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Climate and Forests

During the lifetime of the Barum woman, temperatures in Scandinavia were more or less as they are today. The forests were dominated by pine and hazel. Nutritious hazelnuts were a key part of people's diet. Hardwood deciduous trees such as oak, elm, ash and lime were also to be found in the forests. About 8,800 years ago the climate started to become damper and slightly warmer, which was favourable for hardwood trees.

When the people of Motala gathered some 8,000 years ago for their strange funerary rites, the southern half of Sweden had a climate not unlike that of England today. The woods became ever denser, with ivy and prickly bushes occupying the ground between the trees. There were plenty of dead trees to provide a habitat for birds and insects. This type of natural environment dominated western Europe for thousands of years, yet today there are virtually no traces of it left. Practically all the ancient deciduous forests have been cut down to make way for farmland, towns and roads.

To experience a forest something like those where our relatives lived during this part of the Stone Age, you have to visit a nature reserve. In such surroundings, you can find small fragments of the original European deciduous forest. One example is Vitsippsdalen ('the Vale of Wood Anemones') in Gothenburg's botanical gardens, where I walk whenever the opportunity arises. When I am there, I think about how humid, leafy woods just like this, full of songbirds in spring, were long the norm in the southern half of Sweden and across much of Europe.

The most extensive and cohesive vestiges of Europe's virgin forests are to be found in Białowieśka, on the border

between Poland and Belarus. When travelling through the region a few years ago, I was struck by the impenetrable density of the forest and by how difficult it is for the sun to filter through the leafy treetops. When dense forests of this kind took over in southern Scandinavia, the habitat was no longer suitable for reindeer, horses or the great aurochs. Deer and wild boar accounted for most of the available quarry. On the one hand, such game animals were plentiful, as the forest provided such a wealth of food. On the other, it was a challenge for people to locate their quarry in such dense vegetation, and actually moving around within the forest was difficult.

Archaeological finds from Denmark and elsewhere show that bows and arrows became common at precisely the time that forests were becoming denser. Spear throwers had been an effective weapon in the earlier open landscape characteristic of the Ice Age. But now that people needed to pick their way stealthily through dense forests and target their prey from different angles, bows were a much better weapon. And of course there were dogs too. In my view, the archaeologist Martin Street, based in Germany, is on the right track with his idea that hunting with dogs came to play a more important role once the open landscape was replaced by dense forests. Dogs may also have helped people hunting waterfowl from canoes by swimming to retrieve their prey.

Canoes were an indispensable means of transport when the forests grew denser. On land, all the trees and bushes made it more difficult to travel long distances, as people had been able to do when the landscape was more open. Moreover, people gradually felt less need for contact with groups living a long way away. The good life in virginal northern Europe in the warmer period after the Ice Age gave a big boost to population size, thereby improving the chances of finding companions and marriage partners close at hand. There was no longer any need to trek over hundreds of kilometres to have some company – two or three dozen were sufficient.

As a result, groups of people became more isolated. This can be seen from the tools they left behind; increasingly, these show specific local features.

When the climate was at its warmest, Sweden was a few degrees warmer than it is today; temperatures were more or less what they are expected to be in a few decades' time, as a result of the global warming that is currently under way.

But 8,200 years ago there was a backlash. The cold made a comeback, probably owing to the weakening of currents in the Atlantic, including the well-known Gulf Stream. This brief cold spell lasted for a few centuries. It was at its worst for a period of about four years. People who had managed to adjust to a mild climate were catapulted back into a climate as bitter as that of the Ice Age. It was as if modern-day people from southern Sweden suddenly had to cope with a climate like that of Greenland.

As if it were not enough that temperatures varied unpredictably, the same applied to the sea level. When the great glaciers of the Ice Age melted, the water ran out into the sea and other bodies of water. Moreover, the land rose in much of Scandinavia. The bedrock, once weighed down by kilometre-thick layers of heavy ice, rose up again once the masses of ice had disappeared.

The land is continuing to rise in much of Scandinavia, but it was a much faster process initially. The hunters of the Stone Age sometimes witnessed entirely new land masses emerging from the sea within a matter of years. Conversely, their settlements and habitual hunting grounds were often engulfed by water.

That is exactly what happened to Doggerland, where the flooding was particularly catastrophic. People had lived for millennia in the regions between Britain and Denmark. There may have been relatively small groups of mammoth and reindeer hunters there even during the Ice Age. Unlike Scandinavia, which was largely covered by thick glaciers,

parts of Doggerland seem to have remained ice-free even during the coldest periods.

After the end of the Ice Age, Doggerland's climate grew warmer, just as in the rest of northern Europe. The vegetation changed. Hazel bushes spread over an increasingly wide area where once there had been only tundra, and gradually dense forests of hardwood broadleaf trees also emerged. The old fauna that people had once hunted disappeared. The people who remained in the region were obliged to adapt to a new way of life based more on hunting deer and wild boar.

At the time when the climate was at its very coldest, parts of the northern coast of Doggerland probably stretched up to the same latitude as the Shetland Islands and the Norwegian city of Bergen. However, the more the sea level rose, the more Doggerland shrank. Researchers calculate that the sea rose by 1.25 metres (4 $\frac{1}{8}$ feet) per century. That corresponds to the changes today's young people may experience if our emissions and global warming continue at their current rate.

Doggerland dwindled, becoming increasingly dominated by river deltas, lakes and marshes. Covering reasonably long distances on land became more and more difficult. Canoes became an essential means of transport. Increasingly, the hunting of deer and wild boar was supplemented by fishing and hunting seabirds. The whole region underwent major changes. For all that, however, it was a remarkably productive landscape; some scientists describe it as one of the most favourable environments in the whole of Europe.

The cold spell that occurred 8,200 years ago was, of course, a major blow that doubtless caused many deaths, both in Doggerland and in the rest of north-western Europe. Three or four generations later – 8,100 years ago – disaster struck once more. Large tracts of rich countryside disappeared under water.

The reason for this was the Storegga Slide, a very extensive landslide on the seabed in the Norwegian Sea between Iceland and Norway, at the same latitude as the Norwegian city of Trondheim. This landslide gave rise to a tsunami that was the most powerful ever documented in northern Europe.

Along the Norwegian seaboard, the land closest to the slide, the waves were between 10 and 12 metres (33 and 39 feet) high. No one who was near the shore at the time can have survived. However, those that were up in the mountains – on a hunting expedition, perhaps – would have managed to stay alive. One can only try to picture these hunters' horror when they returned and found their base camp destroyed by the waves, with all their family members drowned.

No one on Doggerland's low-lying shoreline can have survived either. Although the tsunami waves were only three or four metres (10 to 13 feet) high here, the land was flatter than the Norwegian coast, and there were no high mountains where anyone could take refuge.

It is, of course, theoretically possible that a few of Doggerland's inhabitants were in their canoes far out at sea, perhaps to fish for mackerel or hunt seabirds. Out on the deep, the tsunami would have been scarcely perceptible, just a few centimetres high. The boat would have rocked a little, but the seafarer would not have felt anything else – until he or she paddled back to the shore, where the wave had destroyed everything. The whole settlement would have been flooded and all friends and family swept away.

The sea level continued to rise over the centuries that followed. Doggerland is still under water. The land that was home to people for millennia now lies at the bottom of the sea.

I began to ponder when my own foremothers had arrived in Scandinavia and which route they had taken. Did they paddle across the sea from Doggerland? Did they walk across a dry Öresund Strait, or did they take the long way round via Finland? To answer these questions, I needed more comprehensive analyses of my mitochondrial DNA than the Icelandic company deCODE was able to offer.

In the summer of 2013 I bought a test kit from Family Tree DNA (FTDNA), a US company that specialises in

catering to family history researchers. I scraped the inside of my cheek with a small plastic spatula, put the sample in a test tube and sent it in an envelope to the laboratory in the United States. A few weeks later I received the full details of my mitochondrial DNA – the most exhaustive mitochondrial test in existence.

I found out that I belong to subgroup U5b1b1.