

Earliest Americans could not have arrived by dry land, study indicates

Research shows that ice age corridor between Siberia and Alaska would have been too inhospitable a migration route, contradicting longstanding theory



A present day view north in the area where the retreating ice sheets created the ice free corridor more than 13,000 years ago. Photograph: Mikkel Winther Pedersen

By Tim Radford

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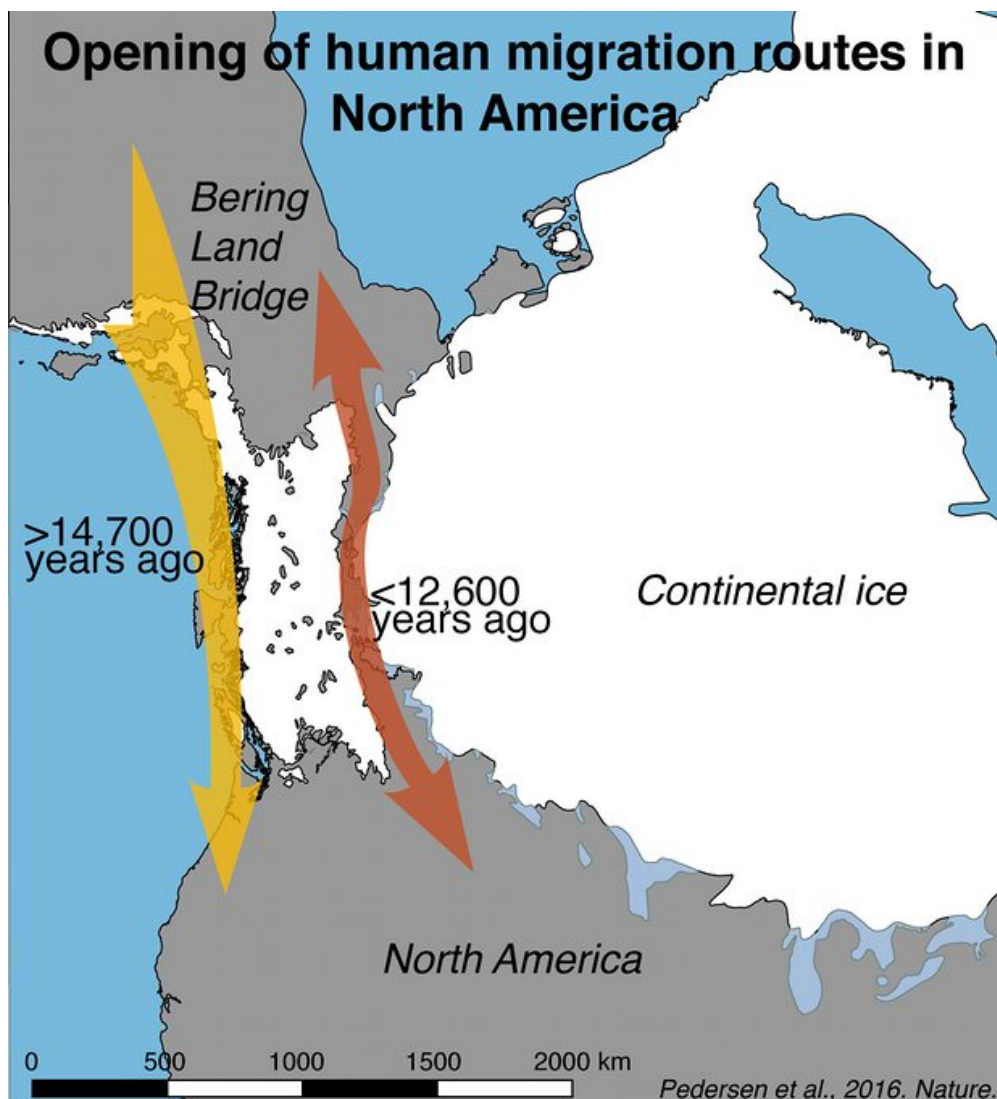
The first Americans – the earliest people to cross from Siberia to Alaska and begin the colonisation of two vast continents linked by a narrow isthmus – could not have simply followed the deer and the buffalo across dry land during the last ice age 13,500 years ago. They would have been in the right place, but at the wrong time, a new study shows.

What is now the Bering Strait would indeed then have been dry land. There was, as scientists have known for many years, an open 1500km corridor of grassland between two great ice sheets that would have made migration deep into North America possible.

But, according to a new study in *Nature*, this route wasn't fully open for traffic until 12,600 years ago.

This means the very first pre-Columbian settlement of America, perhaps by people known to archaeologists as the Clovis culture, must have been either by sea, or by hugging the Pacific shoreline, long before the ice sheets retreated and the ocean closed in to flood the Bering Strait and separate the Old World from the New.

Studies based on radiocarbon dating, pollen, fossils and ancient plant and mammal DNA from lake sediments, found that before 12,600 years ago, there were no grasses, trees, bison, woolly mammoth or rabbits to serve as food and shelter along the corridor.



Map outlining the opening of human migration routes in North America as proposed by the new study. Photograph: Mikkel Winther Pedersen

“The bottom line is that, even though the physical corridor was open by 13,000 years ago, it was several hundred years before it was possible to use it,” said Eske Willerslev, an evolutionary geneticist from the University of Copenhagen, St John’s College Cambridge and the Wellcome Sanger Institute.

“That means the first people entering what is now the US, Central and South America must have taken a different route. Whether you believe these people were Clovis, or someone else, they simply could not have come through the corridor, as long claimed.”

The corridor ran eastward of the Canadian Rockies between two great and retreating sheets of ice, and would have first been steppe, grazed by bison and woolly mammoth, and then a “parkland” of trees supporting moose, elk and bald-headed eagles. There would have been fish in the lakes. Around 10,000 years ago, the landscape was claimed by forests of spruce and pine. The ice cap retreated, sea levels rose and the [Americas](#) were cut off from the rest of the world. Later hunter-gatherers from Asia travelled down the corridor and differentiated into a wide range of peoples and cultures, to lose contact with the Old World for more than 9,000 years.

“What nobody has looked at is when the corridor became biologically viable,” said Willerslev. “When could they actually have survived the long and difficult journey through it?”

He and colleagues sampled DNA from the muds of Charlie Lake in British Columbia, and Spring Lake in Alberta, sites along the corridor, for traces of surviving DNA that would have accumulated with animal excrement and plant tissue.

The sequences told their own story. Before about 12,600 years ago, the region would have been inhospitable. But since a prehistoric people with distinctive stone tools had already colonised what would become the United States 13,000 years ago, they must have come by another route: perhaps along the shoreline of Alaska and Canada, over beaches, dunes and estuaries long since covered by the Pacific Ocean. How they did this is speculative: there is no evidence from that era of any boat travel.

But Mikkel Winther Pederson, of the University of Copenhagen Centre for Geogenetics, and a co-author, sees a possible parallel with the modern Inuit peoples of the Arctic region, who find their food and skins both on land and at sea.

“In caves along the coast archaeologists have found evidence of bear and reindeer dating back 16,000 years; this suggests that the coastal route would have been open earlier for human migration,” he said.

“However, as the coastlines at this time have been inundated by the sea level rise the majority of the archaeology is now underwater.”

