

THE RED HILLS OF STANFORD WHARF: IRON AGE AND ROMAN SALT MAKING IN THE THAMES ESTUARY

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The best summary of the talk given by Edward Biddulph can be found at <http://oxfordarchaeology.com/featured-projects-by-name/214-stanford-wharf-nature-reserve-london-gateway> It runs:

Stanford Wharf Nature Reserve, a 44-hectare site bordered by Stanford-le-Hope industrial area to the north, Mucking Creek to the west, and the River Thames to the south, was investigated as part of the DP World London Gateway port development, which combines the UK's newest deep-sea container port with Europe's largest logistics park. The nature reserve was created from farmland to the west of the main port development to provide a wetland habitat for wading birds and other wildlife, as well as green space for residents and visitors. This ambitious project involved reducing the ground level across the whole area by 0.5m, and breaching the existing sea wall to allow the site to be flooded by the tidal waters of the Thames Estuary. DP World London Gateway funded a series of field investigations at Stanford Wharf Nature Reserve by Oxford Archaeology to ensure that archaeological remains were preserved or investigated before the site was flooded.

By the middle Iron Age (c 400-100 BC), settlers arrived for one purpose – to make salt. Excavation across the north-western corner of Area A uncovered the remains of red hills, a characteristic feature of long-term salt production on the Essex coast. Other evidence relating to salt production included pits, hearths and briquetage, a coarse ceramic used for making salt-processing equipment, such as cylindrical moulds, troughs, pedestals and firebars. Scientific and ceramic dating confirmed that this activity belonged to the middle Iron Age. The dating was exciting, identifying the red hills from Stanford Wharf as among the earliest known in Essex.

Although archaeologists have long accepted a link between red hills and salt making, quite what red hills are made of has remained a mystery, and how they were formed in view of the conventional understanding of late Iron Age and early Roman salt production methods has never been satisfactorily explained.

The analyses revealed that the mounds consisted of fuel ash derived from burnt salt marsh plants and sediment. The plants, harvested still with marsh sediment adhering, had been burnt as fuel for hearths, above which brine was evaporated to crystallise salt. A by-product of the fuel burning was a salt-rich ash, which when mixed with seawater, was turned into a highly saline solution. This was filtered, and the resulting brine was then also evaporated above salt marsh plant-fuelled hearths. It was the residue from hearths and filtering that was dumped to create low mounds or red hills. This discovery is of enormous importance for Iron Age studies

in Britain, as it revolutionises conventional understanding of salt production.

From about AD 250, the site was reorganised. New ditches were laid out and four salterns established. One saltern contained a hearth, a three-celled tank, and dumps of salt-processing waste. Three more salterns were set up within an adjacent enclosure. The recovery of fuel ash dominated by salt marsh plants in the late Roman salterns indicates that the method of brine and salt production, established in the middle Iron Age, continued to be employed as late as the late 3rd and 4th centuries. In the late Roman period, however, there were no red hills. The salt marsh sediment that gave the red hills its colour was not collected, pointing to more careful harvesting – and sustainable management – of the marsh plants.

There was also continuity in the use of briquetage troughs and equipment. The late Roman use of briquetage was another unexpected outcome of the analysis, as it has been difficult to show in earlier studies of red hill and salt-working sites in Essex that the date of the material extended beyond the 2nd century AD. That said, evidence for continuity was also accompanied by evidence for a fundamental change in the scale and methods of salt production during the late Roman period. Traces of lead recorded in two salterns pointed to the adoption of lead evaporating pans at the site for use alongside briquetage troughs. The use of lead pans is well known in the salt industries of the West Midlands and North-West England, but in Essex had remained a matter of conjecture only. At the time that lead vessels were being used for evaporation, wood was being burnt in the hearths below. This may have been a result of the pressure to obtain large quantities of fuel as salt production intensified and expanded.

There were other surprises. The dumping of a mass of tiny fish bones in a late Roman ditch suggested that fish sauce, probably liquamen or allec, was produced. Stanford Wharf is not the first site in Britain to have produced evidence for the manufacture of fish sauce, but never before has the evidence, mainly comprising juvenile herrings, sprats, and juvenile smelt, been so abundant and in such a clear association with salt-works. And, in the early Roman period, a timber-post structure with an apsidal end erected on the edge of the palaeochannel was identified as a probable boathouse, which hints at coastal fishing and the trade of salt and other resources.

For those interested in more details, the Library has purchased a copy of the excavation report: London Gateway: Iron Age and Roman salt making in the Thames Estuary: Excavation at Stanford Wharf Nature Reserve, Essex by Edward Biddulph, Stuart Foreman, Elizabeth Stafford, Dan Stansbie and Rebecca Nicholson. This is also available as a free pdf download at http://library.thehumanjourney.net/909/8/London_Gateway_OA%20Mono_graph_18.pdf