

The River Erme, 2024

Sit beside the River Erme almost anywhere between its source on Dartmoor and the town of Ivybridge some 14 km downstream and you'll see why it is one of the fastest flowing rivers in Britain. Here, in the upper and middle reaches, the river drops about one metre for every 50 metres overground. That's a gradient of about 2 percent, which is steep. As the river tumbles, kilometre over kilometre, over granite boulders you could be forgiven for thinking you're in the Scottish Highlands, Snowdonia or Switzerland. But you're in South Devon. When winter storms come in from the Atlantic, the runoff from Dartmoor raises the river's height by 2–3 metres, making it a spectacular if dangerous roller-coaster ride for Olympic-level kayakers.

Erme's origins

The Erme is one of several rivers – the Avon, Dart and Plym among them – that radiate from the granite dome beneath Dartmoor. That dome was created some 280 million years ago, when molten rock intruded beneath layers of sandstone, limestone and shale laid down by ancient seas. At that time, what is now Europe lay much closer to the Equator. As the granite cooled, superheated water dissolved and then deposited exploitable metals such as tin, copper and lead. That hot water deep underground, and the weathering of exposed granite since, also dissolved some of the feldspar component in granite, creating china clay deposits.

Over more than 200 million years, the 2–3 km layer of mainly sandstone and slate overlying the granite and its surroundings was eroded, exposing the granite and leaving Dartmoor standing proud of its setting. Across several Ice Ages between 2.6 million and about 12,000 years ago, glaciers extended south from around the North Pole but did not quite reach what is now Dartmoor. The V-shaped, wooded valleys at the edge of Dartmoor, including the Erme's, have been carved not by glaciers but by the rivers themselves within the last 200,000 years.

Dartmoor's granite dome, and the geological events surrounding it, shaped the nature of the River Erme and laid the deposits that established industries in the river's vicinity. However, the chemistry and colour of the Erme's water today is a testament to human manipulation of the environment over some 8,000 years. That manipulation has resulted in Dartmoor being extensively covered in peat with overlying mosses. They release humic acids and tannins which enter the river, making the Erme's water slightly acidic and staining it brown.

Prehistory in and around the Erme valley

Left untouched, Dartmoor would probably be wooded upland interspersed with patches of scrub. The pollen record locked within the ground tells us that sometime around 6,000 BCE, the middle stone age (Mesolithic), hunter-gatherers began cutting or burning back Dartmoor's forest and scrub to create clearings. Here, prey such as deer and auroch (wild cattle) would gather, making them easier to hunt.

By the late stone age (Neolithic) period, about 2,500 BCE, people had begun farming in the lower parts of Dartmoor, enlarging the clearings for animal pasture and growing crops. Dartmoor's oldest stone constructions, such as the communal chambered tomb at Cuckoo Ball near South Brent, date from around this time.

Partly in response to a shift to a more equitable climate, the Dartmoor population expanded around the time of the early Bronze Age (c. 2,300 BCE), gathering in small villages of stone-walled roundhouses. Such settlements have left clear circles on the land on both sides of the River Erme just north of Harford. Such people had time enough to gather together to shift granite stones in the landscape, creating stone rows, stone circles and cairns (large piles of stones, some of which enclose burials). Britain's longest stone row, extending more than 3 km, snakes its way over Stall Moor and crosses the River Erme. Its function is unclear, but given that its southerly beginning and northerly end mark specific locations from which the sea can be seen, no doubt the row marked landscape features that had strong sociocultural significance.

By the middle Bronze Age (c. 1,700 to 1,200 BCE) communities had begun dividing up Dartmoor's lower slopes, enclosing elongated field systems in boundary walls of earth and stone known as reaves. The farming appears to have been well organised, providing meat and cereals for food, and skins and hides for clothing and building materials.

From about 1,000 BCE, with the climate becoming cooler and wetter, much of the granite upland was becoming waterlogged. Peat bogs began to spread. The land could no longer sustain year-round farming communities and people abandoned their settlements and fields and migrated to the surrounding lowlands, with just a few farmers using Dartmoor for summer grazing of sheep, cattle and ponies. Throughout the Iron Age, Roman and Saxon times, Dartmoor's uplands were only very sparsely inhabited. It was not until about 950 to 1250 CE, in response to a warmer climate and a rising regional population, that year-round farming gradually returned to Dartmoor.

So, from prehistoric through to medieval times the River Erme was already being profoundly influenced by human activity. But not just by forest clearance and agriculture. Consider tin mining. Tin is a vital component in alloys such as bronze, pewter and brass. Extracting tin by streaming – washing and sifting deposits – such as those dug from the sides of the Erme Valley, or from the river's bottom gravel, dates to at least the late Bronze Age. The tin is found in the form of black cassiterite, with particles the size of a grain of sand to, in rare cases, nuggets the size of hen's eggs. The remains of medieval tin-workers' dwellings and workhouses, and scars in the landscape from digging and crushing deposits in the search for tin, are common in the upper Erme valley.

Extracting tin by streaming would have resulted in the discharge into the river of sand and silt which would cloud the water and smother the habitats of many bottom-living creatures. It would also make life challenging for many species of fish, and especially trout and salmon. Analysis of buried silts in the lower Erme Valley reveal disturbed tin fragments accumulating downriver in the late Bronze Age (c. 990–850 BCE), from late Roman to early post-Roman times (4th to 7th centuries CE), and in medieval times (13th to 14th centuries CE). So, polluting the River Erme or disrupting its riverbed habitats is nothing new.

Ivybridge

Ivybridge, with its population of about 12,000, is the largest town in the Erme's catchment and is a focus for local industry. The town would not exist but for the river. However, given that

there were river fords to the north and south, there was little incentive to build a bridge – after which the town is named – until medieval times. Reputedly, the first bridge was built in the 12th or 13th century, to provide safe passage for monks walking between Plympton Priory and the lands around Buckfast Abbey.

Since the 16th century – and possibly much earlier – several mills harnessing the Erme’s powerful flow have been located in and around Ivybridge. The earliest were so-called grist mills, which could grind to flour a variety of cereal grains, including corn and wheat. By the 18th century, at least one mill was processing rags to turn into paper. Another, a tucking mill, was beating woollen cloth to thicken it, and through washing, removing impurities.

By 1801, with its agriculture and its cloth, mining and paper industries, Devon had become the fourth most populous county in England. The water-driven mills in and around Ivybridge had become major local employers.

The early mills would have had a considerable local impact on the Erme, diverting some of the flow and releasing pollutants such as wool fibres, soap and lanolin from tucking mills, and cloth fibre particles, acids, bleaches and starches from paper processing. The last operational mill in Ivybridge – Stowford Mill – ceased making paper in 2013, 226 years after it opened. Over that period it had employed many thousands of Ivybridge people. In the last few decades the operators had improved the treatment of the mill’s wastewater, dramatically reducing the release of pollutants. After the mill’s closure, the Erme’s motive power is no longer being harnessed commercially – an opportunity, perhaps, waiting to be exploited.

The Erme estuary

It is arguable how far the Erme estuary stretches inland. The river is tidal as far as the weir just below Sequer’s Bridge near Ermington – which is about 5 km inland. In mid-summer I joined River Monsters’ TV presenter, Jeremy Wade, and we kayaked from Sequer’s Bridge down to the sea on a rising tide. Beside the weir the water crowfoot was covered in a growth of surface algae – a sure sign that the river was too nutrient-rich, most likely from agricultural runoff or insufficient sewage treatment. On the way down we saw the occasional brown trout of about a pound, and dippers and pied wagtails were among the birds darting about on the riverbank. We commented on the silence and sense of seclusion.

On the rising tide it was as if the river were confused, unsure of which way to flow. At Holbeton the intrusion of seawater was flowing upstream accompanied by squadrons of grey mullet. At Pamflete Wood, mini-tributaries were flowing in different directions, some upstream away from the main river and others downstream towards it. Gulls and oystercatchers had gathered on the sandbars, with a smattering of little egrets, and in the distance we could hear the ‘cour-eeee’ calls of curlews. The rising water was laden with sheets of the green seaweed *Ulva*, turning the river water into a fertile soup.

The Erme estuary has an unkept beauty. In places, primeval-looking, oak-hazel woodland cloaks the gentle slopes of the valley, with rare saltmarshes below. Where the Erme meets the sea, several beaches, including the sandy Coastguard’s and more pebbly Mothecombe, draw tourists and are favoured haunts for locals in the early morning and evening. Grey seals,

harbour porpoises and bottlenose dolphins are occasionally seen on the high tide. In some summers, basking sharks visit to track back and forth to feast on the plankton that gather at the fronts where different water masses meet.

Salmon and sea trout travel up the Erme to spawn, but in far fewer numbers than they did only a decade ago. In 2022, only one rod-caught Erme salmon and two sea trout were reported to the Environment Agency. By contrast, the Erme's catch had been seven salmon and 95 sea trout in 2012.

Taking action

Water companies and the Environment Agency have come under considerable criticism in the last decade in the face of worsening water quality in British lakes, rivers and coastal waters. Dr Simon Rundle is a former Professor of Aquatic Biology at the University of Plymouth and is now proprietor of Ivybridge Brewing Company. As he puts it, the simplified narrative around water quality goes something like this, "Water quality is getting worse. That's because the water companies haven't invested in infrastructure because they've given that money to shareholders." But, as he explained further, even if that narrative is true, we don't always have sufficient ongoing scientific data on the state of the environment to make a strong case for negligence by water companies.

However, there is plenty of anecdotal evidence for the worsening of water quality in the Erme given the visible sewage discharges that have recently plagued the river. In a wish to highlight and hold to account the work of South West Water and the Environment Agency, and take positive action, the WATER (Wild About The Erme River) initiative was set up in 2022 (<https://ermeriver.org/>). WATER is an action group steered by a diverse range of local stakeholders, including landowners, farmers and scientists. Through a Freedom of Information enquiry with South West Water, WATER quickly established that the Erme was receiving higher levels of stormwater discharge than other Devon rivers, and much higher than the national average. When water treatment works are overwhelmed by high rainfall levels, runoff water – which could contain all kinds of incidental pollutants from roads, farms and built-up areas – enters drains and sewers. Rather than being treated, this potent mix may be discharged through stormwater overflows directly into the river. The ability of a water company to store or process stormwater, rather than discharge it directly, is key to maintaining a river water's quality.

Farming practices in the Erme valley have always had an influence on river water quality. Farmers on the Flete Estate, which runs on both sides of the river from the southern outskirts of Ermington to the sea, make a point of practicing environmentally responsible agriculture. Much of the land surrounding the lower estuary is now designated a Site of Special Scientific Interest (SSSI). Farmers are obliged to temporarily fence off livestock from having direct access to the river, so preventing their urine or faeces entering the water. This practice also lessens bank erosion. Flete Estate farmers do not spray fertilizers or pesticides close to the river. But farmers elsewhere may not be so diligent. The Lud Brook, a tributary of the Erme that rises on Dartmoor and joins the main river at Ermington, suffered a pollution incident in the last five years, which killed all the fish in the lower reaches. The nature of the pollution is not known,

but a single spill of slurry from a farm would be enough to do the job. For the fish to recolonise the tributary could, without human intervention, take many decades.

WATER has gone on to raise awareness through community events. The WATER group has collaborated with other community groups, Positive Living in the 21st Century (PL:21) and Ermington Environmental, to help organise river cleans to remove litter from in and around the river's middle and lower reaches. Gatherings to remove invasive Himalayan Balsam from Erme's riverbanks are planned. Other land-based initiatives can help treat pollutant-laden surface water before it reaches the river. WATER hopes to support the Flete Field Lab in extending some of that organisation's field trials. In one project, the lab has successfully used fungi to remove excess nutrients, potentially harmful bacteria and suspended solids from a stormwater overflow near Holbeton's wastewater treatment plant. The next phase would be to repeat similar investigations over several sites in Erme's catchment.

Working in tandem with other organisations such as the Westcountry Rivers Trust (WRT), WATER successfully mobilised local support in having Coastguard's Beach in the Erme estuary officially designated as a bathing beach. This means that the Environment Agency now has a statutory obligation to regularly sample the water there for coliform bacteria and intestinal enterococci, which are indicators that the water is contaminated with faecal material which could cause gastrointestinal problems for bathers.

WATER, like the Westcountry Rivers Trust, seeks to adopt a citizen scientist approach. By training local people in the techniques for sampling the river water and monitoring its wildlife, new generations can become educated and enthused to help look after the river. Perhaps the most useful measures will be using biotic indices. By taking a kick sample from the river bottom, dislodged invertebrate larvae – such as those of caddisflies, mayflies, stoneflies and damselflies – can be caught by net and identified. The blend of species found indicates the state of the river. Key will be using indices that can be compared with those used for other river systems, and which can provide an initial baseline for the state of the River Erme. Regular monitoring will determine whether the river is getting cleaner and more hospitable, or not.

Coda

We all have our reasons for wanting to look after the Erme, whether it is those who want to swim in its water, those who want to fish it, and the many of us who find solace there, who want to know that the river is not a danger to human health and that it supports a rich wildlife. As Colin Campbell a landscape gardener in his 60s who has lived all his life near the Erme, puts it, "I've seen the river get worse in my lifetime" and "I want to see it get better, for those who come after me".

Any river, and the Erme is no exception, is constantly evolving. Rather than returning the river to its natural state we need to be managing the river and its catchment so that they have the qualities we value. That involves consulting experts, researching the river system to find out how it works, informing the local community, engaging in dialogue, reaching agreement and taking action. The WATER project has kickstarted that process. Given that the Erme is a comparatively small river – only 24 km long – and has a catchment population of only 18,000, WATER's mission is a realistic venture that could have a real impact on the river's water quality

and the wellbeing of its wildlife. And it offers a model of good practice that could be emulated elsewhere.

©Trevor Day, trevorday@reading-writing-results.com, August 2024

Licensed to WATER (Wild About The Erme River), <https://ermeriver.org/>