

Visit of the Newbury Geology Society to Suffolk

Saturday 21st March-Sunday 22nd March 2026, led by Tim Holt-Wilson, accompanied by local geologists Gillian Apps and Frank Peel.

Saturday 21st March

Site 1 – Pakefield

From the Pakefield Coastwatch tower, the group walked to the Pakefield cliffs. The site is noted for the Cromer Forest bed (c0.7Ma), where evidence of early hominin presence was identified from worked flints found in the lower beds. Tim described the Pleistocene scenario of glaciations and the origins of sediments found in local material.

Examples found included:

- Quartzite pebbles from the Bunter pebble beds (Midlands/Wales origin).
- Chatter marks on eroded flint pebbles from the London Basin.
- Chert pebbles and large glacial flint erratics with striations. (photo)
- Old Red Sandstone from Scotland.
- Chalk erratics.
- Decalcified sandstone from Peterborough area.



Since the discovery of the hominin evidence, the Lower Cromer Forest-bed has been covered by the northward encroachment of Benacre Ness (against the southward longshore drift). The group examined a possible exposure of the upper part of the Cromer Forest-bed featuring involution. These floodplain deposits show erosion and glacial stands, evolving due to periglacial freeze-thaw effects, frost churning, and ice wedges.

Tim explained the Lowestoft Till (lodgement till) found under the ice sheet, which has a high percentage of Jurassic mudstones, including Oxford and Kimmeridge Clay. Larger sections contain belemnite and other fossils. Local ice thickness is estimated at up to 1km.

Site 2 – Covehithe / Benacre Broad - Norwich Crag, Baventian beds, and Holocene erosion.

The Covehithe Antian/Pastonian clay beds (~2Ma) represent a warm phase and include Mastodon, Hyena & Cheetah remains. The Baventian beds (1.9Ma) were a cold phase representing early glacial deposition in the Lower Pleistocene. On the beach (eroding at 6m/year), we discussed Broad formation, the breaching of shingles, and shingle origins. Trees situated in peat below the clay level were discussed in the context of clay settlement.

Site 3 – Westleton

At the Dunwich Road gravel pit, there was a lively discussion between Gill, Frank & Tim answering questions from the group, expanding on glacial braided estuarine deposition of gravels and sands of the Norwich Crag. This was evidence of basin deposition of a prograding fan delta likened to examples in northern Alaska today. Pebbles were mostly well-rounded flint with a small number being quartzite.



Site 4 – Dunwich included a visit to Dunwich Museum which told the story of coastal erosion and the loss of the seaport and town. Greyfriars Friary showed an excellent variation of ballast erratics incorporated in its walls.

Sunday 22nd March

Site 1 – Bawdsey Shore

The group visited the bay formed in the lee to the south of the rock-armoured coastal defences, with the cliffs exposing Eocene London Clay (54-50Ma) and fossiliferous Pliocene Red Crag (c2.5Ma). The clay and Red Crag were seen beneath a sandy glacial layer. Examples of pebbles of brown Miocene Trimley Sands (6Ma) were noted, containing maritime pollen and fossils, preserved despite Britain being uplifted at the time.

The London Clay contained selenite crystals, pyritised wood, with holes made by piddocks (bivalve molluscs). Iron concretions were observed in the Red Crag formed in burrows. Tim explained examples found of phosphorite ‘coprolite’ nodules in the Red Crag cemented basement layer, formerly exploited by the coprolite industry. Bio-erosion, caused by *Osedax* (boring worms) which feed on whale carcasses, was noted alongside shells, fish vertebrae and other remains.



Frank described the unconformity between the London Clay and Upper Pliocene Red Crag beds. Tidal sands representing single tide cycles suggest a rapid deposition period of circa 10 years. Liquefaction of the clay caused undulations (domes and ridges), possibly due to rapid loading; earthquakes were also considered. The vertical white stripes indicate dewatering of mud which exhibited burst-out cratering at the original surface; he argued these features have less iron as the expelled water had a reducing effect.

Site 2 – Shingle Street

Tim showed OS map comparisons where the River Ore and shingle have changed form over even 20-year timescales. We observed tidal lagoons in the Sandlings area and salt marsh creeks building up in the lee of shingle banks. We observed changes in shingle size and steep banks showing various storm tide levels. Before departing, Tim showed the 'Shell Line' sculpture created by visitors to this unique environment.



We would like to thank Tim, Gill and Frank for guiding the group on an excellent excursion covering the dynamic processes affecting both present and past Suffolk coastlines. The group would also like to thank Bill and Jackie for their work organising, though sadly they were unable to join us.

