



Indigenous Awareness: Pre-Mining History

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Below BC, 2020

Moche Gold Head Dress: ancient Peru



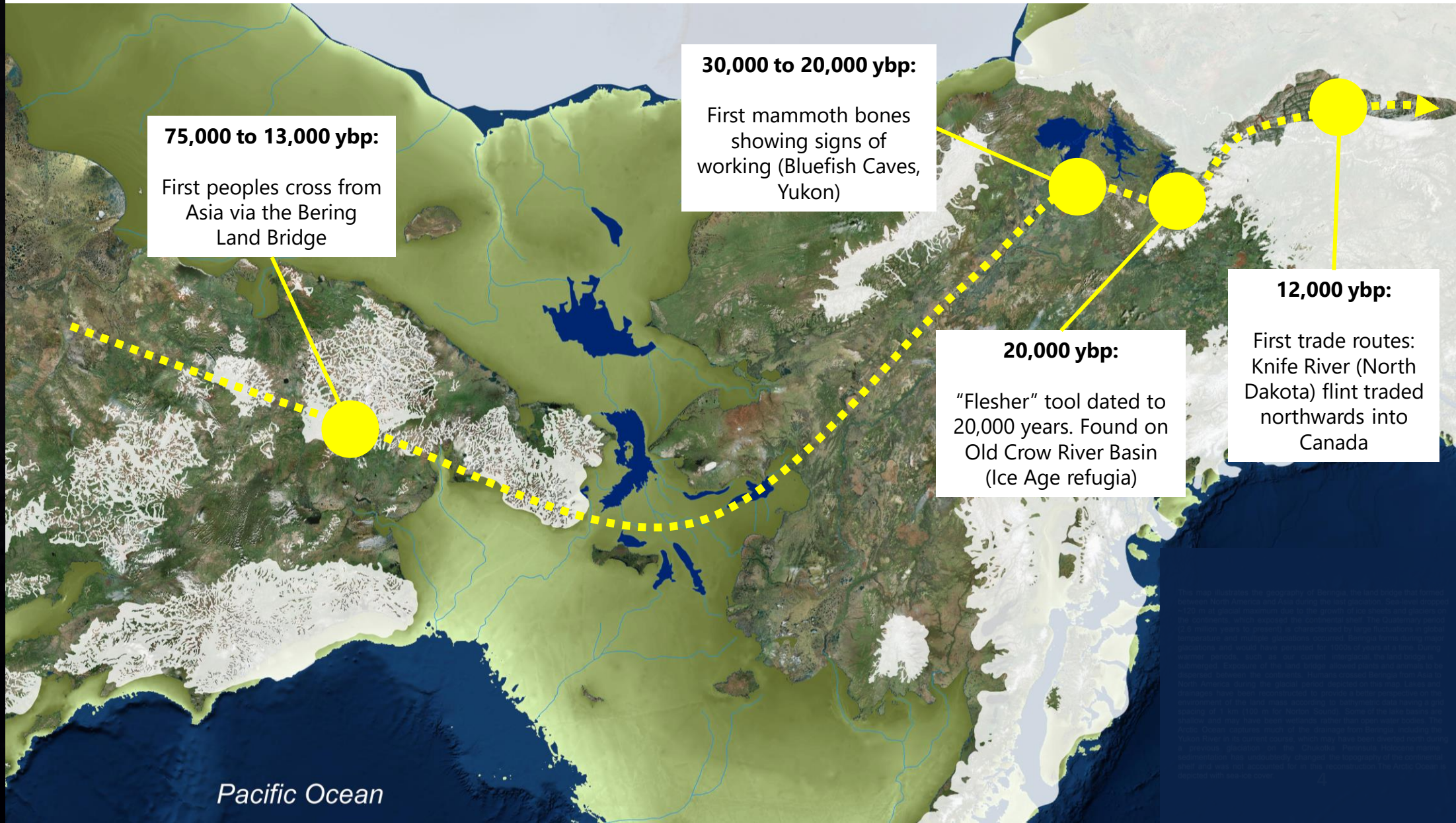
First Nations Prehistory to First Contact



Coast Salish Land

- A group of ethnically and linguistically related Indigenous peoples of the Pacific Northwest Coast
- 2013 estimate the population at 56,590
- Evidence from Mission from c. 3000BC shows established occupancy. Midden deposits in Marpole range from 2000BC to 450AD.
- Early European contact in 1791 by Spanish naval officers exploring the Georgia Strait
- In 1850 population was around 5000 due to Small Pox epidemic travelling up from Mexico through intertribal contact

Time Immemorial – Glacial Peak



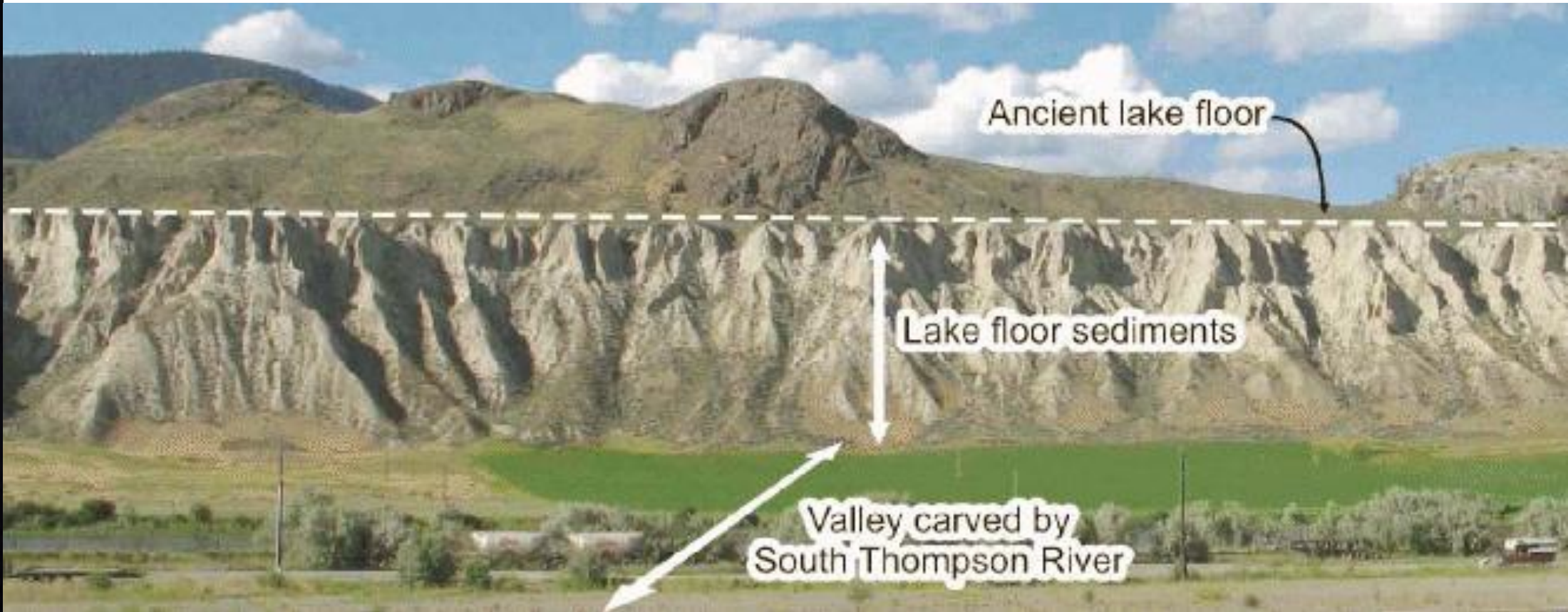
Time Immemorial – Missoula Flood



- Waters of Glacial Lake Missoula dammed by ice, which periodically breached 15,000 to 13,000 years ago, unleashing catastrophic flooding.
- Changed the landscapes, now called the “Channeled Scablands”
- Water would have obliterated all life in its path on way to ocean – and become part of oral history of Salish.

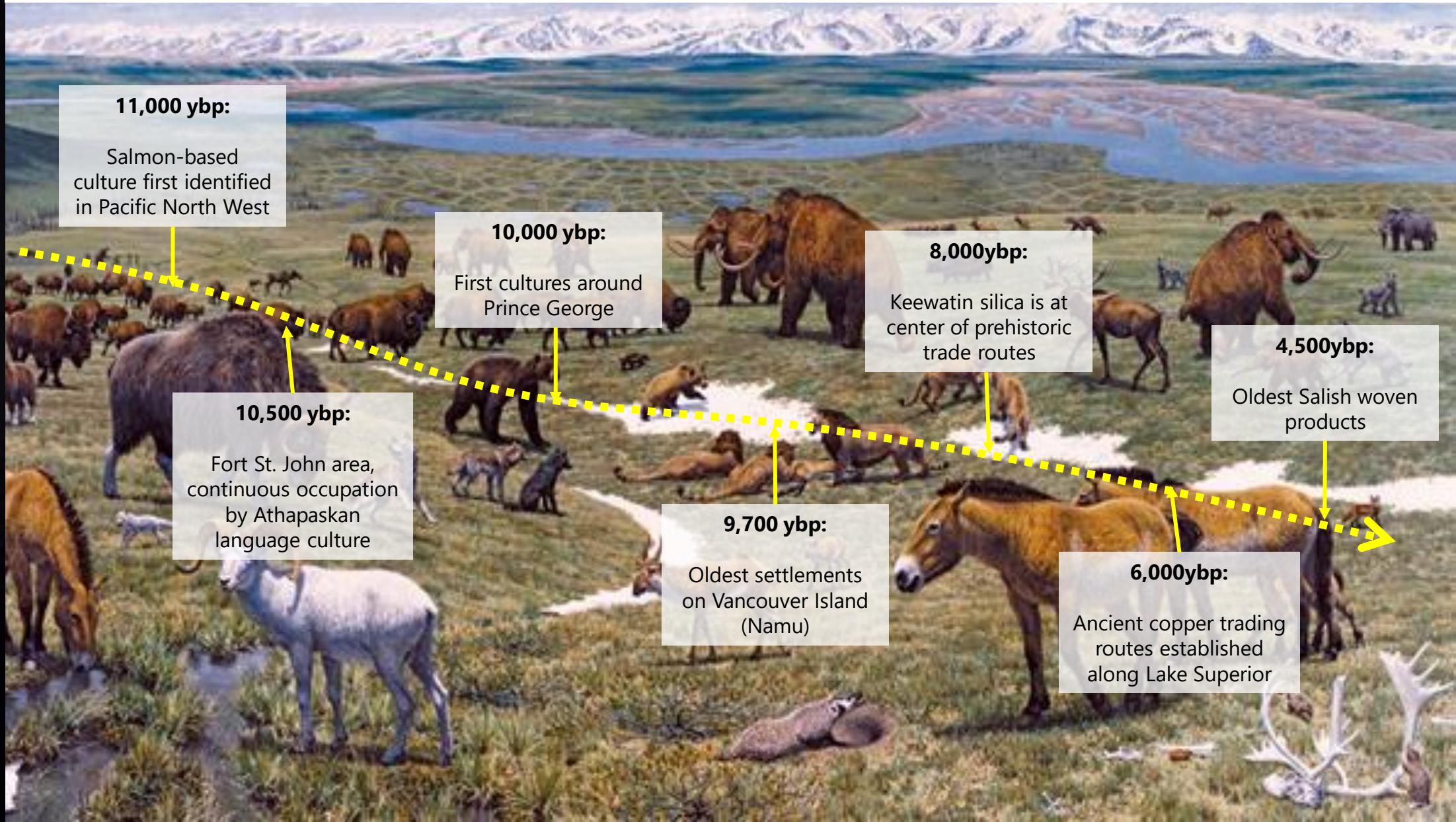


Time Immemorial – Deadman Lake Flood



- This event is more local and occurred around 10,000 years ago.
- Deadman Glacial Lake was created by an ice dam that gave way and caused catastrophic floods along the Fraser River and into the Salish Sea 250km away.
- As much as 20 cubic kilometers of water drained in a matter of days.

Time Immemorial – Deglaciation



11,000 ybp:

Salmon-based culture first identified in Pacific North West

10,000 ybp:

First cultures around Prince George

8,000ybp:

Keewatin silica is at center of prehistoric trade routes

4,500ybp:

Oldest Salish woven products

10,500 ybp:

Fort St. John area, continuous occupation by Athapaskan language culture

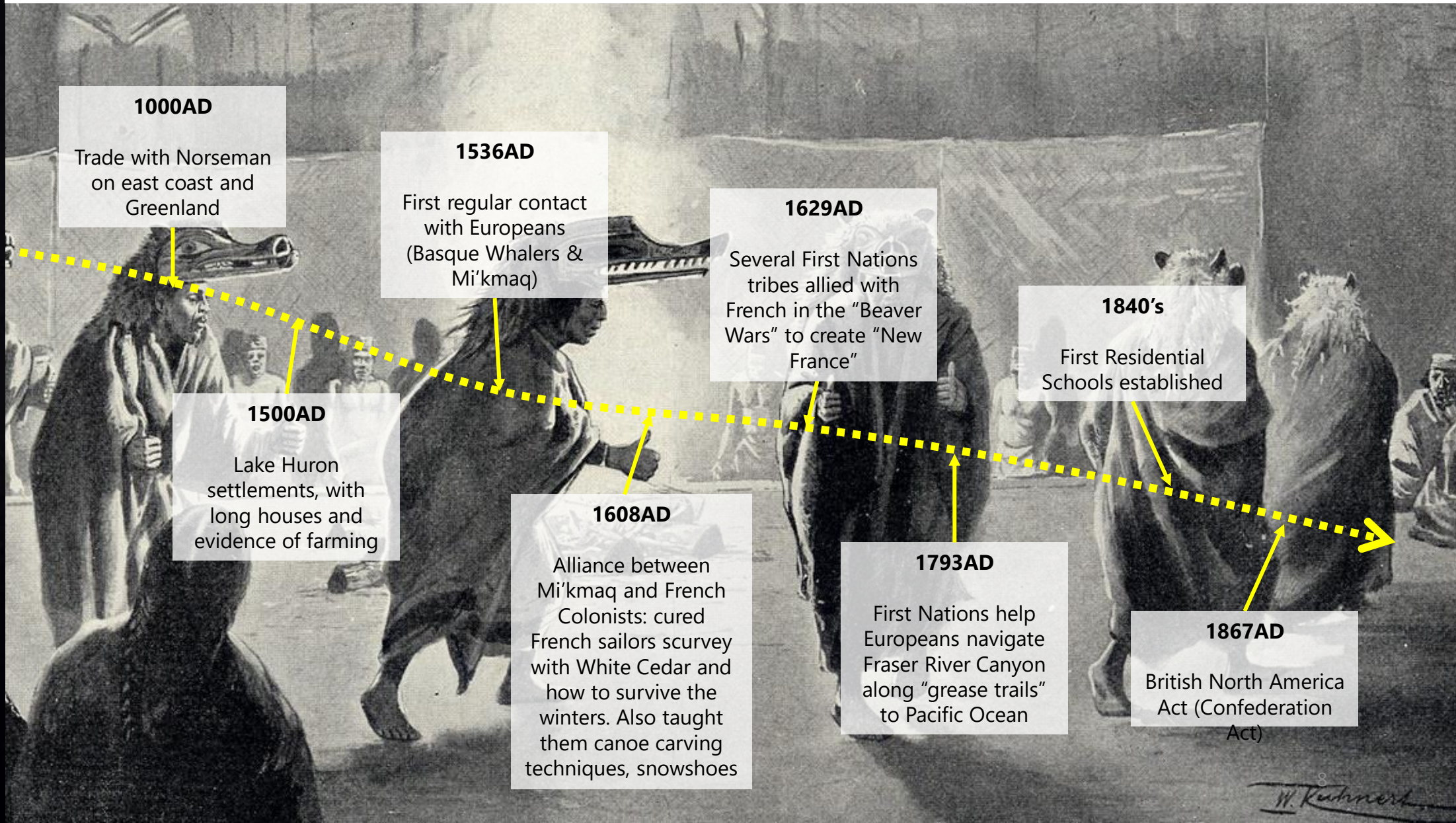
9,700 ybp:

Oldest settlements on Vancouver Island (Namu)

6,000ybp:

Ancient copper trading routes established along Lake Superior

Time Immemorial – Outside Contact



1000AD

Trade with Norseman
on east coast and
Greenland

1536AD

First regular contact
with Europeans
(Basque Whalers &
Mi'kmaq)

1629AD

Several First Nations
tribes allied with
French in the "Beaver
Wars" to create "New
France"

1840's

First Residential
Schools established

1500AD

Lake Huron
settlements, with
long houses and
evidence of farming

1608AD

Alliance between
Mi'kmaq and French
Colonists: cured
French sailors scurvy
with White Cedar and
how to survive the
winters. Also taught
them canoe carving
techniques, snowshoes

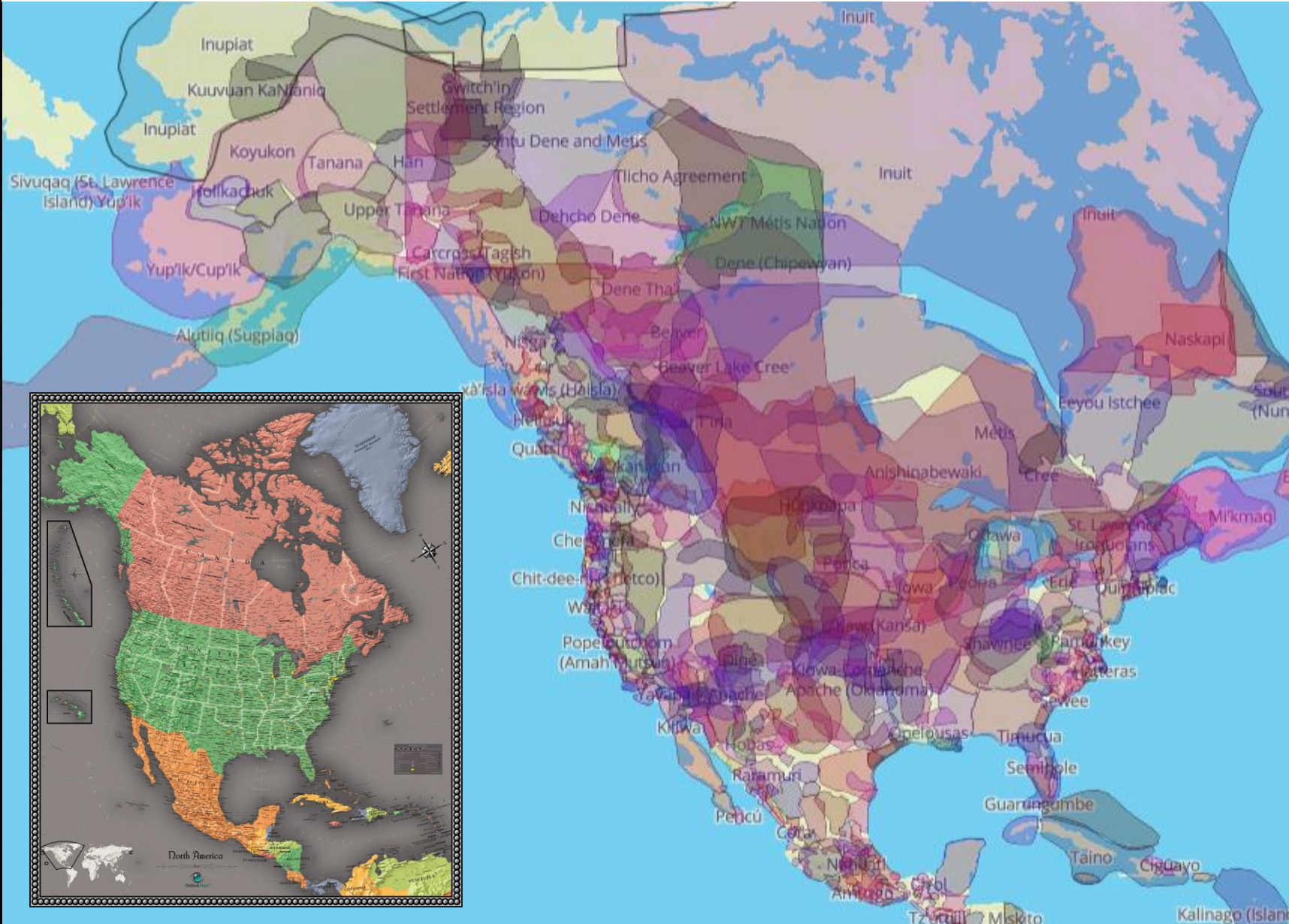
1793AD

First Nations help
Europeans navigate
Fraser River Canyon
along "grease trails"
to Pacific Ocean

1867AD

British North America
Act (Confederation
Act)

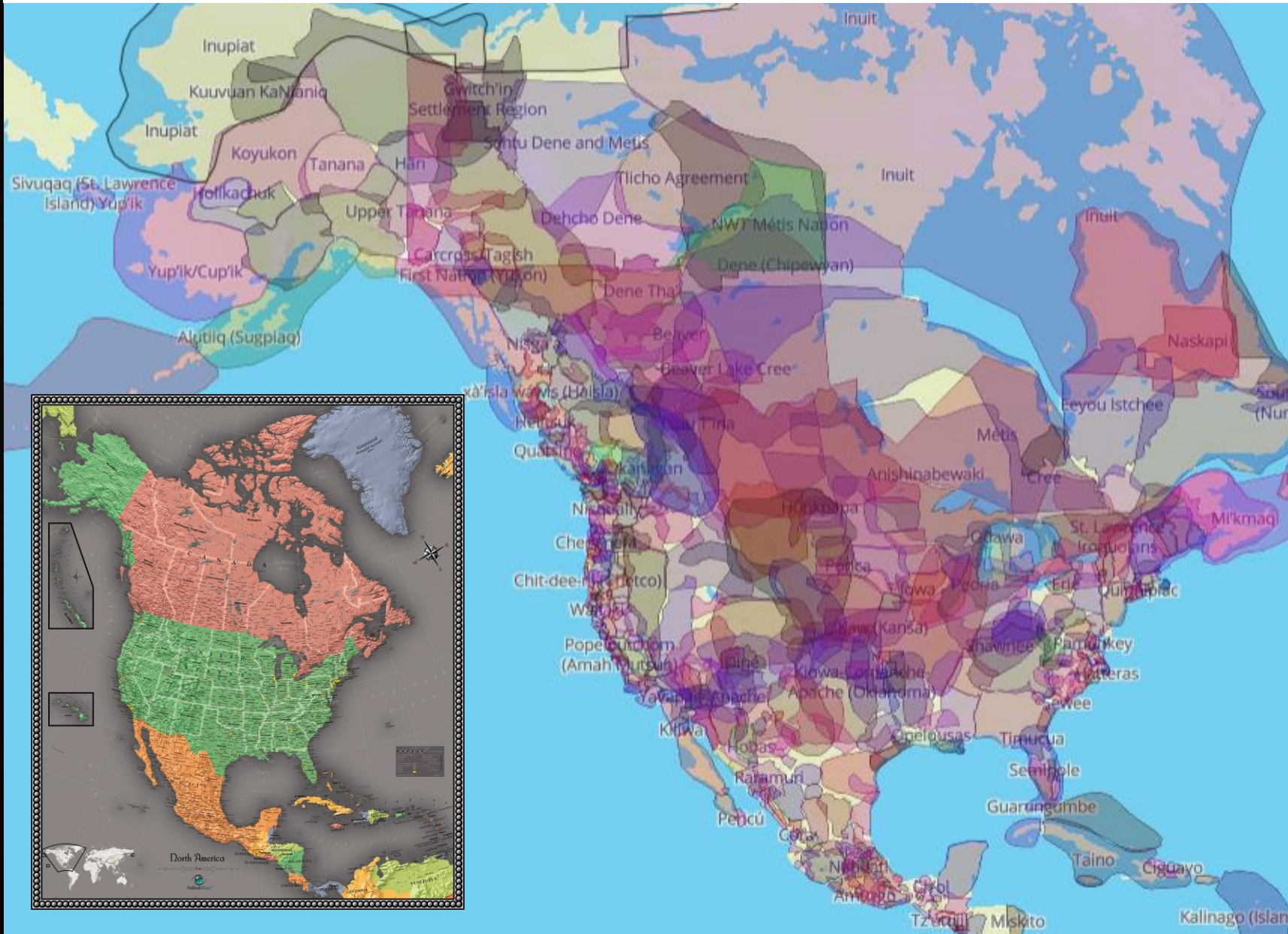
Contrasting Maps



The map of North America that we are used to (inset) is very different from a map of traditional native territories.

Suggest www.native-land.ca as a resource

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First Nations, First Miners: Creation

Iroquois Creation Story – Turtle Island

MINE8000: Module 2 2020



After the **Great Flood**, different animals were diving down for earth. **Muskrat** tired and was under water so long all assumed he drowned. But he finally surfaced, **clasping earth materials**, and so he placed them on the **back of a turtle**, creating **Turtle Island**



First Nations, First Miners: Applications

Adapted from Dr. Jim Morin, PhD, PGeo

Indigenous Peoples & Minerals

Physical Needs & Available Minerals



Jade
(Density & Tenacity)



Asphaltum
(Glue)



Coal
(Heat)



Copper
(Malleability)



Mud
(Construction)



Copper
(Ornamentation)



Ochre
(Colour)



Quartz
(Hardness)



Argillite
(Softness)



Obsidian
(Sharp Edges)



Sandstone
(Texture)



Obsidian
(Sharp Edges)



"Sharp Edges"

Sharp edged tools and implements created by chipping and flaking (knapping) silica rocks and minerals such as obsidian and flint that have a **conchoidal** fracture.

Obsidian scalpel blades still in use for fine surgeries with less scarring

How Stone Age Humans Made Hand Axes





Obsidian
(Sharp Edges)

Mount Edziza



Mount Edziza is a **stratovolcano** in northwestern British Columbia. It is in the **Tahltan Territory** and has been a source of obsidian for 10,000 years

Obsidian forms when **silica-rich lava** (i.e. **rhyolite**) **cools quickly**. This can be at the edge of a flow or when it comes into sudden contact with water or ice

"Construction"



Mud
(Construction)



Stone
(Construction)

Materials such as rocks, stone and mud is used in the construction of a range of structures.

- Fish / animal traps
- Houses and dwellings



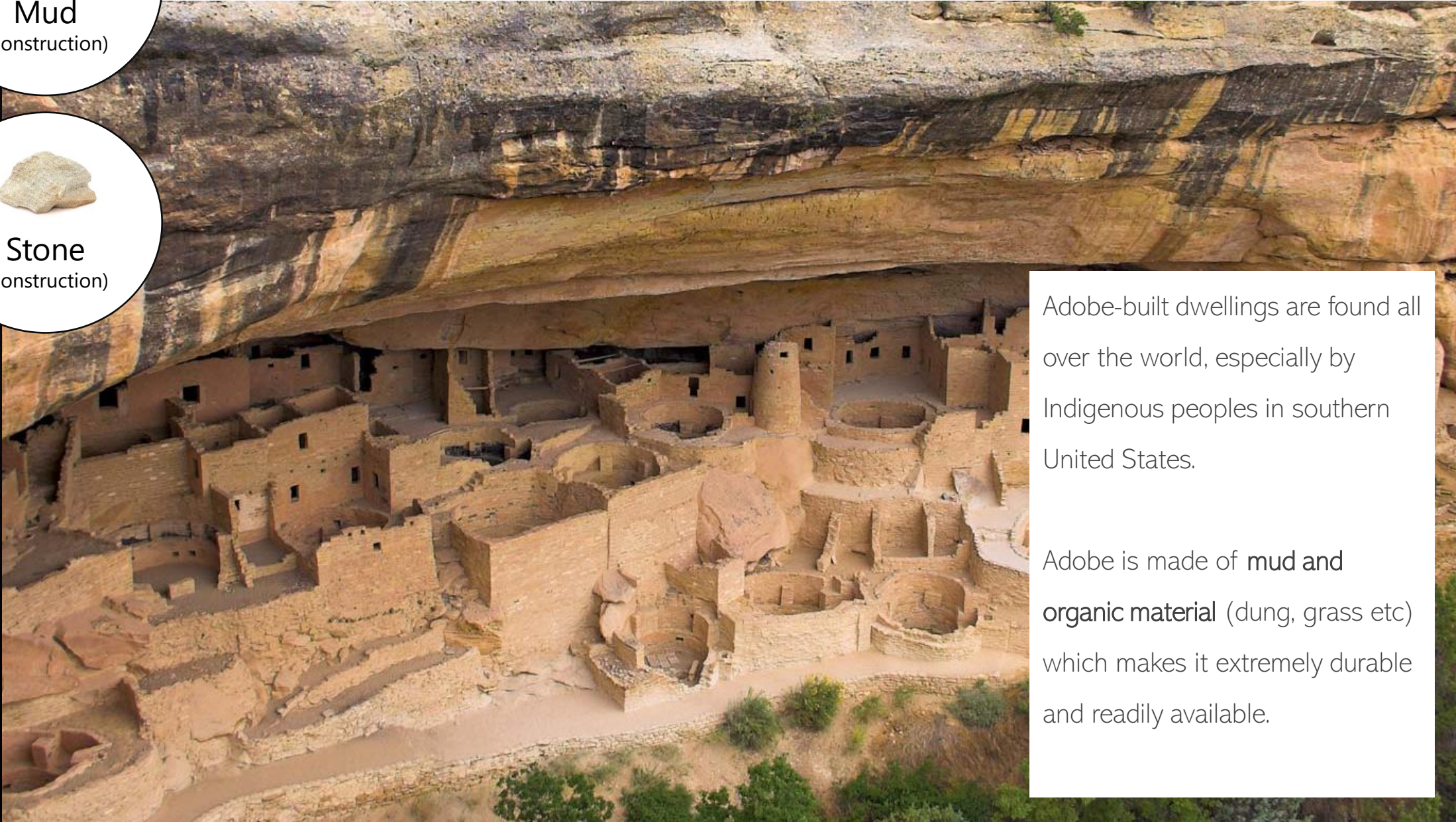
Adobe Dwellings



Mud
(Construction)



Stone
(Construction)



Adobe-built dwellings are found all over the world, especially by Indigenous peoples in southern United States.

Adobe is made of **mud** and **organic material** (dung, grass etc) which makes it extremely durable and readily available.



Copper
(Ornamentation)



"They frequently carry [pieces of copper] in their medicine-bags; they are carefully wrapped up in paper, handed down from father to son, and wonderful power is ascribed to them."

— Johann Georg Kohl 1860:60

Malleability

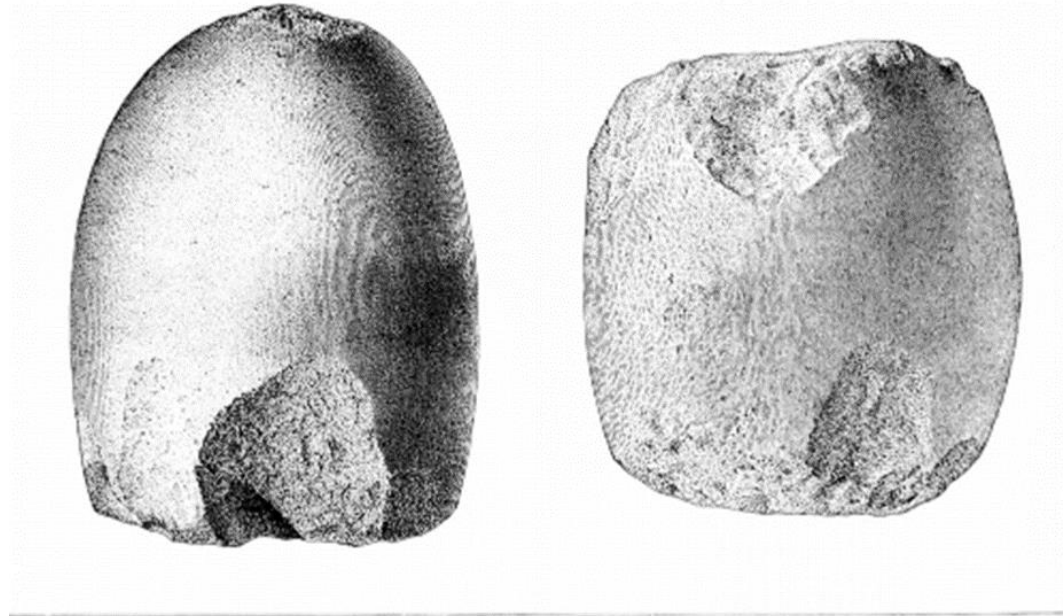
Malleability refers to the ability to be **hammered** into thinner and thinner shapes.

Deposits of native copper are found around the **western shores of the Great Lakes**, and have been used by Indigenous Peoples for over 7,000 years.

Artifacts include **projectiles**, knives, fish-hooks, awls, needles, bracelets and pendants



Copper
(Ornamentation)



STONE SLEDGES USED IN BREAKING UP THE ROCK AND FREEING THE COPPER MASSES

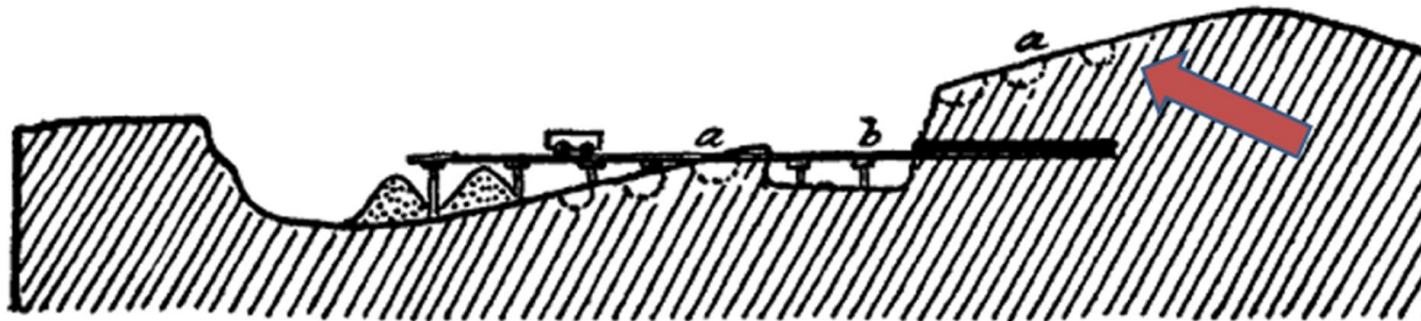


FIG. 73—General section of McCargoe's Cove copper mines. *a*, Slope of ridge with ancient pit-tings. *b*, Modern mines with tunnel, tramway, and dump.

McCargoe's Cove

Indigenous peoples first began mining copper at the McCargoes Cove Mine site in Michigan 4,500 years ago.

Native copper was extracted in pits up to 30ft deep using stone tools, with early engineering techniques of using boulders to support pit walls and drains to remove water. Fire was used to heat the rocks which could then be split by quenching with water.

Ornamentation



Copper
(Ornamentation)



Copper and gold were also used to decorate tools, jewelry and ceremonial artifacts.

Metals are chosen based on colour, shimmer, glow and reflections with light.

(Other natural materials were also used such as abalone shells which would have been extracted and carved using fine stone tools)



Argillite
(Softness)



Jade
(Density & Tenacity)



Hardness & Softness

This refers to the **ease of cutting into a material** using other objects to create items of art or utility.

Argillite is a **mudstone** that is more massively bedded and therefore lacks the cleavage of shales / slates.

Other materials include **jade, serpentine and basalt** used to carve items

Steatite (Soapstone)

Steatite is a magnesium-rich metamorphic rock, high in talc, and forms from ultramafic protolith or metasomatism of dolomites.

It is very easily carved and shaped. In [California](#), rounded blocks were cut from outcrops and then shaped using other stone tools in items such as bowls or beads.



Texture



Sandstone
(Texture)



Like modern sandpaper, rough-grained rocks such as sandstone were used to grind, cut and shape surfaces.

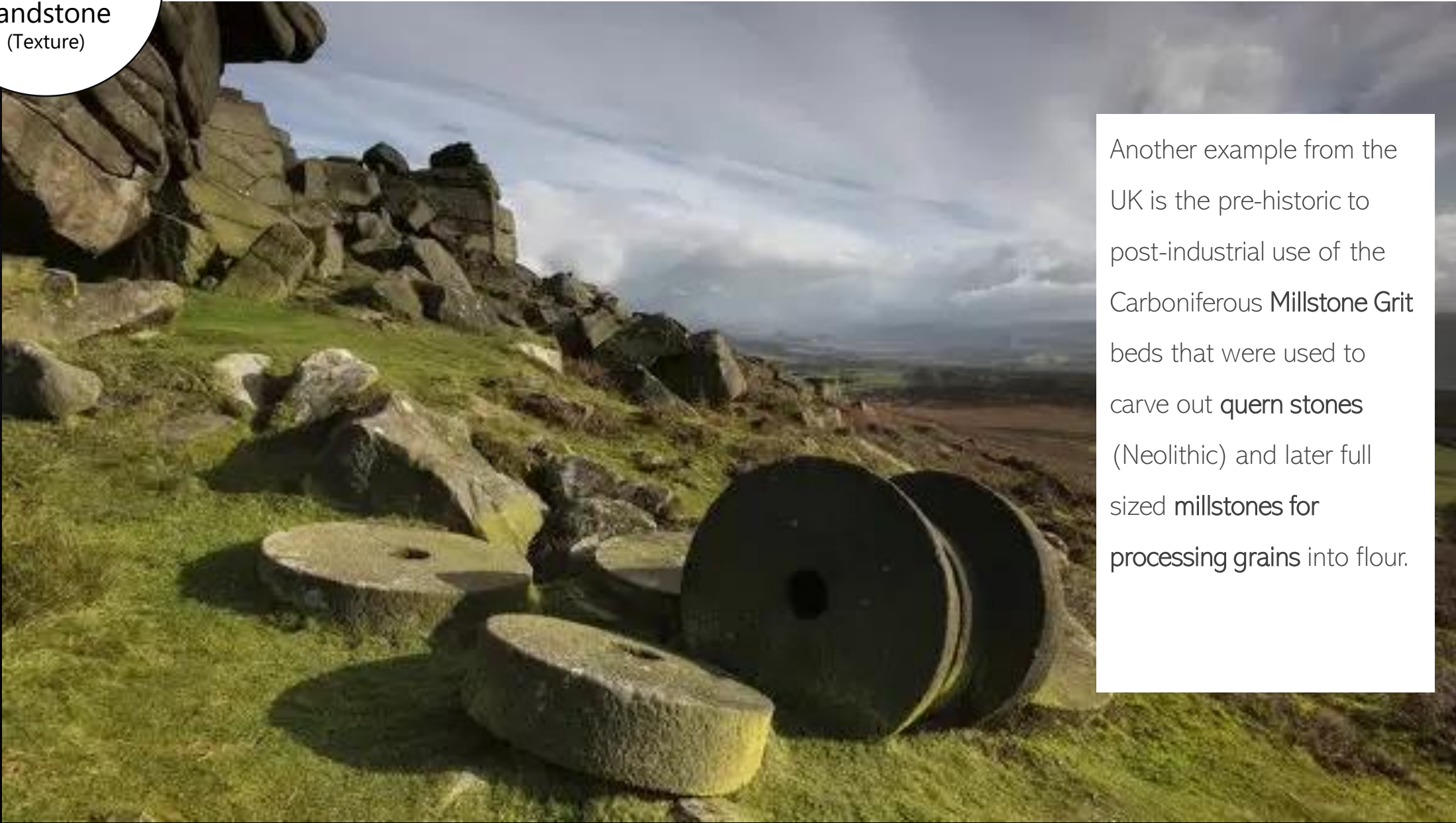
These are abrading stones, used to smooth and straighten wooden shafts for use in arrow and spear making.



Texture



Sandstone
(Texture)



Another example from the UK is the pre-historic to post-industrial use of the Carboniferous **Millstone Grit** beds that were used to carve out **quern stones** (Neolithic) and later full sized **millstones** for processing grains into flour.

Tenacity



Jade
(Density &
Tenacity)



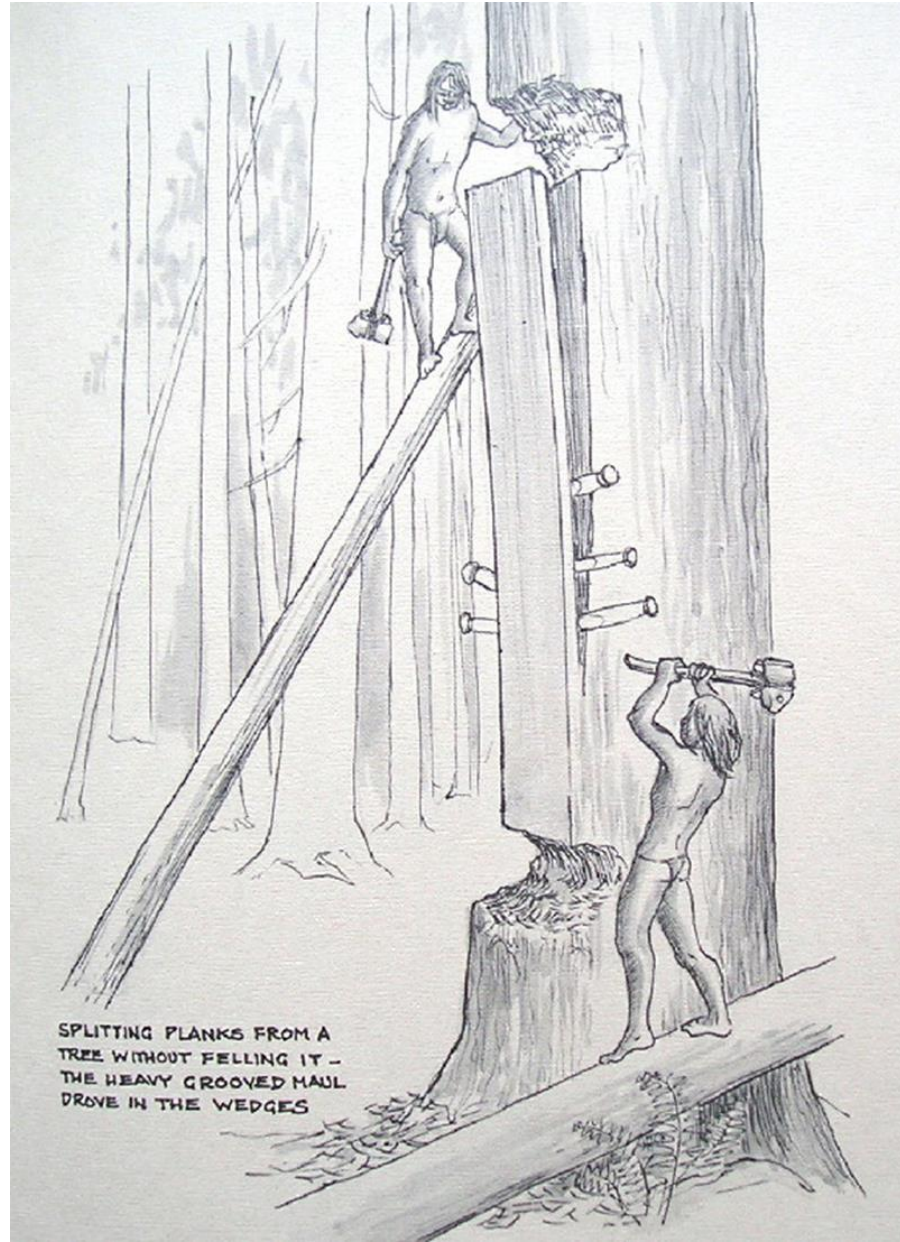
Tenacity refers to the ability for a rock or mineral to **hold together** under stress.

Jade was often used for **axe heads** (adzes) or for **hollowing out trees** to make canoes for example.

The Jade could be **reshaped** and **sharpened** as the surfaces wore down.



Jade
(Density &
Tenacity)



Tenacity

Wedges were often made of jade of similar stones that could be shaped and used to split planks for wood from trees.

This was done by hammering a series of wedges strategically into a trunk until a plank is freed.

This was a sustainable method used by Indigenous peoples as it did not require felling the tree.

Colour



Ochre
(Colour)



Copper
(Ornamentation)



Colours for decoration were made by using a variety of minerals and supplies:

- **Green:** copper minerals such as malachite, azurite
- **Red:** Iron-rich clays (Ochres) and minerals including hematite
- **Black:** Soot, coal, charcoal, lignite

Paints were made by mixing with **dried salmon eggs** and applied with brushes made from **porcupine hair**



Coal
(Heat)

Combustibility

Burning coal produces **heat** for warmth, but also for firing **clays** into hardened bowls and other utensils.

The Hopi and Navajo Indians from southwestern US would historically strip mine coal seams, but in 1974 this area was bought by a mining company and the site was named the “**Black Mesa Mine**”. Although both tribes agreed, in recent years there have been lots of **issues** over land rights and access.

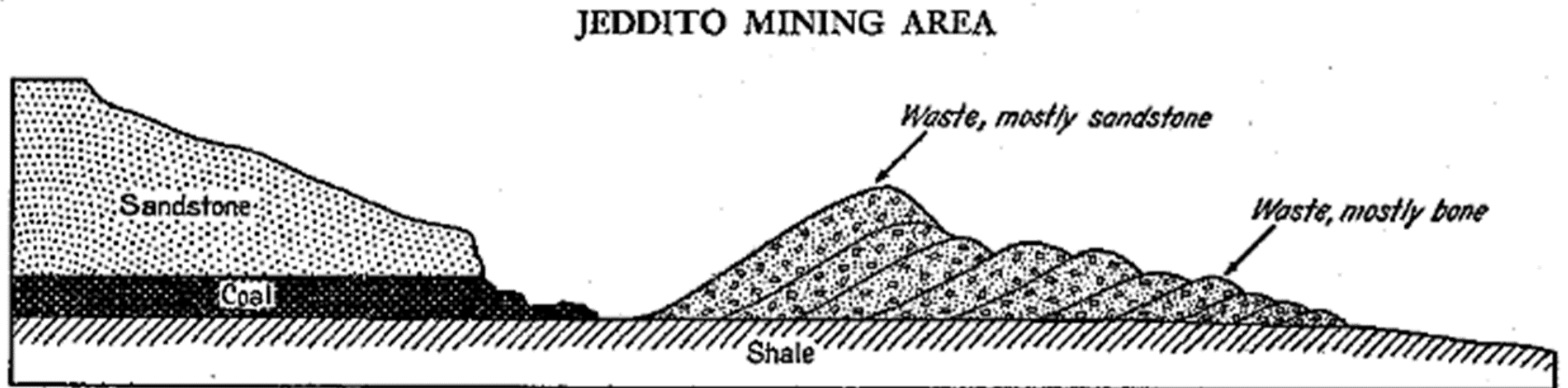
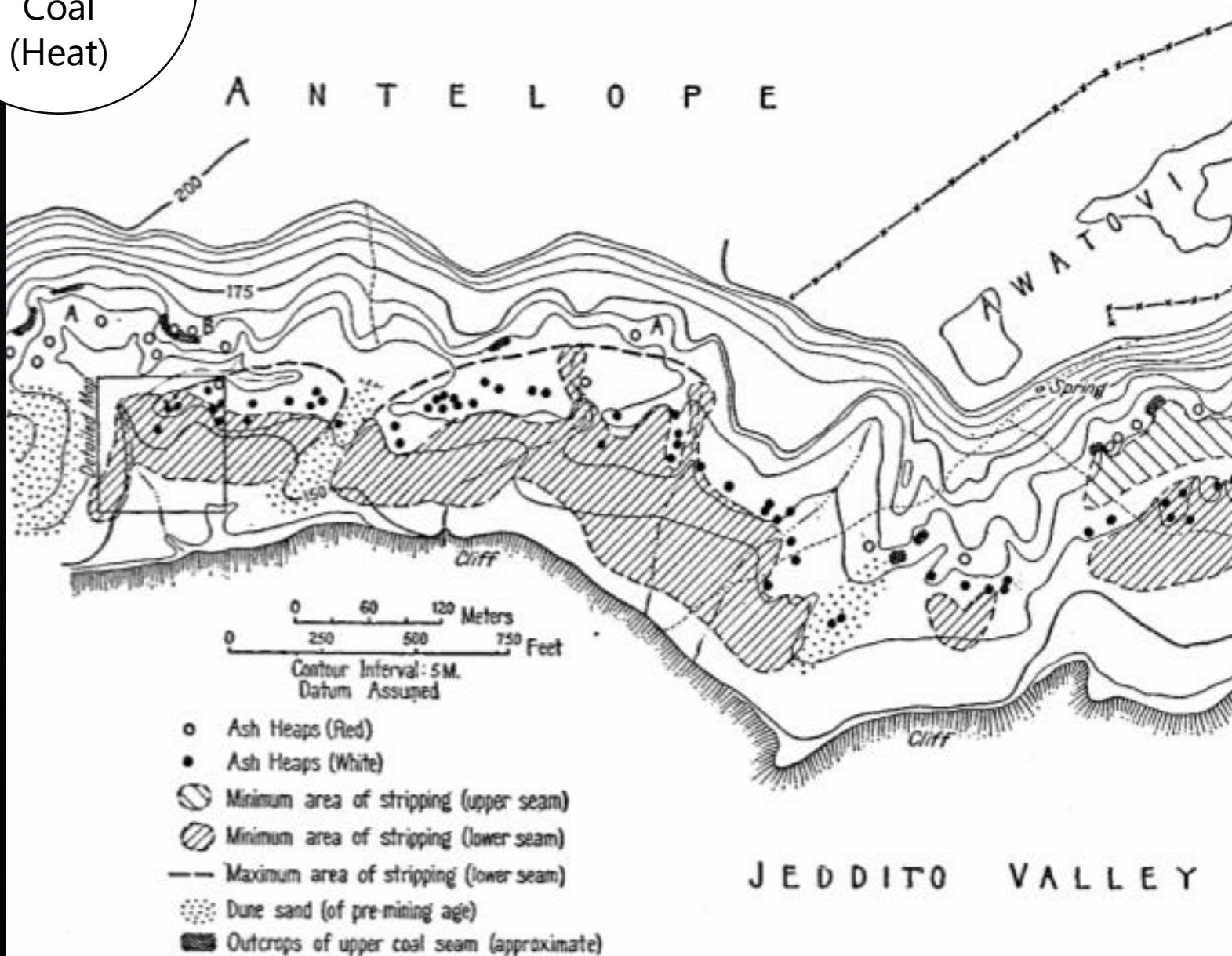


FIG. 3. Ideal section of a typical Hopi strip mine.



Coal
(Heat)



Combustibility

Prehistoric Hopi mines stretch for over 2km along the edge of the [Jeddito Valley](#).

Area is well known for its “Yellow ware” which was made with local clays, then fired and decorated using coal from these workings.



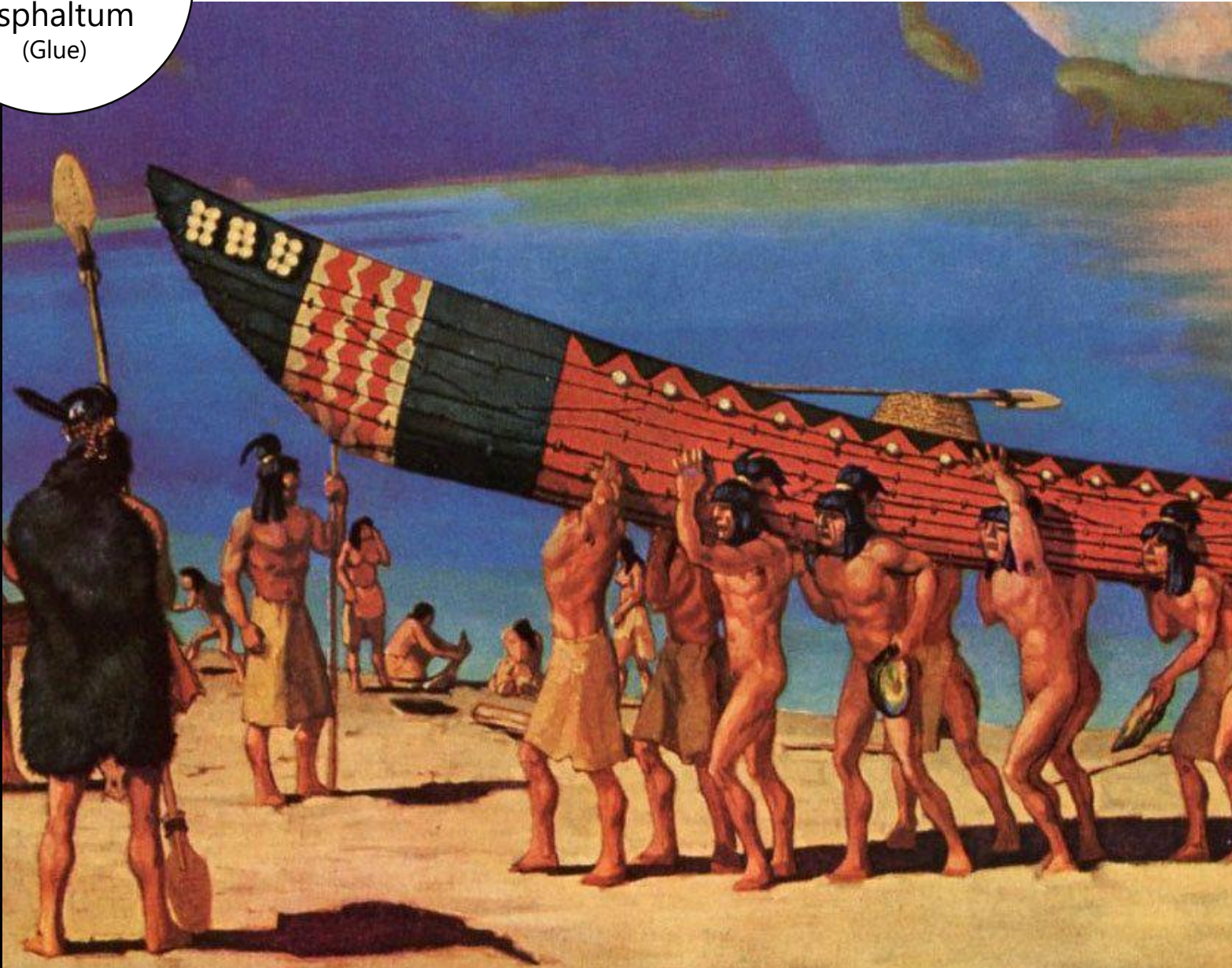


Asphaltum
(Glue)

Glues, Adhesion and Waterproofing

Asphaltum (tar / bitumen) was found as **natural seeps** on the surface. It was used to **glue** surfaces, **waterproof** bowls and canoes and also for **pigments** and in the **preservation** of bodies.

Chumash Indians of California used it extensively in **canoe building** where it was applied to woven and stitched planks to form a seal / barrier to water.



W. Langdon Kuhn '46