



THE LOST WORLD

Armed with a map depicting a 10,000-year-old landscape submerged beneath the North Sea and fresh evidence from nearby sites, archaeologists are realizing that early humans were more territorial than was previously thought. **Laura Spinney** reports.

Pilgrim Lockwood, the skipper of a British fishing trawler named *Colinda*, wasn't quite sure what to make of the thing his nets had scraped up from the bottom of the North Sea. Just over 21 centimetres long, it was made of antler with a set of barbs running along one side. Back on land, Lockwood gave the artefact to the ship's owner, and it eventually made its way to a museum in Norwich, UK. It turned out to be a prehistoric harpoon point dating to the Mesolithic period, between about 4,000 and 10,000 years ago.

That was 1931, and archaeologists studying the artefact, which became known as the *Colinda* point, began to realize that hunter-gatherers would once have roamed across a vast plain that connected Britain to the rest of Europe. But they had no idea what the plain looked like or what life would have been like for the harpoon's makers. Now researchers have drawn the first map of that lost world, sketching out a 10,000-year-old landscape filled with marshes, rivers and lakes. It turns out that the region they call Doggerland may have been a sort of paradise for Mesolithic people.

Because the archaeological evidence from the period is thin, Mesolithic people have in the past been depicted by researchers as restless nomads and Doggerland as a land bridge

through which they passed without leaving a trace. The new map suggests that, on the contrary, Doggerland would have been an ideal environment for them to linger in — until sea levels, rising since the end of the last ice age, finally inundated it, turning Britain into an island about 8,000 years ago. Along with other new discoveries in Britain and continental Europe, the research is helping to fill in crucial gaps in the current knowledge about Mesolithic life. “Doggerland is key to understanding the



A sketch of the Mesolithic harpoon point found in the North Sea by the *Colinda* in 1931.

Mesolithic in northern Europe,” says Vince Gaffney, a landscape archaeologist at the University of Birmingham, UK.

Along with his colleagues Simon Fitch and the late Ken Thomson, Gaffney established the mapping project to outline the terrain of Doggerland, named after the sandbank and shipping hazard of the Dogger Bank (see ‘Mesolithic sites around the North Sea’). They managed to borrow seismic survey data, which outline sediment layers below the seabed, from the Norwegian oil company Petroleum Geo-Services. The researchers then put their powerful computers to work to

reconstruct Doggerland in three dimensions.

In a pilot project beginning in 2002, the researchers reconstructed 6,000 square metres of the ancient landscape — slightly larger than a football field. There, about 10 metres beneath the modern seabed, they discovered the course of a major ancient river, almost as big as today's Rhine. They named it the Shotton River, after Birmingham geologist Fred Shotton who, among other things, was dropped behind enemy lines to map the geology of the Normandy beaches before the D-Day landings. Now confident that the reconstruction would

work, the researchers expanded the project. The result is a 23,000-square-kilometre map of a part of Doggerland — an area the size of Wales — that they hope eventually to extend northward as well as eastward, towards the Netherlands¹.

Archaeologists are excited about the map for several reasons. First, with an idea of how the terrain undulated, they can work out how, and how quickly, it was submerged. It is thought that the sea level rose no faster than about one or two metres per century, and that the land would have disappeared in a series of punctuated inundations. “It was perfectly noticeable in a generation,” says marine archaeologist Nic Flemming, a research fellow at the National Oceanography Centre of



A Mesolithic-age artefact, made from the antler of a red deer, trawled from the bottom of the North Sea.

understand their meaning,” says Hans Peeters of the National Service for Archaeology, Cultural Landscape and Built Heritage in Amersfoort, the Netherlands.

Jan Glimmerveen, a Dutch amateur archaeologist, has over the past decade collected around 100 Mesolithic artefacts, which he gets from fishermen trawling the southern North Sea. The material includes an adze- or axe-like tool made from an antler, with part of the wooden shaft preserved, and a tool made from the bone of an aurochs, a large type of extinct cattle. Some of the artefacts have been radiocarbon dated

to between 10,000 and 8,100 years ago, and all come from a small area just off the southern edge of the Birmingham map of Doggerland. The Dutch call it ‘De Stekels’ (‘The Spines’) because there are steep dunes that were probably once close to a river. Although the artefacts were lying loose on the seabed, Glimmerveen is convinced there was a Mesolithic settlement on or close to those dunes, and Peeters agrees. “You can look at it in a similar way to ploughed fields,” he says. “Objects may have been

displaced, but not over very large areas.”

Dutch researchers have a unique opportunity to retrieve Mesolithic material that was once underwater but now is part of reclaimed land. Peeters, for instance, works in a region of the central Netherlands, the Flevoland polders, that was reclaimed from an inland sea in the mid-twentieth century. In the early Mesolithic period, this area would have been tidal wetlands. Later it became a peat marsh, and the ancient bog has yielded a wealth of objects, including pottery and flint tools, that he thinks were deposited as a ritualized reference to lost ancestral lands³.

Back on the British side, archaeologists are extracting Mesolithic information from a submerged site known as Bouldnor Cliff in the Solent, the stretch of water separating the Isle of Wight from mainland Britain. As sea levels rose, swelling rivers deposited sediments over a Mesolithic

valley. When the Solent began to form around 5,000 years ago, it eroded first the sediments and then the original valley floor. That erosion is continuing today, and near the Isle of Wight’s shore, it is uncovering signs of Mesolithic human activity. A few scattered flints emerged first, followed by the remains of what could be a wooden dwelling and then, last summer, tools, wood chippings and part of a log boat.

“In general the preservation is immaculate,” says Garry Momber, director of the

“Doggerland is key to understanding the Mesolithic in northern Europe.”

— Vince Gaffney

H. WILDSCHEUT University of Southampton, UK. “But nobody had to run for the hills.”

Second, researchers can now start to predict how Mesolithic people might have used the terrain. But it won’t be easy. Working with divers and remotely operated vehicles is complex and expensive, and the new map isn’t detailed enough for underwater excavation purposes: the smallest detectable feature on it is about 10 metres high and 25 metres wide.

To get a more detailed picture of what Doggerland might have looked like, computer specialist Eugene Ch’ng of the University of Wolverhampton, UK, is building a virtual-reality simulation. Starting with a 27-kilometre stretch of the Shotton River, he has recreated a Stone Age settlement by the water’s edge, at the confluence of two rivers, complete with thatched huts and racks for drying fish and tanning hides².

The virtual vegetation is faithful to the palaeobotanical record, right down to the stinging nettles. There are fish in the rivers, birds in the air and boar in the woods — although for now these are just avatars rather than accurate biological models. The only thing that is missing is the people, but Ch’ng will add them soon. He is constantly feeding new data into the simulation, and his ultimate goal is to turn the virtual reality into augmented reality, in which archaeologists need only don a headset to enter the Mesolithic landscape.

Found artefacts find meaning

The most immediate way in which the map will be useful, however, is in giving context to marine archaeological finds. For more than a century, fishing boats — particularly Dutch beam trawlers, whose nets scrape the seabed — have been scooping prehistoric material out of the North Sea. Most of it dates from the Palaeolithic, the vast era that ended around 10,000 years ago, and includes the bones of woolly mammoths and reindeer from the last ice age. But there is also some more recent, Mesolithic material. Until now, archaeologists haven’t been sure how to interpret these scattered remains. But with the Doggerland map, “we’ll be able to position the archaeological finds within that landscape to

MESOLITHIC SITES AROUND THE NORTH SEA



Death in the Mesolithic

Mesolithic burials in northern Europe could be elaborate. People were buried lying, sitting cross-legged or on their bellies. They were buried with goods that included dogs, red deer antlers, food and amber beads. At Vedbæk Bøgebakken, north of Copenhagen, a newborn baby was buried on a swan's wing, next to a woman who is presumed to have died in childbirth.

But quite possibly, Mesolithic people in Britain didn't practise the same traditions. The only known Mesolithic burial site in Britain is Aveline's Hole, a cave in Somerset where the remains

of around 50 individuals dating from approximately 10,000 years ago were discovered in 1797. It's possible that archaeologists have been looking in the wrong places for other graves, but another explanation is that British burials were totally different from those on mainland Europe.

If so, then the submerged landscape of Doggerland could throw light on how burial practices diverged as Britain became isolated by rising seas. In Denmark, burial rites seem to have been concentrated on the coast, and there is evidence that the dead may have been placed

in canoes and sunk at sea. "I suspect that will be commonplace in Doggerland," says Kristian Pedersen, a historian at Newcastle University, UK.

Mesolithic people seem to have respected body integrity more than their successors in the Neolithic, who commonly re-entered graves to remove bones, which they then stacked in ossuaries. During the Mesolithic, "the bodies are buried fresh, they're buried intact and without a lot of disturbance", says archaeologist Liv Nilsson Stutz of Lund University in Sweden. However, there are also augurs

of what was to come. "There are examples in which people have opened the burials up and retrieved bones," she says.

Death in northern Europe was often violent. At Vedbæk Bøgebakken, one woman has a projectile point embedded in her spine, and similar finds have been made at the Breton cemeteries of Tévéc and Hoëdic. Pedersen says this fits with the notion that Mesolithic people might have embraced the concept of territoriality. "It is suggestive of some sort of conflict," he says. "People squabbling over fishing grounds, maybe." **L.S.**

Hampshire and Wight Maritime Trust for Maritime Archaeology in Southampton, who is overseeing the project. He believes Bouldnor Cliff may have been a boat-building site, which is significant because it was far from the coast and so the boats would have been used only on a local lake. "We're finding evidence of sedentism," he says. "These people would have been living and working the land, maybe to a greater extent than we understand now."

Nomads settle down

Attachment to the land, ritual practices and sedentism are usually associated with later, Neolithic people. The boundary between the Mesolithic and Neolithic periods is defined as when farming begins to be practised in an area, and it generally dates to between 4,000 and 6,000 years ago in northern Europe. The stereotype of Mesolithic people is as "surviving in this harsh wilderness", says Peeters. "It was only with the introduction of farming that this poor and risky way of life was gradually brought to an end." This view, he thinks, short-changes Mesolithic people and the imaginative ways they may have used the landscape, both in life and in burial practices (see 'Death in the Mesolithic').

Evidence supporting this more complex view of Mesolithic life comes from Tévéc and Hoëdic, two Mesolithic burial sites on the coast of Brittany, France. Here, archaeologist Rick Schulting of the University of Oxford, UK, has analysed stable isotopes — mainly carbon and nitrogen — in human bones to get an idea of what the locals ate. Tévéc and Hoëdic are only 30 kilometres apart, a trivial distance for hunter-gatherers, and yet Schulting has found consistent differences in the bone isotopes between the two sites. He thinks these reflect

differences in their diet: residents of Hoëdic, for instance, seem to have got a lot more of their protein from marine resources than those in Tévéc. "That suggests to me that these people were quite embedded into the landscape over the long term," says Schulting. "They weren't moving around on a great scale."

A similar picture is emerging from Britain. In 2000, a team led by Clive Waddington of Archaeological Research Services, in Derbyshire, UK, began excavating a Mesolithic hut at Howick in northeast England. By combining radiocarbon dating with analysis of the soil strata, they were able to determine that three huts had been built at the site, each on the ruins of the previous one. Together, the huts were inhabited over about 150 years. That occupation wasn't necessarily continuous, Waddington says; nevertheless, over three or four generations people kept returning to that place.

To him, this suggests that Mesolithic people may have been staking out their group's territory. "Not that hunter-gatherers usually have any sense of ownership," he says. "But what they do have is a very strong sense of rights of access to land." Waddington argues, in fact, that the drowning of Doggerland led directly to the development of sedentism and territoriality⁴. Although the idea is speculative, it fits with the growing body of evidence for Mesolithic life in and around Doggerland. Land would have become an increasingly precious resource as the sea rose.

All these sites, taken together, may illuminate how Doggerland's residents adapted to the changing landscape. But when and how did those changes begin? The Birmingham map offers a possible clue in the shape of a giant

basin called the Outer Silver Pit, which stretches for up to 100 kilometres through Doggerland. Fed by an inlet to the east, the pit would at one time have been a lake. But two sandbanks running almost its full length could only have been formed by fierce currents. Gaffney speculates that, as the sea rose, the peaceful lake became a fast-flowing estuary into which only the most foolhardy fisherman dared launch his canoe. So what started as an attraction for water-loving people might eventually have driven them away, triggering the migration whose long-range effects Waddington is seeing at Howick.

Exact details of this upheaval will be hard to prove, not least because most of Doggerland remains uncharted. Still, archaeologists are in little doubt that such turbulent environmental change required an equally dramatic human response. In just a few thousand years, Doggerland was transformed from a harsh tundra into a fertile paradise, and eventually into the northern European landscape that we know today. "It put human adaptability to the test," says Gaffney. ■

Laura Spinney is a freelance writer in London and Paris.

"These people were quite embedded into the landscape."
— Rick Schulting

1. Gaffney, V., Fitch, S. & Smith, D. *Europe's Lost World: the Rediscovery of Doggerland* (Council for British Archaeology, in the press).
2. Ch'ng, E., Stone, R. J. & Arvanitis, T. N. *The 5th International Symposium on Virtual Reality, Archaeology and Cultural Heritage* www.opennature.org/Portals/0/Documents/ShottonRiver.pdf (2004).
3. Peeters, H. *Hoge Vaart-A27 in Context: Towards a Model of Mesolithic-Neolithic Land Use Dynamics as a Framework for Archaeological Heritage Management* (RACM, Amersfoort, 2007).
4. Waddington, C. (ed.) *Mesolithic Settlement in the North Sea Basin: A Case Study from Howick, North-East England* (Oxbow Books, Oxford, 2007).