of Alaska



13 000 BP	Younger Dryas cold event	
9-7000 BP	Atlantic Warm Period	Humans move into Siberian Arctic
4500 BP		Independence I and II, Saqqaq, Pre Dorset
3000-2500 BP	Cooling trend	Dorset –sea ice
1400-1000 BP	Warm	Thule expansion
500 BP	Little Ice Age	Inuit



# Thule 1000-500 BP

- New wave of people from Alaska
- Followed bowhead whales into previously frozen archipelago
- Whale hunting complex

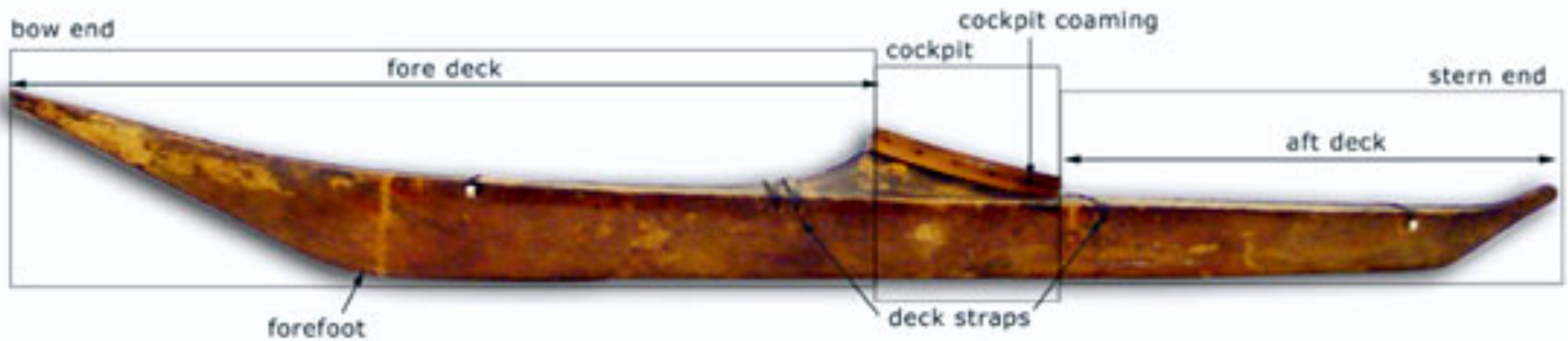


# Thule Technology

- Umiak boats
- Made of seal or walrus skin cover and wooden frame
- Used for whaling
- Still in use in Alaska and Greenland



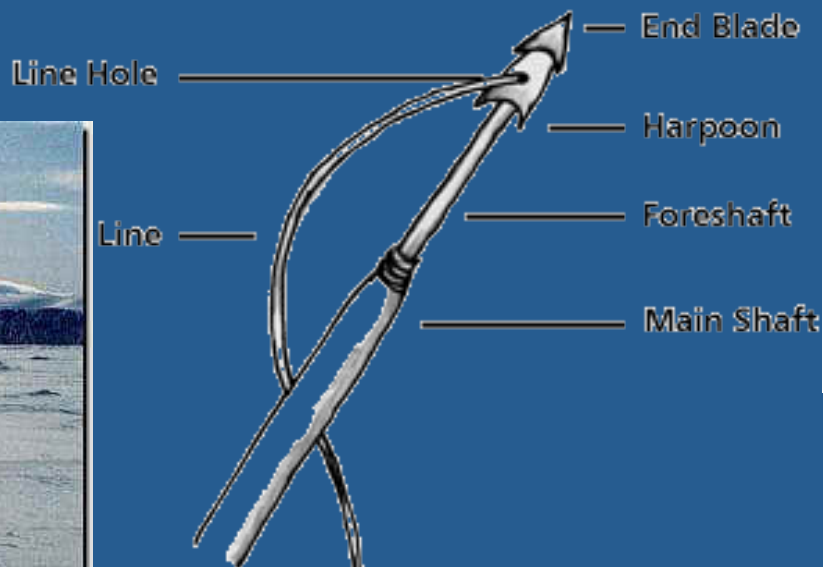
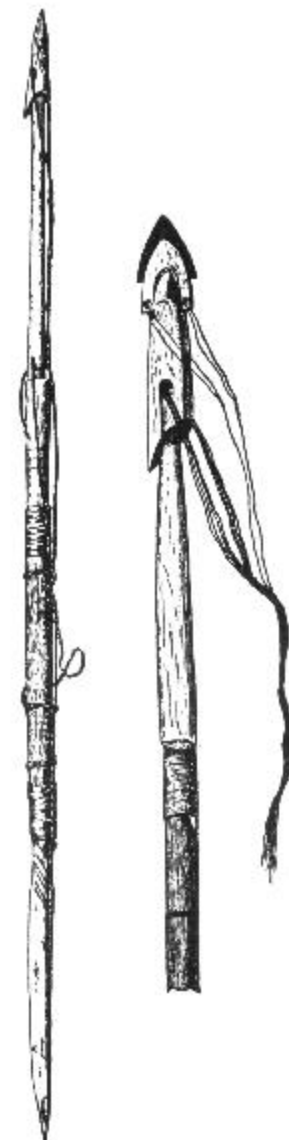
- Kayaks
- Drag floats





# Thule Technology

- Toggle-headed harpoons
- Dog teams
- Snow knives







- Winter house with whale bones for roof



- Summer tent ring

# Despite Dorset and Thule focus on marine environment....

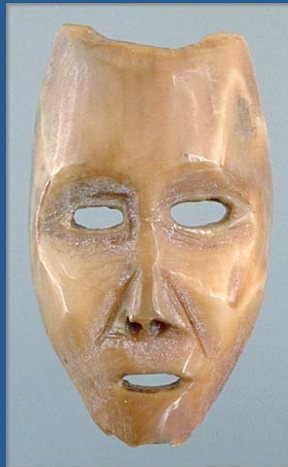
- Both need caribou for clothing
  - (whale skin just isn't fashionable, or warm)
  - -so maintain terrestrial hunting technology





# Dorset

- Adapted to sea ice hunting of seals
- Bone sled shoes, snow knives, ice creepers
- Oil lamps, dog teams, ulus, kayaks
- Toggling harpoons
- 2500-100 BP



# Thule

- Adapted to open ocean hunting of bowhead whales
- Oil lamps, dog teams, ulus, kayaks
- Toggling harpoons
- 1000-500 BP





# Thule Adaptations to Canada/ Greenland

- Whaling during summer, in open sea
  - Not concentrated migration of whales like Alaska
- Smaller concentrations of people
- Need other food sources too
- But very good boat skills





Thule



Thule



Thule



Thule



Thule



Thule



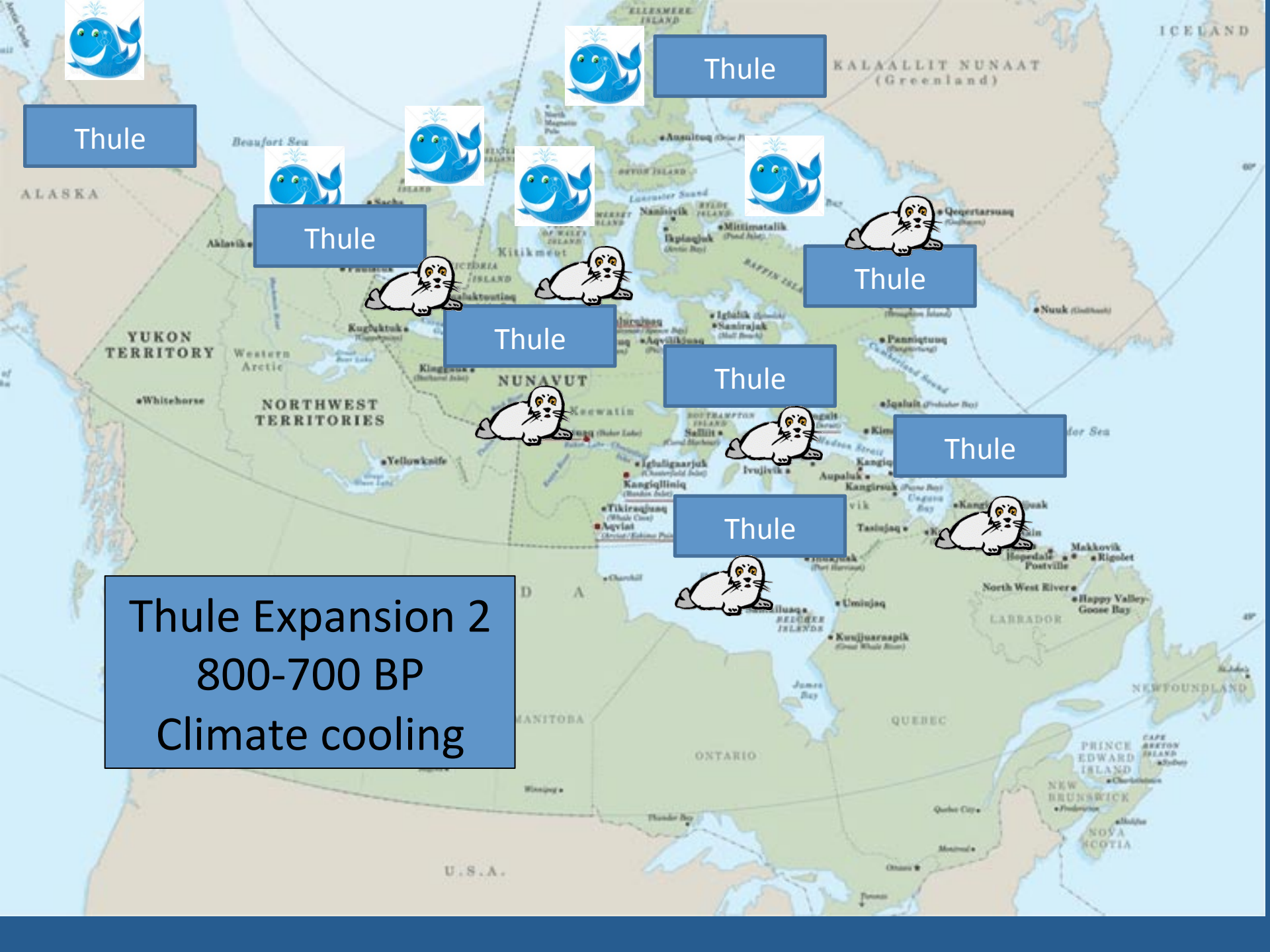
Thule

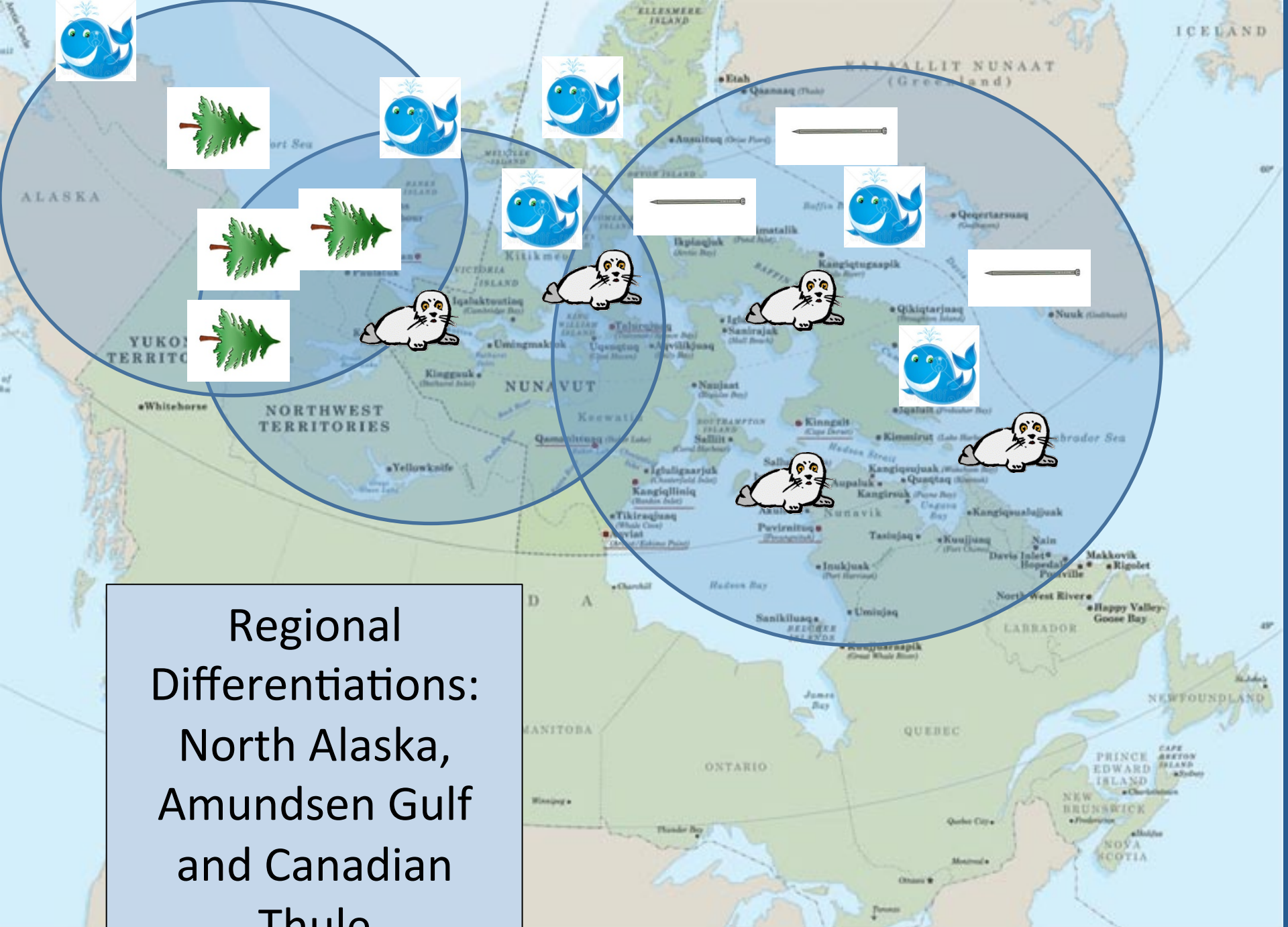


Thule



Thule Expansion 2  
800-700 BP  
Climate cooling





Regional Differentiations: North Alaska, Amundsen Gulf and Canadian Thule



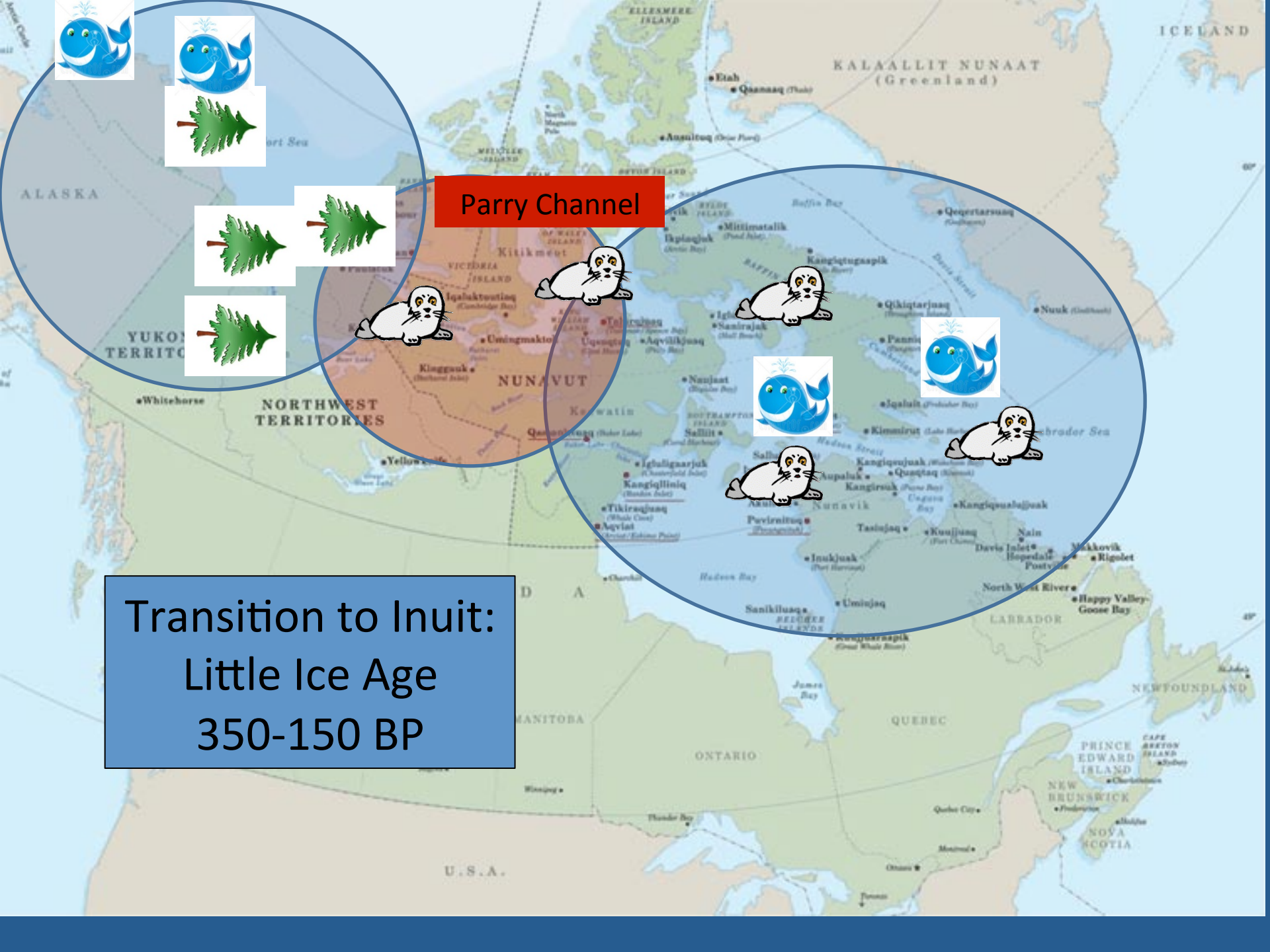
# 3 Regional Variants

- North Alaska
  - Hunting bowhead whales during migration
  - Crude pottery, wood
  - Barbed harpoon points
- Amundsen Gulf
  - Intermediate
- Canadian Thule
  - Little wood
  - Trading Norse iron westward
  - Flat harpoon heads



# Part 4: Inuit





Parry Channel

Transition to Inuit:  
Little Ice Age  
350-150 BP

# Transition to Inuit

- Climate cooled, restricting whales to Bering strait or Atlantic
- Coldest during Little Ice Age (350-150 BP)
- Ringed seal main food in winter for most groups
- Overall, groups became poorer
  - Less time for 'extras'
  - Less decoration
  - Simplified tools



# Transition to Inuit

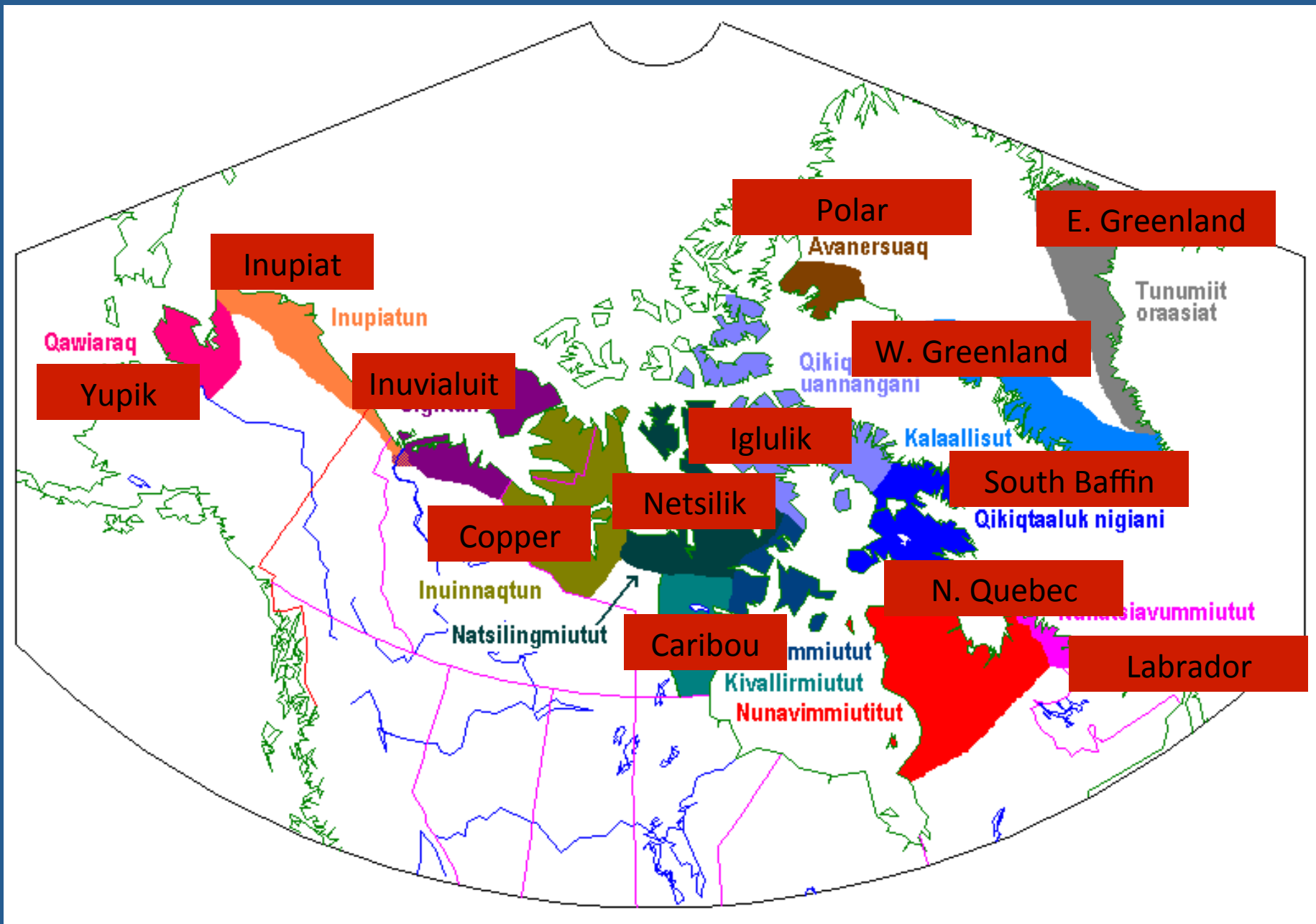
- Climatic cooling ~500 BP reduced whale populations
- Abandoned central Can. Arctic in 15<sup>th</sup> C.
- Adapted to hunting smaller prey





# Regional Variations of Inuit

- North Baffin –Semi-subterranean houses abandoned, *qammaq* adopted, snow houses
- Hudson Bay –only snow houses
- Central area (worst effected)
  - abandon open water boats
  - kayaks used only for caribou hunting on rivers/lakes,
  - graves no longer covered



# Examples of Historic Variation

- Igloolik:
  - Polynya – year-round open water area
  - More dogs, food, cultural development
  - More open social relations
- South Baffin: (ex. Pangnirtung)
  - More seal focused, walrus, beluga, bowheads available, caribou more sporadic
  - More open social relations

# Examples of Historic Variation – Central

- Netsilik:
  - Wood extremely rare, fish important
  - ex. Used frozen fish wrapped in skins to make sled runners
  - More conservative social organization
- Copper:
  - dogs rare, people pull sleds too,
  - caribou very important resource
  - More conservative social organization



# Only Non-Marine Focused Inuit

- Caribou:
  - abandoned marine focus due to harsh env.
  - moved down from Coronation Gulf and Gulf of Boothia after large caribou herds
  - But unreliability of caribou = starvation



# Modern Inuit ~ 1600 to present



# Canadian/Greenlandic Arctic Cultural Timeline

Alaska

Denbigh: Migration 1  
(4500-4000 BP)

Norton: Migration 2 (1400-1000 BP)

Arctic Small Tool Tradition  
(manifested differently in  
different areas as...)

Denbigh

Independence I and II

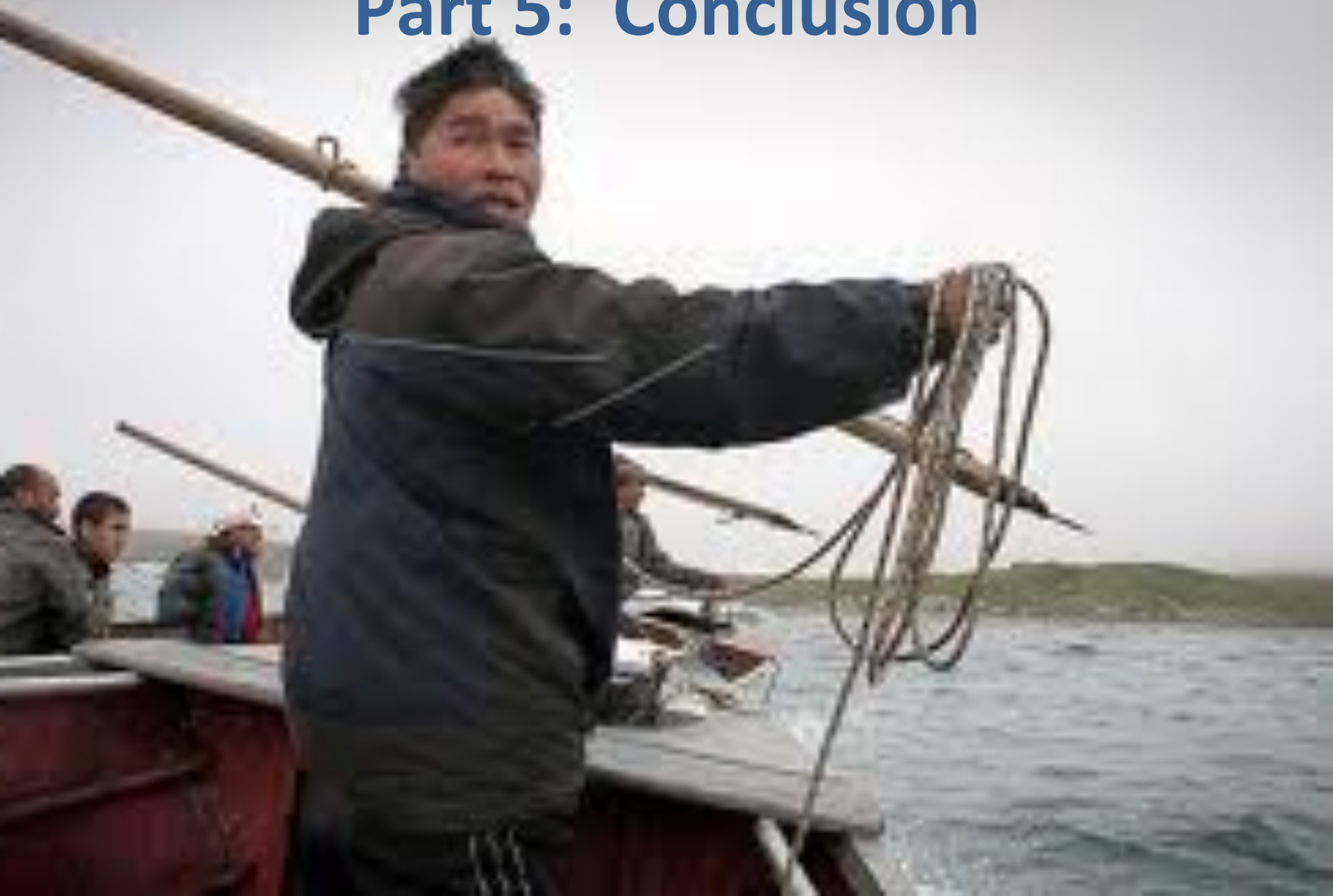
Pre-Dorset

Saqqaaq

Dorset

Thule  
Inuit

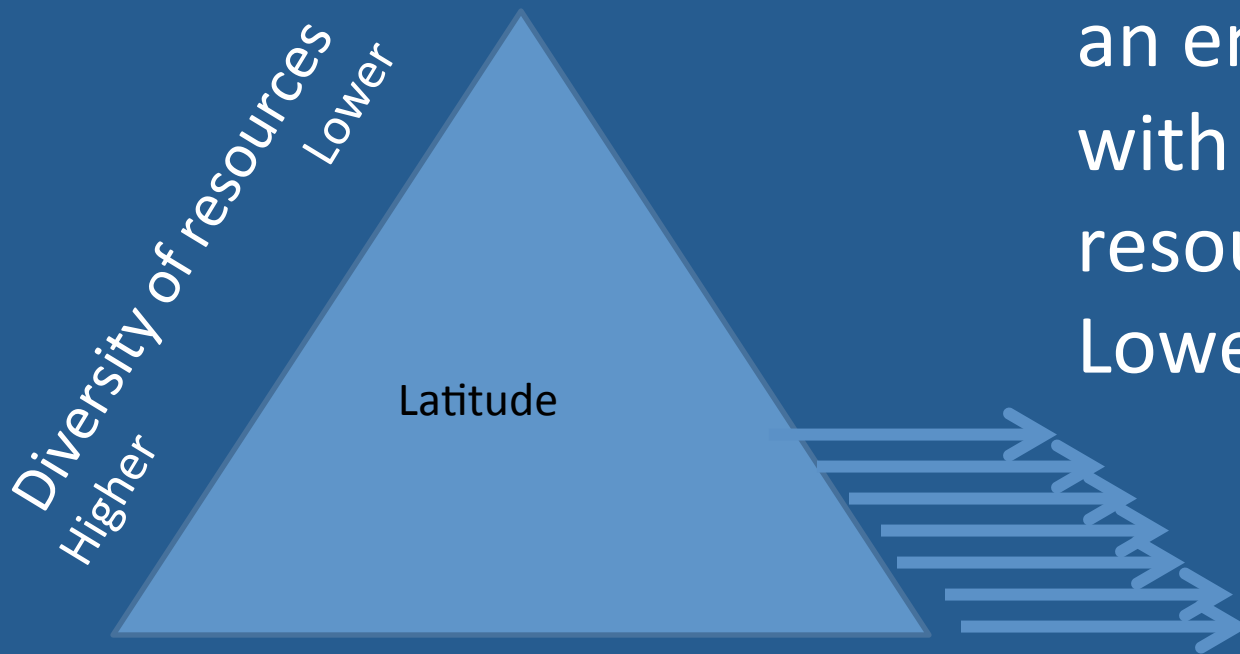
# Part 5: Conclusion





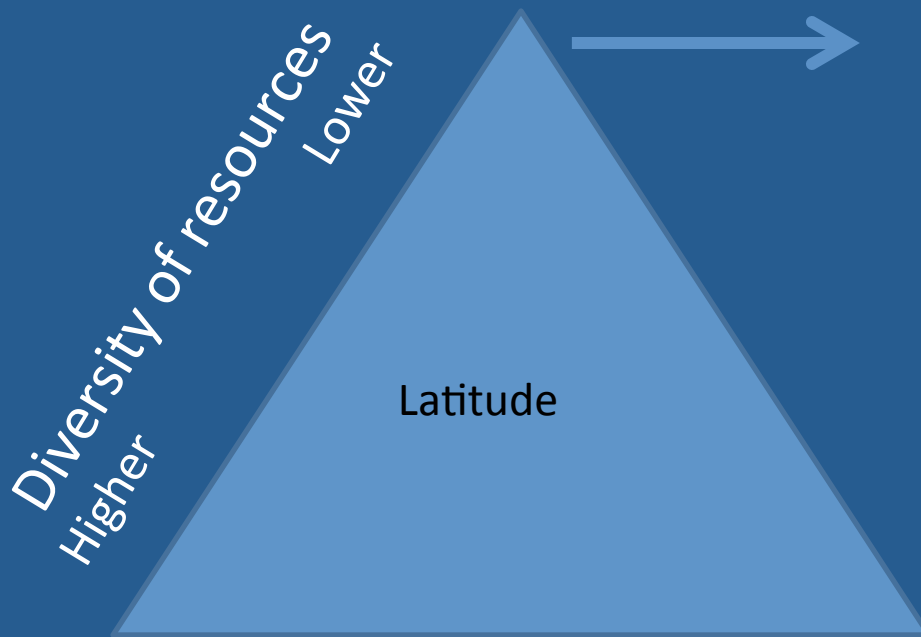
# Human Culture Linked to Environment

Expect lots of cultural variation in how humans exploit an environment with lots of resources ie. Lower latitudes



# Arctic is Harsh

Expect very few  
cultural  
responses  
where  
environmental  
choices are few



# Human Adaptation to the Arctic Environment

- Arctic is considered harshest environment on Earth: seasonal, dark, cold, little fuel and few food sources, many of which are seasonal
- Multiple responses to the Arctic and adaptations to changing climate illustrate that:
  1. Arctic is NOT so confining that only one way of life is possible
  2. Humans are capable of exploiting all resources through technological and social changes

