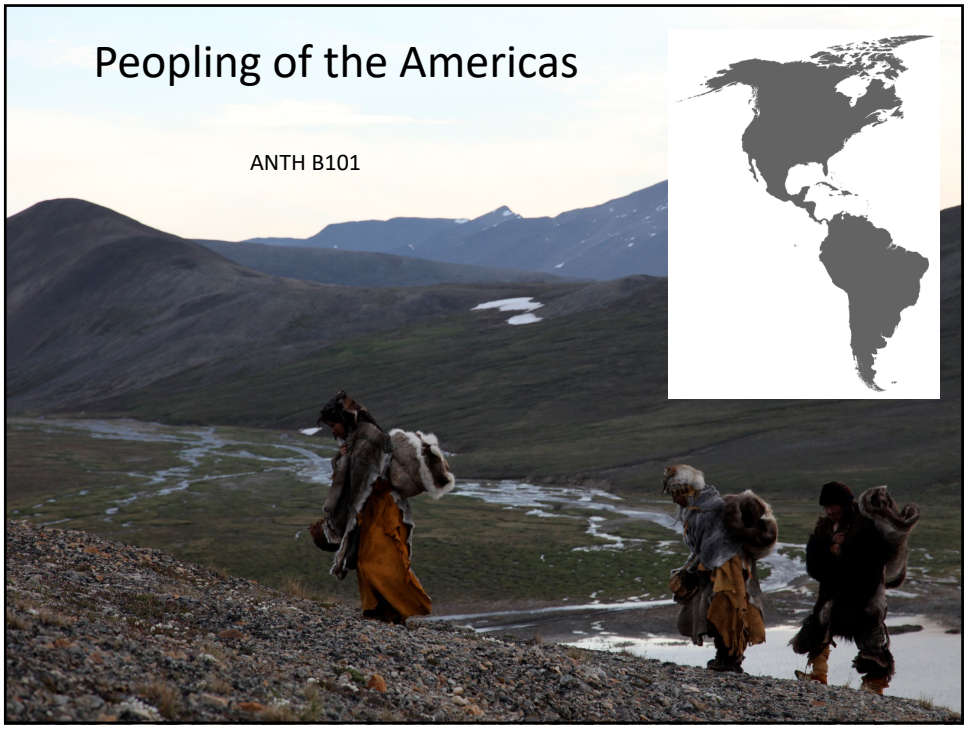
Peopling of the Americas

ANTH B101



1

Peopling of the Americas

Starting point: By late in the Upper Paleolithic period (late in the Pleistocene epoch), modern humans (*Homo sapiens*) inhabited much of the world.

Homo sapiens were the only humans that came to the Americas.

From here on out this semester, "human" means fully modern *Homo sapiens*

2

Major Questions:

- When did the first humans arrive to the Americas?
- From where did the first humans in the Americas come?
- How did they get here?
- How did they 'make a living' after arriving to and colonizing the American continents?

3

Evidence Available:

- Geographical & Environmental evidence (locations, climates)
- Archaeological evidence
- Biological & genetic evidence
- Linguistic evidence

4

Considering the Nature of the Problem –
Scientific Research on the Peopling of the Americas:

Area to investigate: greater than 16 million square miles

Time depth: let's say, between 12,000 & 20,000 yrs ago

-- preservation issues of archaeological remains

Size of migrating groups: small, bands of families -- ~15-35 individuals

-- highly mobile hunters-foragers, likely dynamic group composition & fluctuating population sizes

Amount & type of material culture: no robust houses or buildings (structures), few personal goods, mostly tools used for hunting, gathering, processing; clothing; minimal art/symbolic goods at first (at least not much found)

5

Considering the Nature of the Problem –
Scientific Research on the Peopling of the Americas:

What this means:

Searching for a needle in a haystack!

6

Considering the Nature of the Problem –
Scientific Research on the Peopling of the Americas:

But, after decades of systematic, scientific research on these issues, we now have high-quality data that provide promising answers to many of these questions, and data that do not support some older alternative hypotheses!

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Let's begin with the answer to from "where" and "when" and then look at some of the evidence…

The first Americans migrated from far northeastern Asia-Siberia, sometime likely between ~23,000 and ~15,000 years ago, likely in a few waves of separate migrations, probably via two different main routes.

8

2 Migration Hypotheses:

1. Bering Land Bridge + Ice-Free Corridor Route

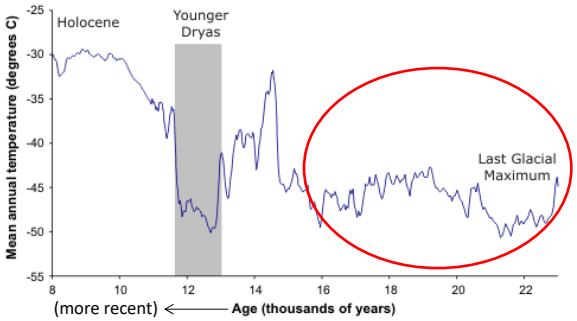
2. Bering Land Bridge + North Pacific Coast Route

9

Environmental & Climatic Setting:

Last Glacial Maximum (LGM) – between 28,000-15,000 yrs ago during Late Pleistocene:

-- sea levels more than 400 ft lower than today
-- Ice sheets extend south at least to Ohio-Kentucky border



10

Last Glacial Maximum (LGM) -- 28,000-15,000 yrs ago

Due to maximum extent of ice sheets, worldwide sea levels dropped 400 feet

The Bering Land Bridge connecting Asia and Alaska

11

- Cold & dry conditions during LGM left much of Beringia itself relatively free of ice

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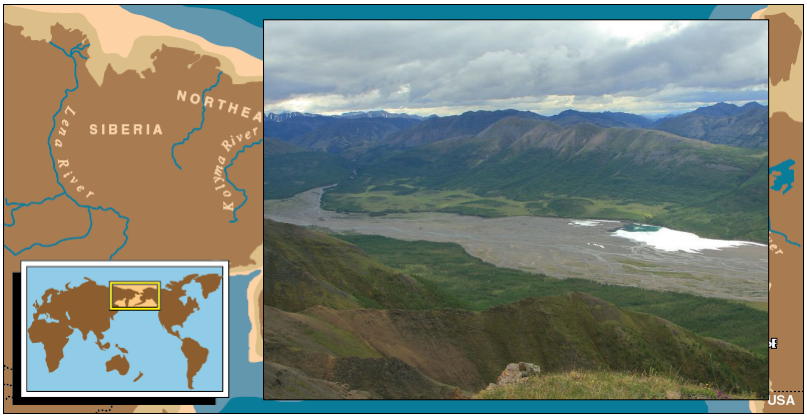
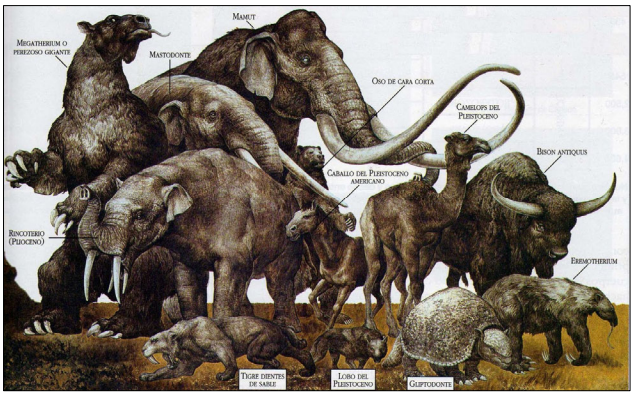


- Cold & dry conditions during LGM left much of Beringia itself relatively free of ice
- Plant cover: dry grasslands; patches of boreal trees and shrubs

13



- Cold & dry conditions during LGM left much of Beringia itself relatively free of ice
- Plant cover: dry grasslands; patches of boreal trees and shrubs
- Beringia's dry steppes and tundras supported herds of grazing animals (megafauna)

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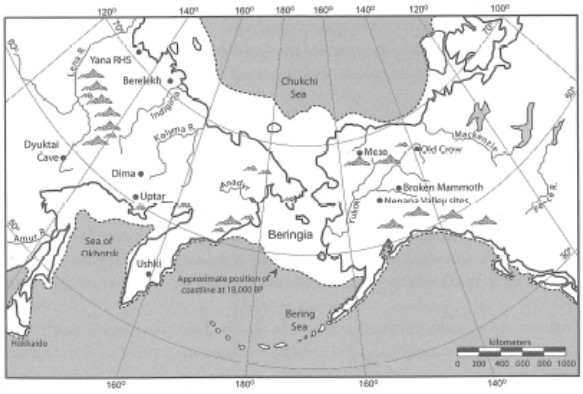
- Cold & dry conditions during LGM left much of Beringia itself relatively free of ice
- Plant cover: dry grasslands; patches of boreal trees and shrubs
- Beringia's dry steppes and tundras supported herds of grazing animals
- Beringia likely dry and open for habitation between 25,000 & 11,000 years ago

15

The Bering Land Bridge connecting Asia and Alaska

16

Map showing extent of Beringia during LGM, and locations of some of the known early archaeological sites in Siberia and Alaska



Note: sites in Beringia-proper are largely unknown because the land bridge is now under water!

17

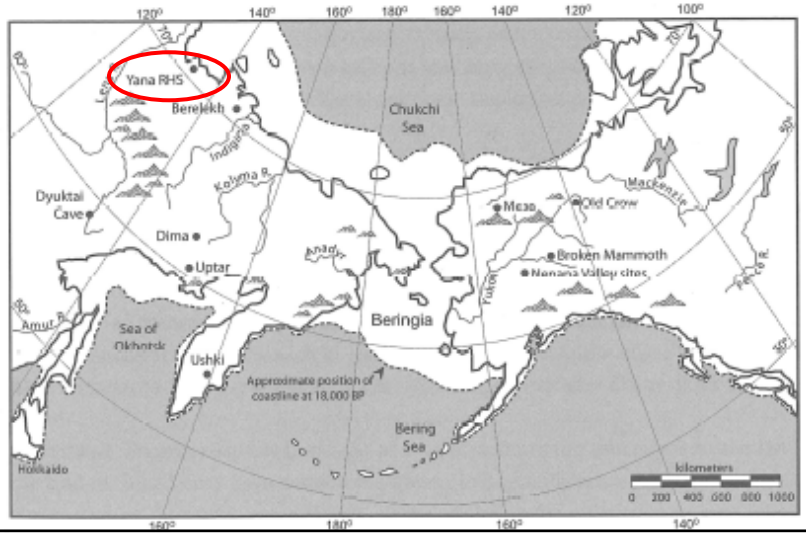
North Asian origins

Communities of mobile hunter-gatherers/foragers were in the Siberian/Northeast Asian Arctic by 32 kya or earlier. At this time, the landscape was a vast steppe-tundra that supported diverse game species.

18

New genetic analyses of 2 buried individuals at Yana RHS site.

Yana RHS represents earliest known human remains in far Northeast Siberia, at 32,000 years ago.



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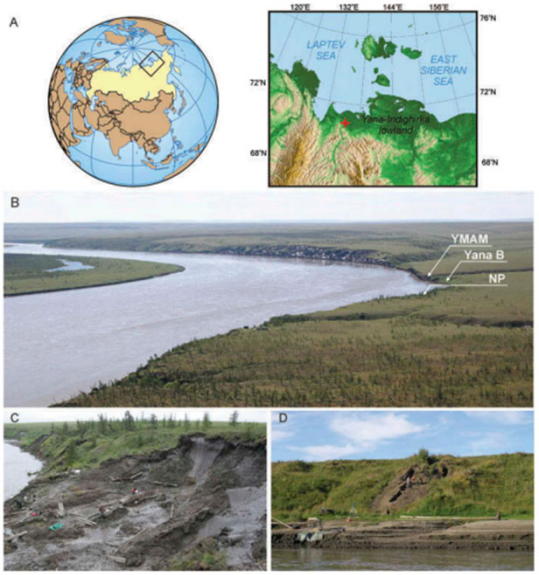

Figure 3 The Yana site complex. (A) geographical position (using a fragment of ETOPO©image); (B) topography and spatial relationships between different parts of the site complex; (C)Yana site Northern Point (Yana-NP) area during the excavation; (D) Yana-B area.

from Pitulko et al. 2015

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Figure 5 An example of artefacts produced from mammoth ivory (A–C, E–G from the Yanasite complex, D spear point or a dart from Bolshoy Anuy site). (A) to (C) ivory shafts and points; (D) spear point or a dart (d1, d2 and d3: enlarged view of the base, medial section and the distal end, respectively); (E) diadem; (F) and (H) bracelet fragments; (G), ornamented ivory scoop.

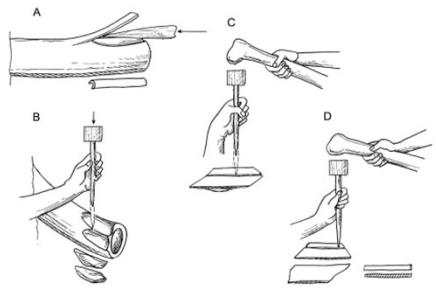

Figure 20 Graphic reconstruction of manufacturing elongated preforms for bead and diadem production. (A) removal of the cementum layer by wedging; (B) debitage by fracture using a pointed bone tool; (C) and (D) truncation of the ivory flake using a pointed bone tool.

from Pitulko et al. 2015

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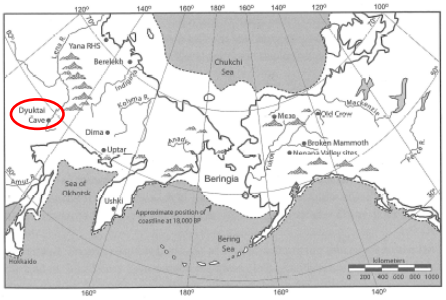
North Asian origins

Diuktai Cave, Siberia, ca. 16.8 kya

Duiktai lithic artifacts: bifacial projectile points and knives, microblades, burins, choppers

Highly portable "Upper Paleolithic" technology for mobile hunting

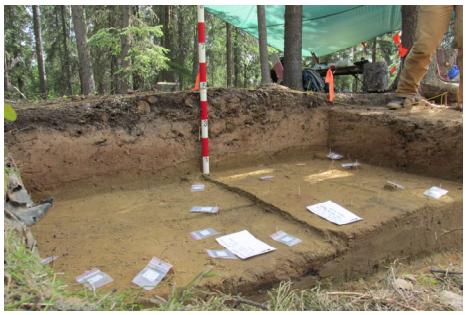
Highly efficient technology: barbed spears inflict more blood loss than conventional spears



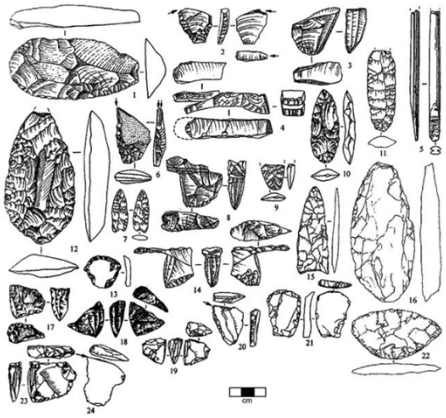
Aldan River, Siberia

22

Swan Point site, Alaska, 14.4 kya



from Museum of the North, U of Alaska



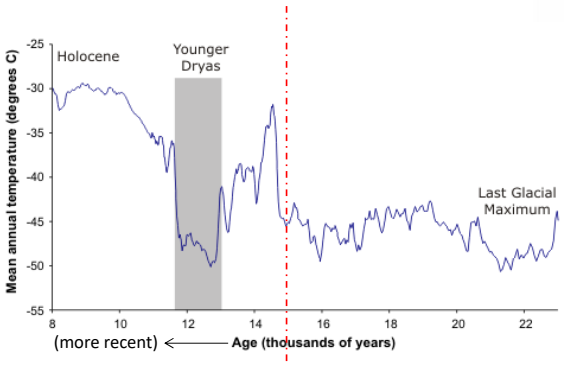
from Wygal 2016

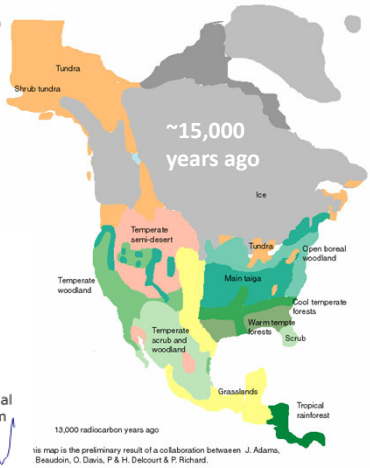
23

Environmental & Climatic Setting:

Post-LGM – starting @ 15,000 yrs ago

-- ice sheet over Canada begin to shrink, opening up small corridor to interior western U.S. (but it would have been a harsh environment still!)





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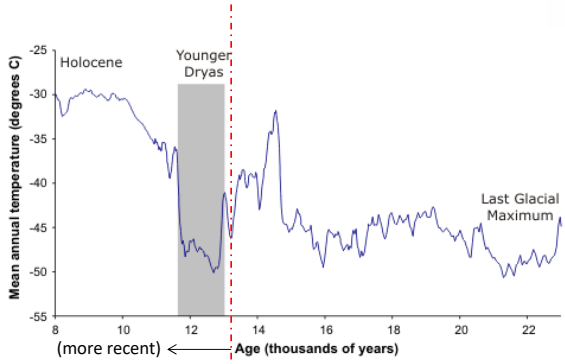
Environmental & Climatic Setting:

Post-LGM – starting @ 15,000 yrs ago

-- ice sheet over Canada begin to shrink, opening up small corridor to interior western U.S. (but it would have been a harsh environment still!)

-- **certainly by 13,000 years ago, the ice-free corridor was habitable by human groups, with expanding forest tundra and grasslands extending south into the U.S.**



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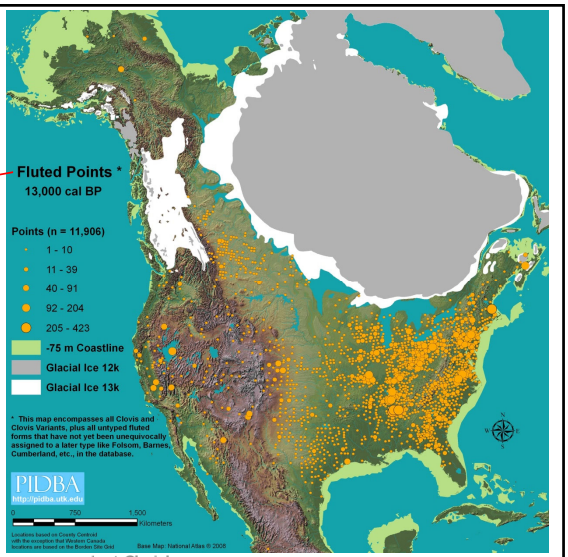

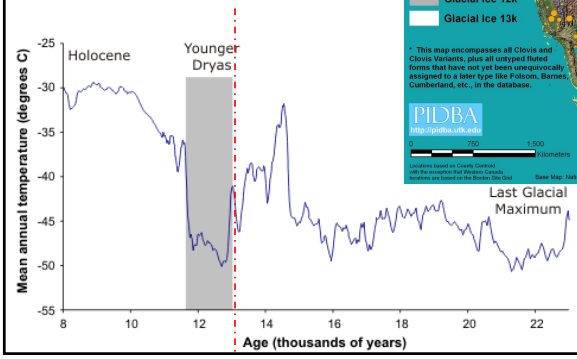

Map showing distribution of fluted stone points @ 13,000 yrs ago

"Clovis"

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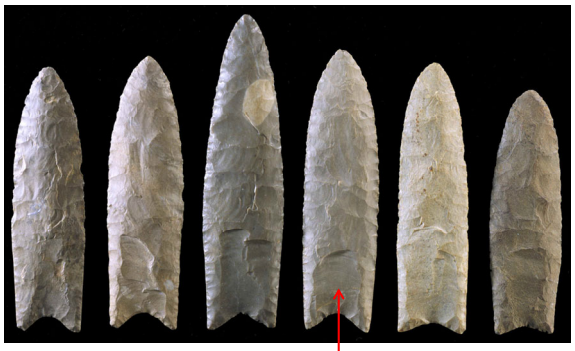
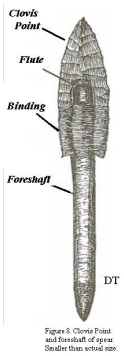
Clovis Stone Tool Industry

- Oldest *named* stone tool industry in the Americas, dated to ~13,500 – 12,800 yrs ago
  - Clovis distinguished by a type of large, *fluted* spear point
    - channel flakes removed from the base of bifaces through pressure flaking to facilitate hafting onto spears and composite tools
  - However, probably not the earliest stone tools in Americas (i.e., there is now good evidence for earlier arrival of "pre-Clovis" Native Americans)

**and remember, tools are not people!



fluting



hafted Clovis point

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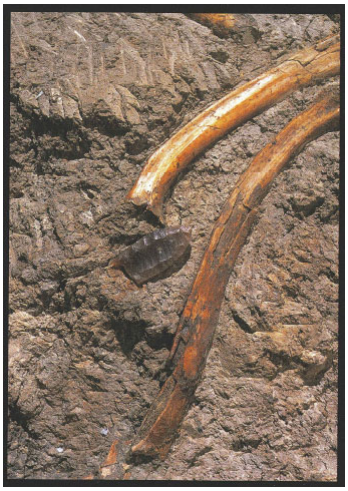
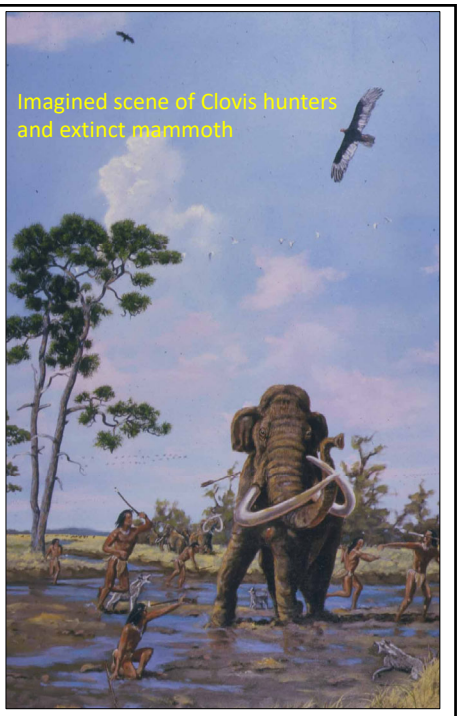
Early Native Americans were *Big Game* hunters



Paleoindian period "Folsom" fluted point found *in situ* between ribs of extinct *Bison antiquus*



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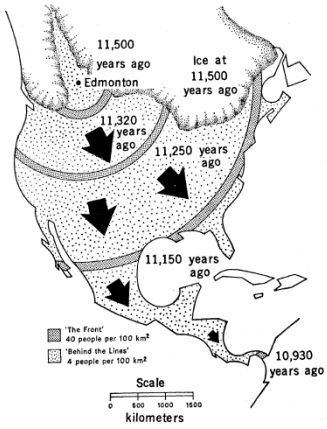


The Earliest Americans

New developments increase the known antiquity of man in the New World but leave many problems unsolved.

Science (1969) C. Vance Haynes, Jr.

Paul Martin
Science (1973)

The earlier Scenario, based on best evidence at that time…

- ca. 13,400 Cal. ybp
- Ice Free Corridor
- Rapid Expansion or Clovis "people"
- Pleistocene Overkill??
- aka "Clovis-First" Model

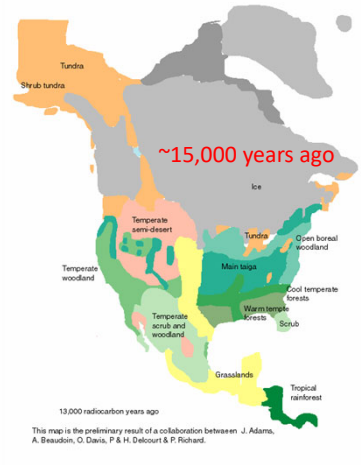
Clovis Points
Blackwater Draw
C. Vance Haynes Cast Collection

COMING INTO THE COUNTRY: EARLY PALEOINDIAN HUNTING AND MOBILITY

American Antiquity (1988) Robert L. Kelly and Lawrence C. Todd

29

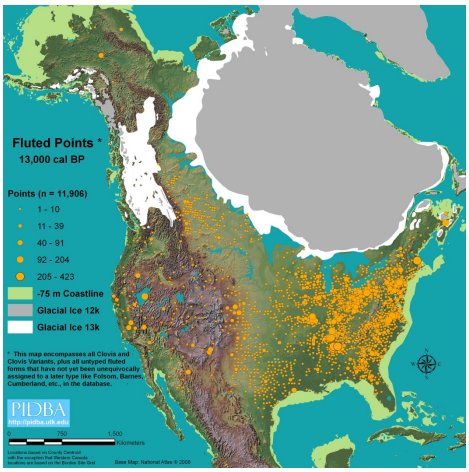
Problems with the Ice-Free Corridor as the only point of entry into Americas??



@ 15,000 years ago, no Clovis in the U.S.

30

Problems with the Ice-Free Corridor as the only point of entry into Americas??



Plus, we now have growing evidence for pre-Clovis Native Americans in North & South America!

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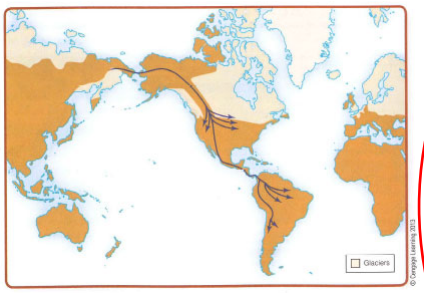
2 Migration Hypotheses With Substantial Support:



1. Bering Land Bridge + Ice-Free Corridor Route

2. Bering Land Bridge + North Pacific Coast Route

Accepted now as *most likely* earliest route

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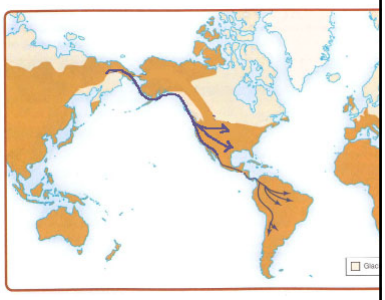
The Pacific Coastal Route

* Main idea: Populations of hunter-gatherer-fishers from Northeast Asia (and/or Siberia) moved into the Americas by traveling down the ice-free Pacific coastline.



* However, only a few sites have been found because dry coastal lands dating to

- The Pacific Rim coast likely habitable by at least 15,000+ yrs ago, if not before
- Could have thrived by hunting sea animals and hunting and gathering near coasts, along coral reefs, and diverse coastal ecosystems, like kelp "forests"

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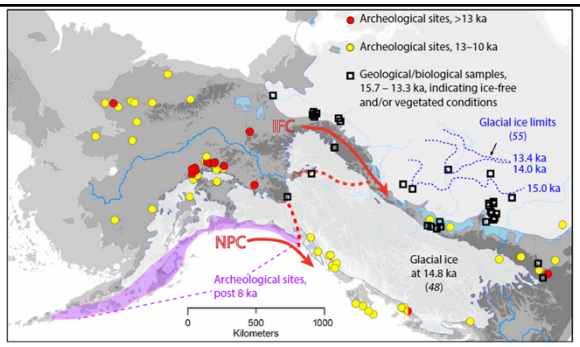
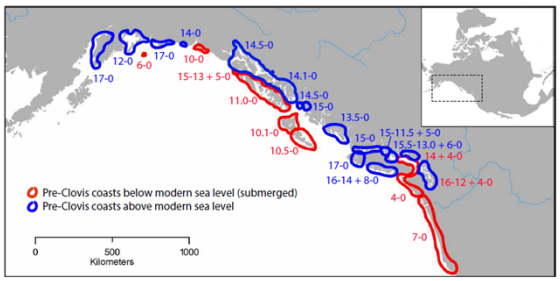


Fig. 1. Northwest North America with archeological sites older than 10,000 calibrated years before the present (Supplementary Materials) and proposed colonization routes: IFC and NPC. Glacial ice extent (white) from (*48*), and archeological site and geological sample locations summarized in (*12*, *78*). Laurentide Ice Sheet limits (dotted lines) from (*55*). ka, thousand years; IFC, ice-free corridor; NPC, North Pacific coast.



Potter et al. 2018

Fig. 2. Sea-level curves by region and periods above modern sea level (in thousands of calibrated years before the present) (that is, pre-Clovis occupations would be potentially accessible if they are extant), adapted from data in (*38*, *79*).

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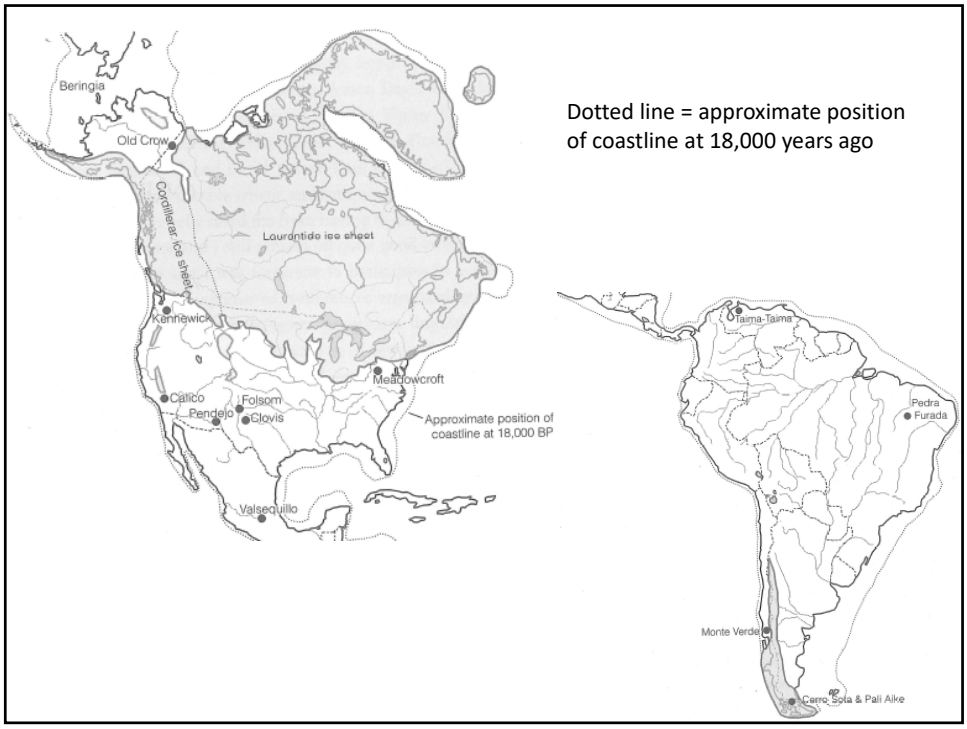
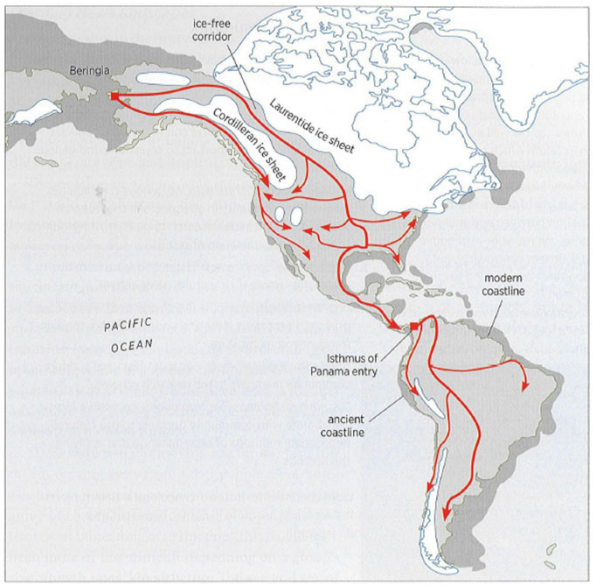


Dotted line = approximate position of coastline at 18,000 years ago

35



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Earliest known sites in the Americas (pre-Clovis)

Cooper's Ferry, Idaho – 16 kya

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Earliest known sites in the Americas (pre-Clovis)

Gault & Debra Friedkin sites, Texas – 15.5 kya

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Earliest known sites in the Americas (pre-Clovis)

Meadowcroft Rockshelter, Pennsylvania – 14.5 kya

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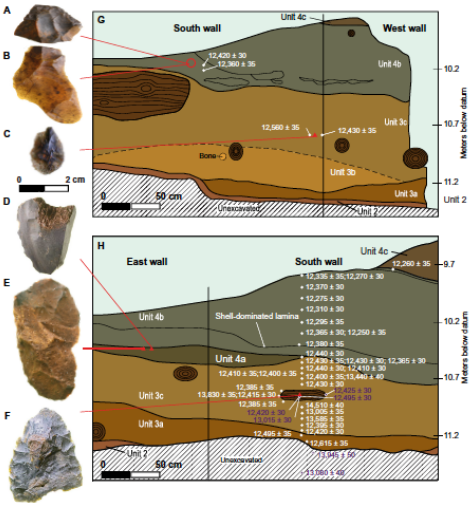
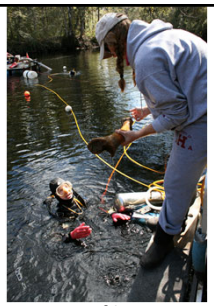
Page-Ladson Site, Florida – 14.5 kya





Bone of large mammal

Fig. 2. Stratigraphy of excavation units at the Page-Ladson site displaying pre-Clovis artifacts and radiocarbon ages. (**A**) Artifact 12209-a. (**B**) Artifact 12209-b. (**C**) Artifact 12242-1. (**D**) Artifact 12068-2. (**E**) Artifact 12068-1. (**F**) Artifact 12080-1. (**A**) to (**E**) are flakes; (**D**) shows evidence of use. (**F**) is a biface. (**G**) 2014 wall profiles showing stratigraphy, locations of artifact finds, and location of radiocarbon samples. (**H**) 2013 wall profiles showing stratigraphy, locations of artifact finds, and location of radiocarbon samples. For (**G**) and (**H**), white dots represent locations and ages of radiocarbon samples collected from profiles. Purple dots and text represent radiocarbon ages collected from within units, plotted with correct elevation, and northing or easting. Red triangles show locations of artifacts collected from within units, plotted with correct elevation, and northing or easting. Open red circle shows approximate location of artifacts found in the screen. Trees in the profile are represented by dark brown. Note that although the biface appears as if it were found in the middle of a tree, the tree only occurs in the south wall profile and does not extend into the excavation unit where the biface was found.

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Earliest known sites in the Americas (pre-Clovis)

Paisley Caves, Oregon – 14.5 kya

coprolite

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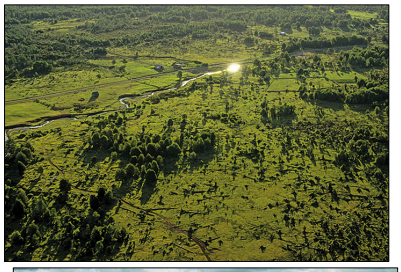
Earliest known sites in the Americas (pre-Clovis)

Monte Verde, Chile – 14.6 kya



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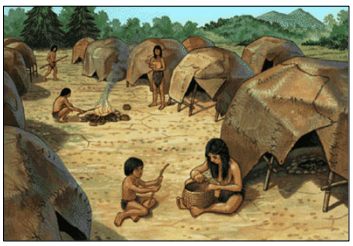
Monte Verde, Chile

- Up to 12 temporary structures with wood frames and hide walls for a community of 20-30 people
- Large, round structure with patio and sand/gravel foundation – possible special purpose structure

Preserved posts



Preserved wood remains

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Santa Rosa Island, southern California:

Island-coastal adapted cultures by 13,000+ years ago

Note: Not Clovis-looking at all!

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Other possible Pre-Clovis sites now being investigated are:

- Bluefish Caves, Yukon Territory
- Topper, South Carolina
- Cactus Hill, Virginia
- Shaefer and Hebior, Wisconsin
- Little Salt Spring, Florida
- Manis, Washington
- SV-2 (44SM37), Virginia
- Page-Ladsen, Florida
- Others… will you find and investigate the next?!

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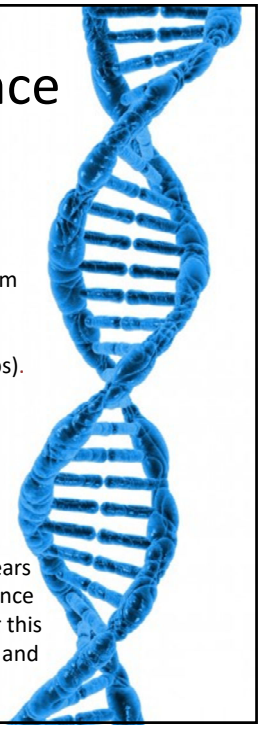
Summary of Genetic Evidence



Mutation rates in certain strains of DNA have been used to calculate the amount of time that has elapsed since different populations diverged from a common ancestor.

❖ MtDNA evidence suggests that all living Native Americans result from up to 5 founding groups (haplogroups).

❖ The Y chromosome suggests at least 2 founding groups (haplogroups).

❖ All of these founding MtDNA haplogroups diverged from an ancestral haplogroup shared by many Asian groups between 24,900 – 18,400 years ago. The Y-chromosome groups also split from Asian groups about the same time.

❖ In the Americas, diversity of all DNA types increased after 16,000 years ago as population increased and local regionalization ensued. Evidence suggests diversification into 2 major groups (limited gene flow) after this time, resulting in a northern North American group (Canada, Arctic) and a lower North American & South American group.

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(Broad) Language Families (similar to "Indo-European"):

Eskimo-Aleut (today, speakers of these languages usually call themselves Inuit, Yup'ik, Aleut, or other terms)

Na-Dene

Amerind

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