

COPPERAS AND PLATIMORE

In the south of Suffolk 54 million-year-old Eocene London/Harwich Clay is exposed in the cliffs and sometimes, as here at Bawdsey, in the wave-cut platform uncovered at low tide. Sometimes known as platimore, this is extremely slippery to walk on. (Always check tide times.) Fossil wood is commonly found on these beaches – when broken open some has a silvery appearance because the wood has been preserved as iron pyrites (copperas).



SPRINGS

Permeable sands overlying clays on our coast give rise to springs – rainwater trickling through the sand seeps out at the junction of the two rocks. There are springs in Lowestoft at Sparrows Nest and Belle Vue Park – sometimes with water pouring out of the glacial sand. At Felixstowe the Spa Gardens water features are fed by Red Crag springs. In this photograph at Bawdsey a row of cabbages is growing along the seepage at the junction of the Red Crag on

underlying London Clay. Do not confuse the brown coprolite nodules found in the Crag with the copperas found in the London Clay.



LANDSLIPS

The Eocene clays are prone to rotational slippage when erosion at the base causes cliff failure. Large masses complete with vegetation rotate backwards, back-tilting the trees. These are well-seen in the Orwell estuary as at Nacton/Levington in the photograph, which also shows a band of cementstone (lithified clay) up-tilted in the foreground.



FIND A FAULT

Nacton/Levington cliff is a good place to look at rock structures. The near-horizontal strata of the Eocene clays are well-defined, the pale bands containing decomposed volcanic ash. Faults can be found which downthrow the strata to the east. The displaced cementstone band in the photograph shows a downthrow of about half a metre and is shattered at the fault line. Fallen blocks of cementstone litter the foreshore and have been used locally in buildings, e.g. Orford Castle. Some with veins of pale calcite crystals are called septaria.



NOT WHAT IT SEEMS

Many more striking features can be found along the Suffolk coast. Here, below Bawdsey Manor the cliffs are faced with artificial stone called Pulhamite. This Victorian structure is 400 metres long and 10 metres high - is it the biggest sculpture in Suffolk?

World War II defences include large concrete blocks on the sand dunes at Minsmere and, elsewhere, rusting metal anti-landing defences. Some large rocks in walls may be from ships' ballast, as at Bawdsey.



LEARN MORE

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For your safety please follow the Countryside Code www.gov.uk/government/publications/the-countryside-code and the Coastguard Service has a coastal safety code at <https://coastguardsafety.campaign.gov.uk/>



Explore the Suffolk coast with GeoSuffolk. The North Sea shapes our coastline, eroding its cliffs and creating its beaches. The results of these geological processes can be seen at many popular localities.

WAVES

We love the ever-changing nature of the coast and the treasures it brings to us. This is an active geologic zone and storm waves are the drivers of change. Waves along our coast regularly exceed 1.5 metres in height as here, on one day at Gorton. Rock armour as seen here is often used to absorb the energy of storm waves.



BEACHES

We usually visit the coast on days such as this at Bawdsey. Fine weather gives us the freedom to explore the shore - the curved patterns in this photo are beach cusps which sometimes form on mixed sand/shingle beaches.



These two photographs were taken three weeks apart – they could have been taken any place, anytime on the Suffolk coast. One day the dragon's head, another the tail.

THE EASTERN SHORE

Ness Point in Lowestoft is the most easterly point in Britain - sunrise here is a full 7 minutes before that in Greenwich. The compass set into the ground here celebrates its location. Nearby the Victorian Christ Church sits amongst modern industry. Built on the old beach to serve the fishing village of the 19th century, the church has a plaque on the door to the 1953 floods.

Further south at Aldeburgh the main shopping street stands on the older part of the beach.



BUILDING ON CLIFFS

This is Maltster's Score, one of the paths or 'scores' running down the old cliff at Lowestoft. They once joined the former 'Beach Village' to the town above. The cliff hosts an annual 'scores race', up and down 401 steps.

In Aldeburgh you can walk from the shops up the old cliff via the Town Steps.



PROTECTING THE LAND

Rock armour (riprap blocks) such as this shown at Lowestoft brings imported materials to our beaches and small eroded pieces can often be found amongst the shingle. The most common rock is larvikite from Norway which glitters with many large blue-grey crystals of feldspar - Felixstowe is also a good place to see this. Other rock armour includes Carboniferous Limestone from France as used at Bawdsey. At Thorpeness large flints are used in wire-mesh gabions.



GEOLOGY EXPOSED

The cliffs at Corton and Pakefield are mainly in Ice Age clays and sands (soft rocks) 440,000 years old. Cliff falls, such as this one at Pakefield, occur when storm waves undercut the base of the cliff and the unconsolidated sands and clays fall in broken masses. These glacial deposits contain erratics - much older material brought to Suffolk by the ice - fossils such as ammonites

and ice-scratched (striated) stones may be found on the beach.

Keep at a safe distance from the foot of cliffs.

Further south, older rocks, Crag sands (about 2-4 million years old) and London Clay (about 54 million years old), may be seen in cliffs.



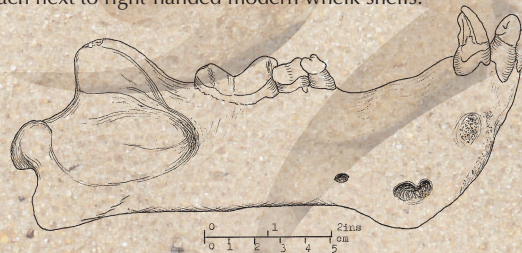
A LOST LAND

Hard blocks of submerged peat (known as moorlog) washed up by the North Sea are evidence of land drowned by rising sea level over the past 8,000 years. These blocks are on Kessingland beach.



BONES AND TEETH

Fossils found on the shores of north Suffolk include teeth and bones of elephants and rhinoceros, antlers of extinct deer and, more rarely remains of large sabre-toothed cats - of which this lower jaw was found at Kessingland in the 1880s. Further south fossil whale bones and shark teeth from the Red Crag, including that of the extinct giant shark Megalodon, can be exciting finds. Left-handed fossil Neptunea whelks lie on the beach next to right-handed modern whelk shells.



LOST BUILDINGS

This coast has been losing land for many centuries. The last of eight Medieval churches in Dunwich, All Saints is shown here. It took from 1904 till 1919 to tumble over the cliff - giving an idea of the rate of erosion at that time. The last of the gravestones in All Saints' churchyard is still visible close to the cliff top and one of the church buttresses was saved and is in the Victorian St James churchyard now.

A walk along Southwold pier gives a good view to the north, where Easton Bavents continues to lose dwellings.



CORALLINE CRAG

The hard limestone layers of this rock, unique to Suffolk, have been used in walls in Orford, having been dug from local pits.

At Thorpeness, where it extends under the sea, eroded blocks are commonly found on the shingle beach as in the photo. They contain fossil shells, bryozoans and occasionally sea urchins - about 3 1/2/4 million years old. The shingle is mainly



brown/yellow-stained flint but look out for opaque white quartz, clear red-stained carnelian and pebbles with quartz veins.

MOVING PEBBLES

The shingle is always on the move. Storm waves generated by north winds drive thousands of cubic metres of shingle southwards along our coast each year. Much piles up on the Suffolk 'nesses' - large triangular beaches which project out into the sea. The northward movement of Benacre Ness is well-documented - shingle is deposited on the north side and is moved from the south side. Thorpe Ness, shown here is anchored in place by the underlying Coralline Crag and the beach above high tide level has been vegetated. Orfordness, the most southerly of these features is a National Nature Reserve.

