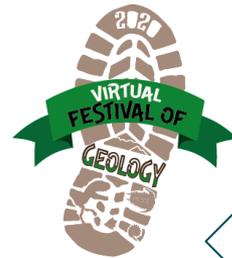


Geological Sights! Southwest England

Harrow and Hillingdon
Geological Society

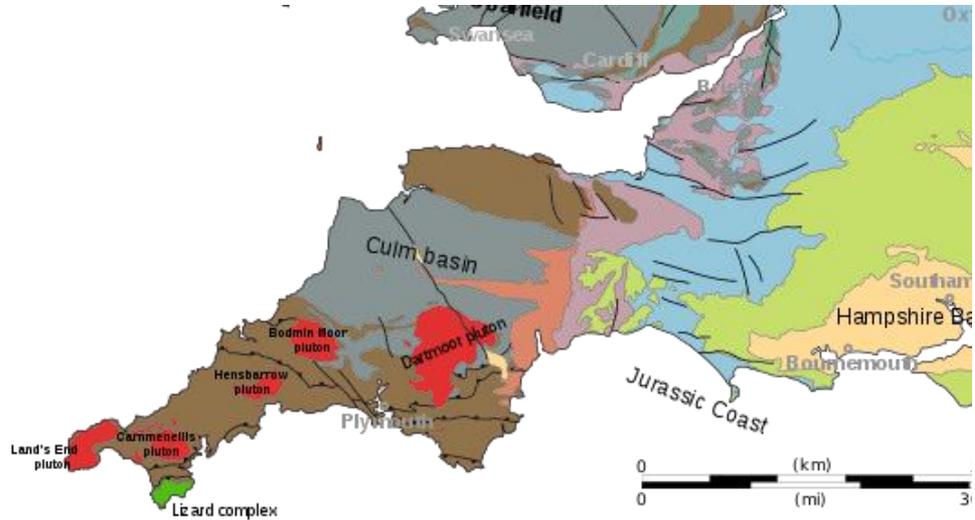


 @GeolAssoc

 Geologists' Association

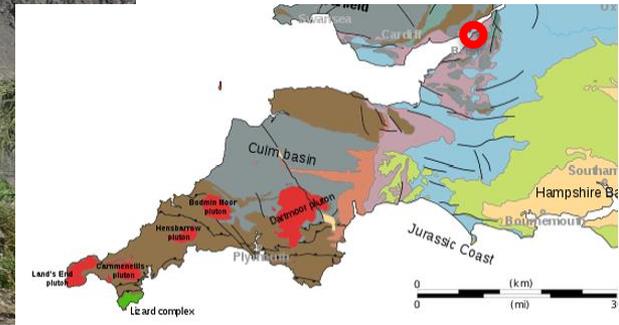
www.geologistsassociation.org.uk

Southwest England





Triassic Mercia
Mudstone & Penarth
Groups (red & grey),
capped with Early
Jurassic Lias Group
mudstones and thin
limestones.



Aust Cliff, Severn Estuary, 2017



Triassic Mercia Mudstone & Penarth Groups, with Early Jurassic Lias Group at the top.



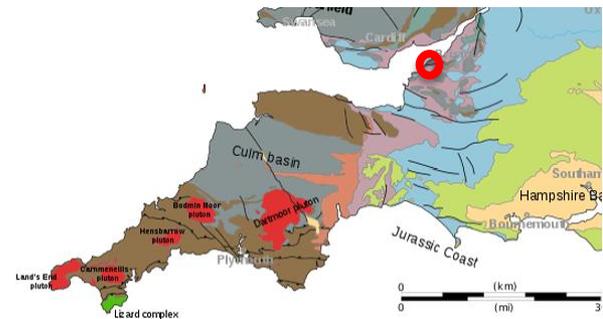
Looking for coprolites

Gypsum at the base

Aust Cliff, Severn Estuary, 2017



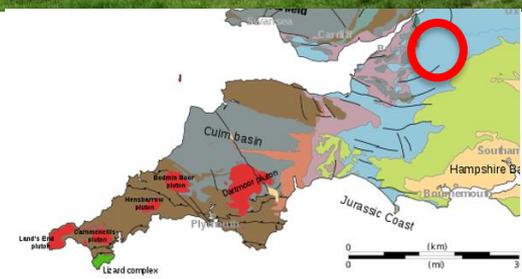
Old Red Sandstone (Devonian)



Portishead, North Somerset, 2017



Carboniferous Limestone – Jurassic Inferior Oolite unconformity, Vallis Vale near Frome



Mendip Region, Somerset, 2014

Burrington Oolite
(Carboniferous
Limestone),
Burrington
Combe



Rock of Ages, Mendip Hills, Somerset, 2014

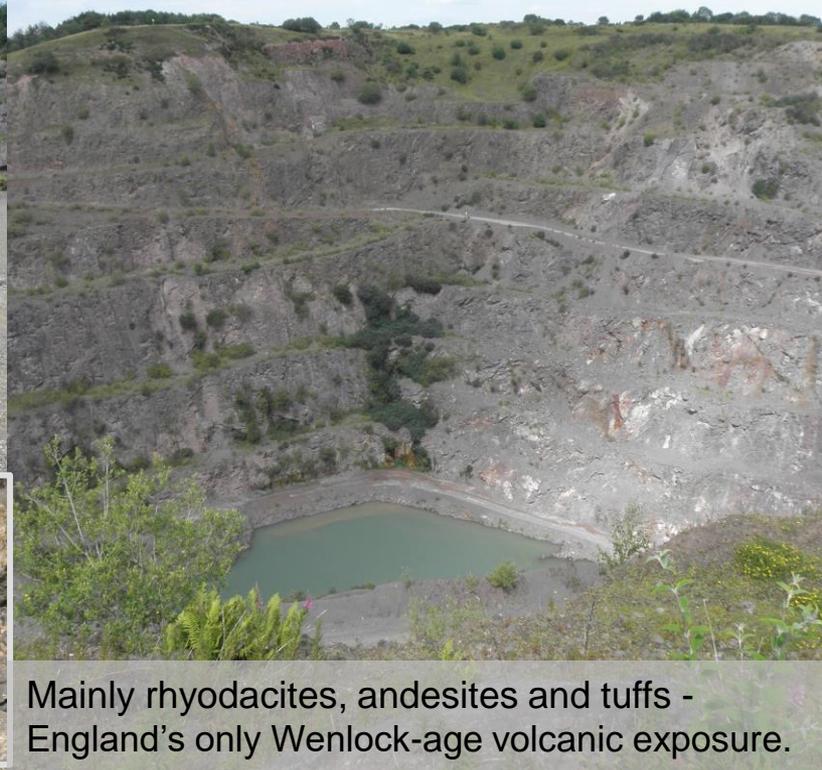
Whatley Quarry
Carboniferous Limestone



Volcaniclastic conglomerate
in Moon's Hill Quarry



Moon's Hill Quarry
Silurian volcanics



Mainly rhyodacites, andesites and tuffs -
England's only Wenlock-age volcanic exposure.

Stone Quarries in the Mendips, 2011



Silurian (Wenlock-age) volcanoclastic conglomerates are seen here above the main faces. The quarry's rock types are similar to those at Mount St Helens.



Spheroidal weathering

Moons Hill Quarry, Mendips, Somerset, 2011

Wave cut platform, Blue Lias Fm. (Jurassic)



Kilve



Kilve

Mercia Mudstone Group
(Triassic)



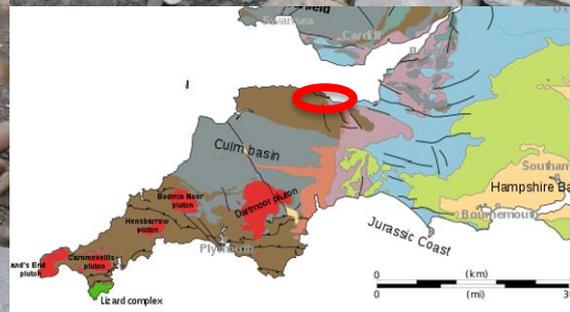
St Audrie's Bay

West Somerset, 2019

Watchet



Blue Lias Formation, Jurassic:
Slickensiding on fault



West Somerset, 2019



Triassic, Penarth Group

Triassic, Mercia Mudstone

Blue Anchor Fault, West Somerset, 2019



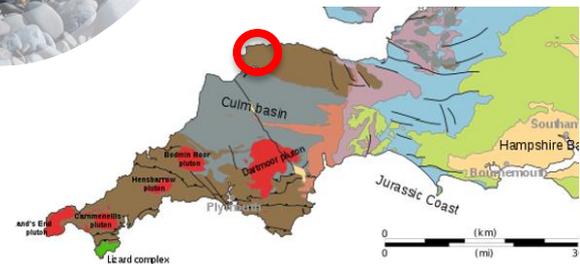
Mortehoe, led by Paul Madgett.
Morte Slates Formation, Devonian
(Frasnian-Famennian).

South side of Baggy Point near Pencil
Rock. Ipswichian interglacial dune sands
& beach deposit (125 ka) upon Picton
Down Mudstone Formation (U. Devonian)



North Devon Coast, 1994

Saunton Down End. 'White Rabbit' glacial erratic (foliated granite-gneiss).



Baggy Headland south side. Granulite-gneiss glacial erratic boulder, the '50-tonner' (possibly Devonian)

North Devon Coast, 1994

Greisenised
granite

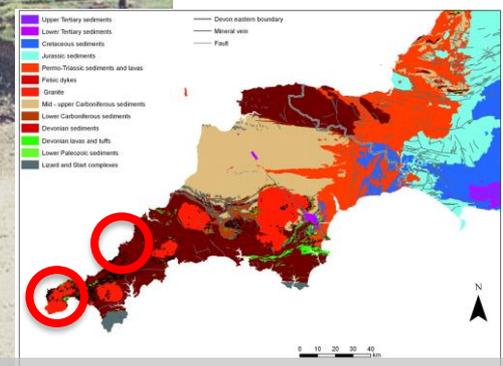


Cligga Head, St Agnes, Cornwall, 2015

Tracing the Perran Iron Lode, Perran Bay

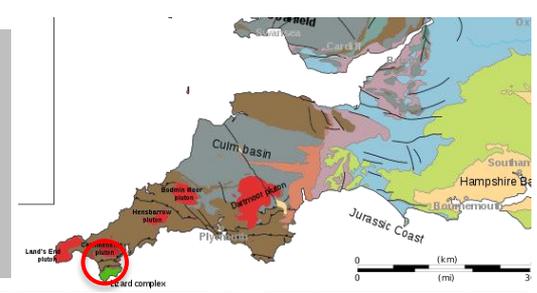


Geevor Mine
(tin & copper)



Mining Heritage, Cornwall, 2001

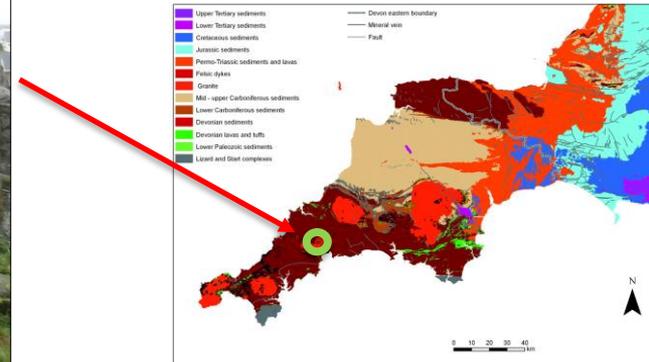
The rocks of the Lizard are part of an ophiolite, a piece of oceanic crust that has been uplifted onto continental crust during plate collision. These rocks are mantle peridotites which have been altered to serpentinite by hot sea water on rising at a mid-ocean ridge in the Devonian. The rocks were then compressed by the Variscan orogeny.



Lizard Peninsula, Cornwall, 2015



Ruined 15thC hermitage built upon outcrop of quartz schorl* (tourmalinised granite). Geological SSSI on the St Austell Granite.
*Schorl is the black variety of tourmaline.



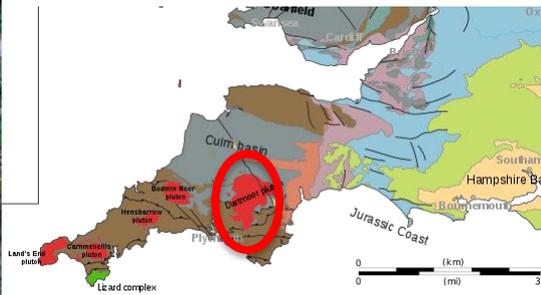
Roche Rock, Cornwall, 2015



L&R: Late President Bob Symes and HHGS group, Meldon, northern Dartmoor



Bob Symes, Lydford Gorge

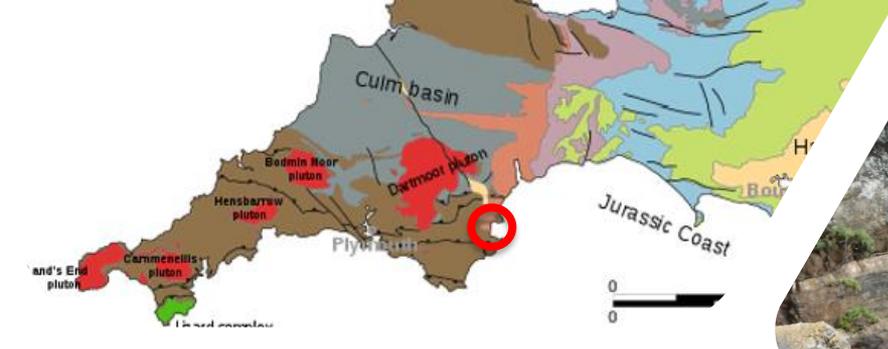


Dartmoor, Devon, 2006



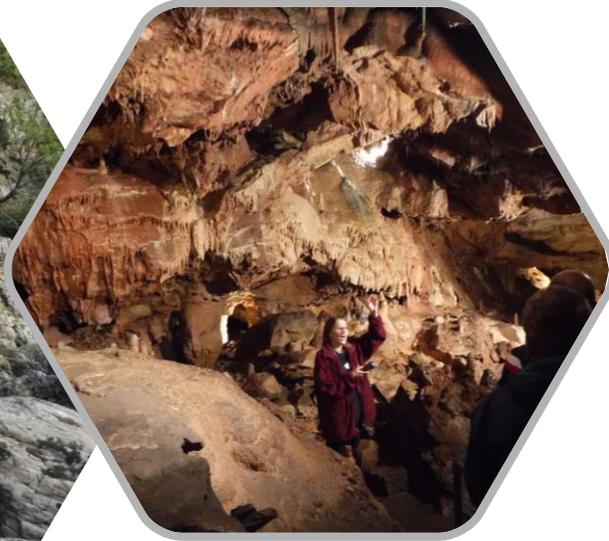
Bob Symes leading HRGS* at Haytor Rocks. Granite & aplite (Permian). *Harrow & Ruislip GS until 1988.

Haytor Rocks, Dartmoor, Devon, 1985



Meadfoot Bay

Variscan folding



Kent's Cavern,
Geological
SSSI and
Scheduled
Ancient
Monument



Landslides

Torbay Breccia (Permian), Oddicombe

UNESCO Global Geopark, Torbay, Devon, 2018

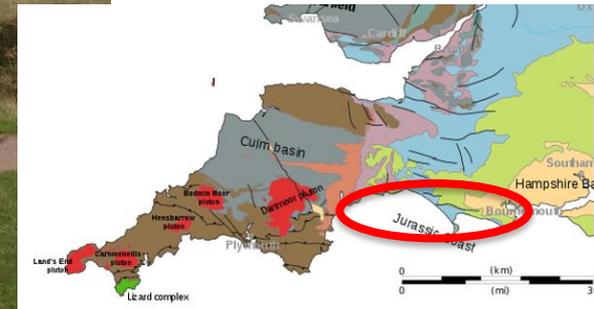
Coryton Cove,
Dawlish. Fossil sand
dune, Alphington-
Heavitree Breccia
Formation (Permian).



Dawlish, Devon, 2015

Jurassic Coast

The Geoneedle, Orcombe Point, Exmouth, marking the western end of the Jurassic Coast, 2011



Jurassic Coast, UNESCO World Heritage Site

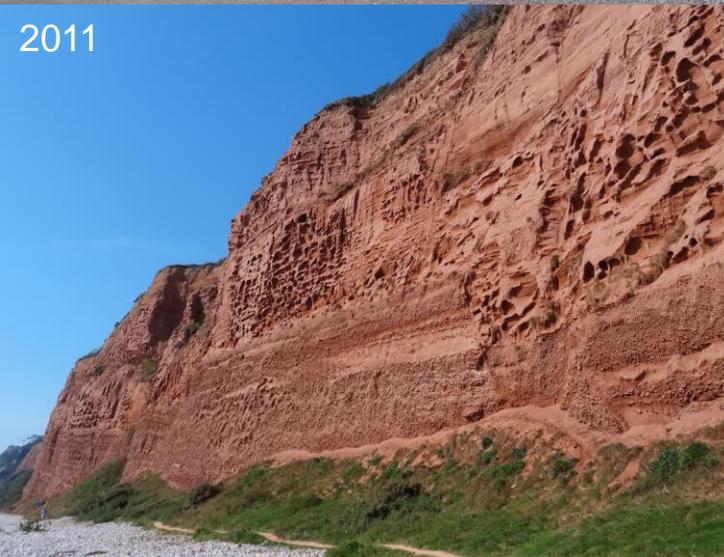


Exmouth Sandstone & Mudstone Fm.
(Aylesbeare Mudstone Group, Early
Triassic).

Fluvial current-bedded sandstones (lower
left); fault (below).



Orcombe, Devon, 2015



Fluvial (upper) and aeolian (lower) sediments of the Helsby Sandstone Fm. (Sherwood Sst. Group, Triassic) with pebble beds below; sandstones are honeycomb-weathered



2015 Yellow band records oxygen reduction of sediments in temporary lake that formed on stony desert surface

Budleigh Salterton, Devon

Jurassic Coast



The pebbles are of quartzite and are derived from the cliffs. The pebble beds were laid down by a braided river flowing across a hot desert.

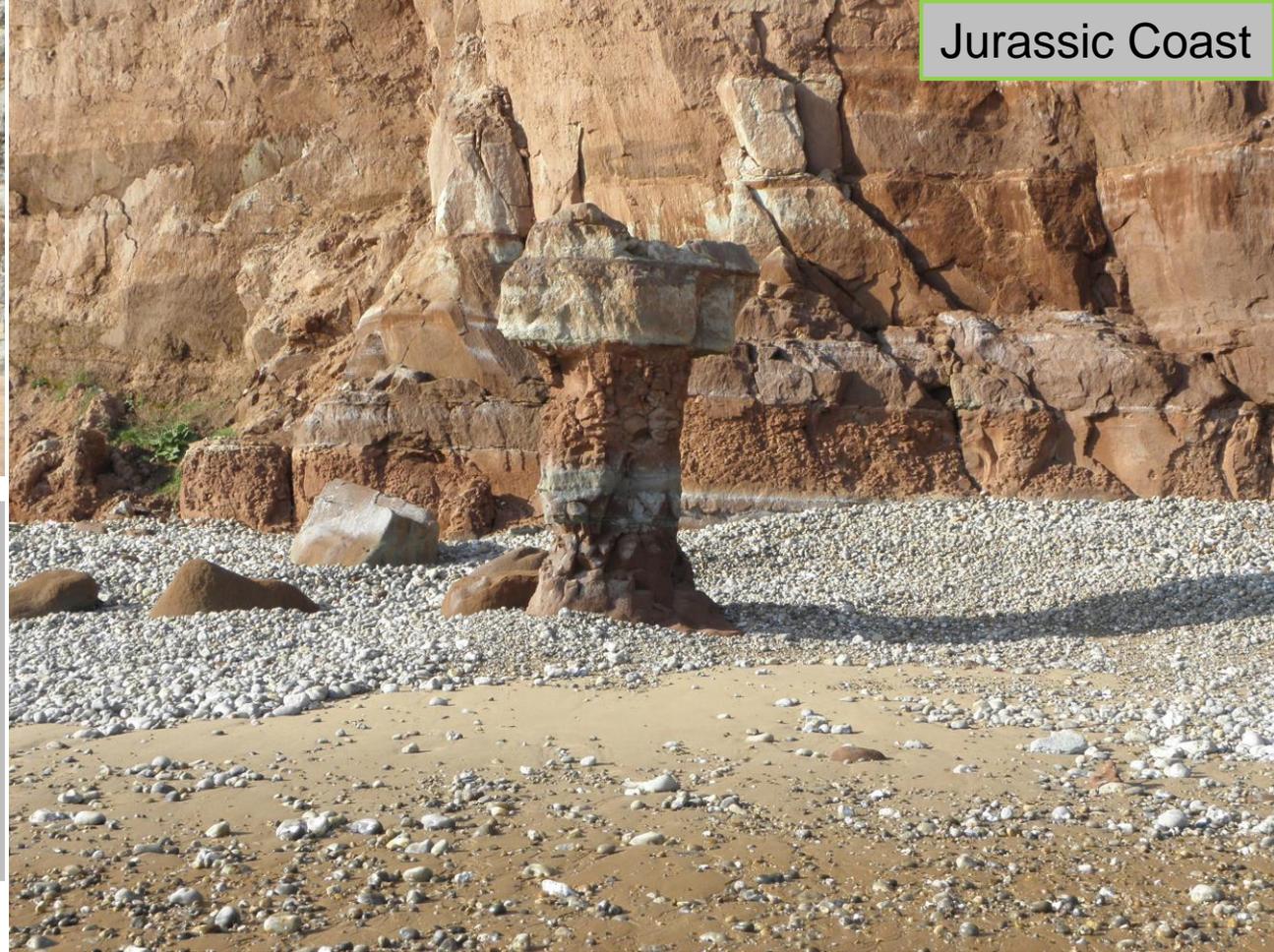


Sidmouth Mudstone Formation (Mercia
Mudstone Group, Triassic) east of Peak Hill



Cretaceous
rocks cap the
cliffs in the
distance.

Sidmouth, Devon, 2011



Above: Channel-fill in the Helsby Sandstone Formation. Right: Sidmouth Mudstone Formation. In the pedestal are layers of greenish mudstone deposited in temporary lakes in a hot, semi-arid environment.

Sidmouth, Devon, 2011

Jurassic Coast



Silcrete boulder from Cretaceous beds

Salcombe Hill, Sidmouth: geology point of interest, Bob Symes' commentary on mobile phone.



Sidmouth, Devon, 2011



Chalk & Upper Greensand (top) on Branscombe Mudstone Fm. (Mercia Mudstone Group, Triassic)



Hooken Landslip, 1988

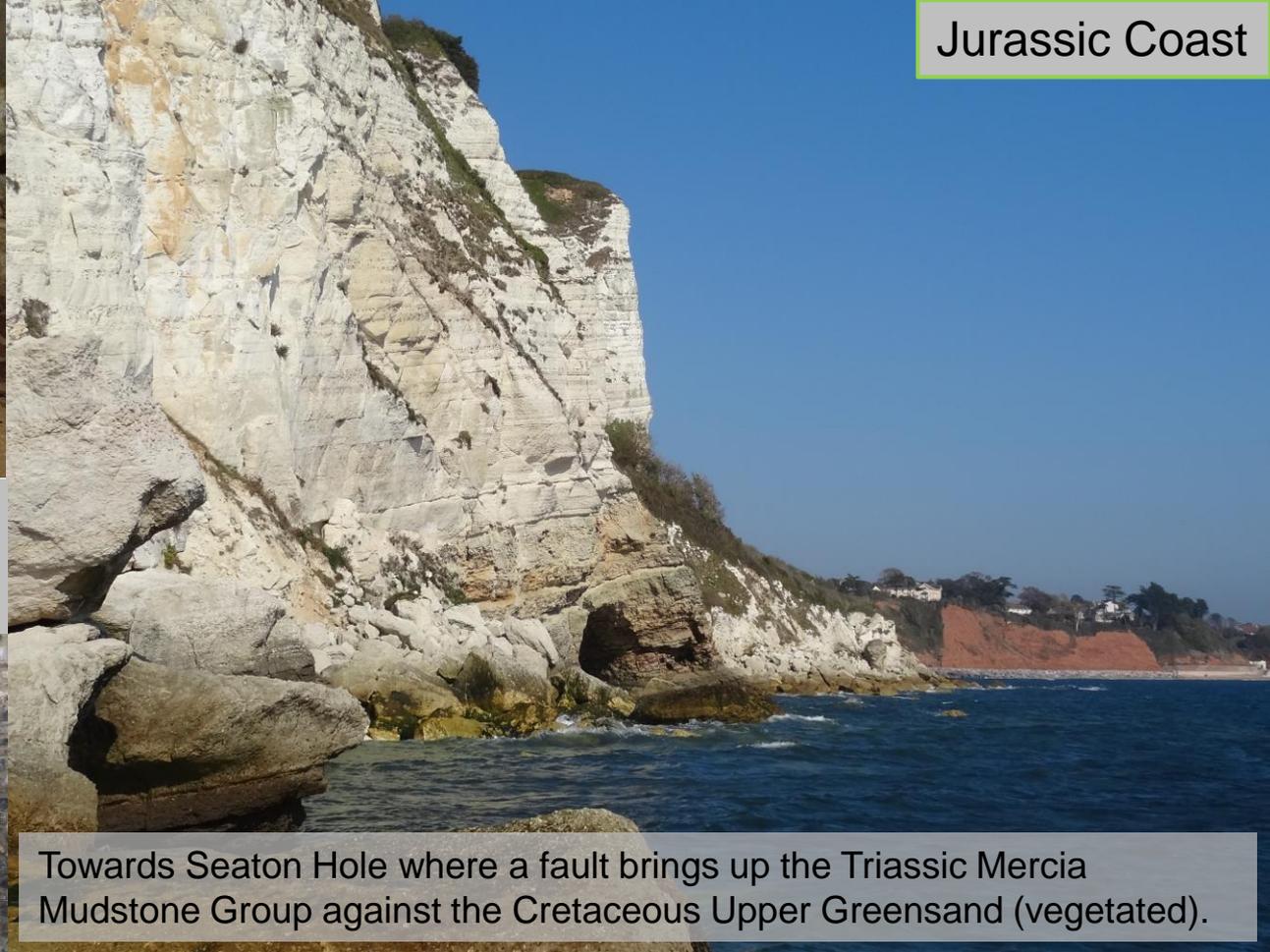


Fallen Chalk and Upper Greensand blocks with the pinnacled Hooken Landslip in the far distance

Branscombe, Devon, 2011



Tools in Beer Stone Mine, within a hard horizon in the Chalk. The stone was used in this window frame.



Towards Seaton Hole where a fault brings up the Triassic Mercia Mudstone Group against the Cretaceous Upper Greensand (vegetated).

Jurassic Coast



Alternating mudstone & limestone of the Blue Lias Formation (Lias Group, Early Jurassic), Seven Rock Point, 1985.



Ammonites near Seven Rock Point, 1979.

Lyme Regis, Dorset

East Cliff, West Bay - Bridport
Sand Fm. (Lias Group, Jurassic).

Jurassic Coast



West Bay, Dorset, 2010



Burton Cliff

Bridport Sand Formation



Burton Bradstock Rock Fall, 2005

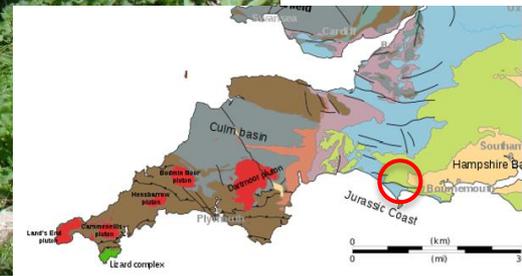
A very large storm beach, 29 km long, enclosing the Fleet lagoon and extending from West Bay to Portland. Abbotsbury Swannery in the foreground; St Catherine's Chapel at left. The beach formed after the last Ice Age as sea level rose, but its development is complex.



Chesil Beach from above Abbotsbury, Dorset, 2010



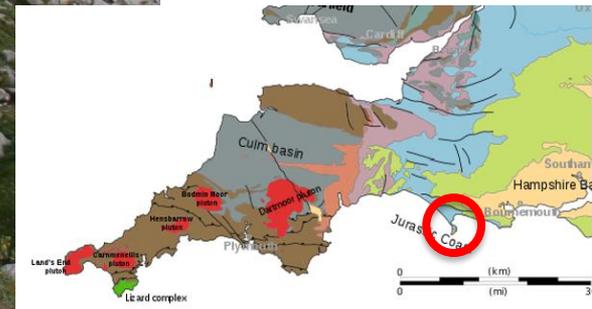
Stromatolitic limestone enclosing fossil tree trunk, Purbeck Group (Jurassic-Cretaceous)



Portesham Rocket Quarry near Abbotsbury, Dorset, 2010

Jurassic Coast

Portland Chert
Member, Portland
Stone Formation,
Portland Group
(Jurassic, Tithonian)



Isle of Portland, Dorset, 2007

Jurassic Coast

- A. Lighthouse, quarry & Western Raised Beach (foreground)
- B. W. Raised Beach on cliff-top
- C. Silicified tree trunk
- D. Freshwater Bay
- E. Gastropods in Eastern Raised Beach



The raised beaches date from the last two interglacials:
Eastern – 125 ka (Ipswichian)
Western – 210 ka (Aveley)

Isle of Portland,
Dorset, 2012

Jurassic Coast



Chesil Beach

Olympic logo, Albion Stone Co.



West Weares



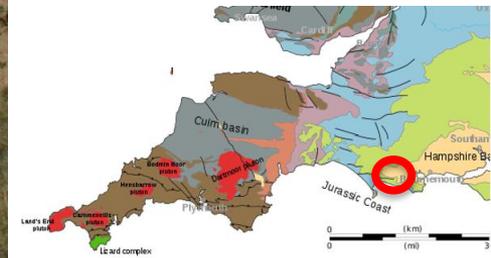
Remains of quarry waste tipping bridge

Isle of Portland, Dorset, 2012

Jurassic Coast



Chalk with Wealden and Upper Greensand in foreground. The rocks are vertical here with Purbeck and Portland Group on the seabed just offshore.



Durdle Cove, Swyre Head and Bats Head, Dorset, 2007



Arch in Portland Stone Fm;
Purbeck & Wealden to left.



St Oswald & Man O'War Bays



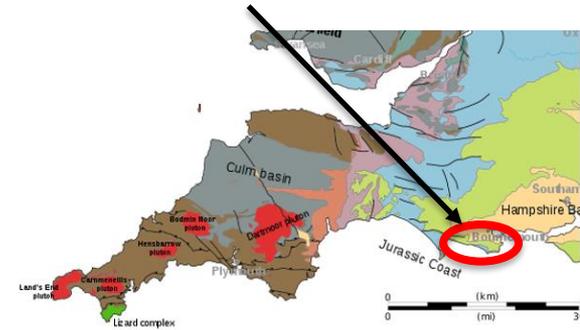
Durdle Door, Dorset

Jurassic Coast

The Lulworth Crumple, Purbeck Group. The limestones have been folded by Alpine tectonic movements.



Lulworth Cove-Studland



Stair Hole, near Lulworth Cove, Dorset

Jurassic Coast



Lulworth Cove formed by erosion of soft Wealden sands and clays after the sea breached the Portland-Purbeck limestone barrier at the cove entrance. The back of the cove is Chalk.



Fossil Forest ledge at right

The Fossil Forest features cylindrical masses (thrombolites) which are of calcareous tufa formed round tree stumps, within the Purbeck Group. The Jurassic-Cretaceous boundary lies within these limestones and shales.



Tree stump in foreground

Lulworth Cove, Dorset

Jurassic Coast

Wealden and Chalk
Groups (Cretaceous)



Purbeck & Portland Limestones



Wealden, Worbarrow Bay

Pondfield Cove
(next door to east)



Purbeck Group



Worbarrow Bay, Dorset, 2017

Jurassic Coast

The Tout headland separates Worbarrow Bay from Pondfield Cove in the foreground. In Gad Cliff Portland and Purbeck strata rest on Kimmeridge Clay Formation.



Worbarrow Bay & Tout



Gad Cliff from Worbarrow Tout, Dorset



Etches Collection, Museum of Jurassic Marine Life, Kimmeridge, Dorset



Oil well on cliff-top



Fault at left



Shales & dolomite bed, Kimmeridge Formation (Jurassic)

Kimmeridge Bay, Dorset, 2009

Chapman's Pool from Emmetts Hill. The cliffs beyond are in the grey Kimmeridge Formation. Portland strata (foreground) are also seen in Houns-tout Cliff (R) above the bench and form the steep upper slopes of Swyre Head beyond.

The harder carbonate bands in the shales form ledges at low tide indicated by the breaking waves offshore.



Chapman's Pool to Kimmeridge, Dorset

Jurassic Coast

The quarry worked Portland Stone which was also extracted underground here. It is one of several coastal quarries (all disused) between here and Durlston e.g. Tilly Whim and Dancing Ledge.



Tilly Whim



Dancing Ledge

Winspit Quarry, Worth Matravers, Dorset, 2009



Underground working was by the pillar and stall method for roof support.



Jurassic Coast



Winspit Quarry, Dorset

Desiccation
cracks



Cinder Bed formed of masses of shells



In Durlston Bay we have the finest section of the Jurassic-Cretaceous Purbeck Group in England. Most of the sediments are lagoonal but the Cinder Bed (L. photo) records a marine transgression. The climate was hot and semi-arid.

Durlston Bay, Dorset, 2008

Jurassic Coast

Virtually the whole Chalk succession is present from the left (where the Wealden is just visible) to Old Harry Rocks.

Swanage Bay has been carved out of soft Wealden sediments between the harder Purbeck rocks and the Chalk on the far side.

← The Pinnacles & Old Harry Rocks

The chalk ridge was once unbroken to the Isle of Wight until breached by the sea possibly during the last interglacial.



Ballard Cliff, Swanage, Dorset, 2017

Jurassic Coast

Here is some of the youngest chalk to be seen on the south coast of England – the Portland Chalk Fm.



2016



1996

Old Harry Rocks, Handfast Point near Swanage

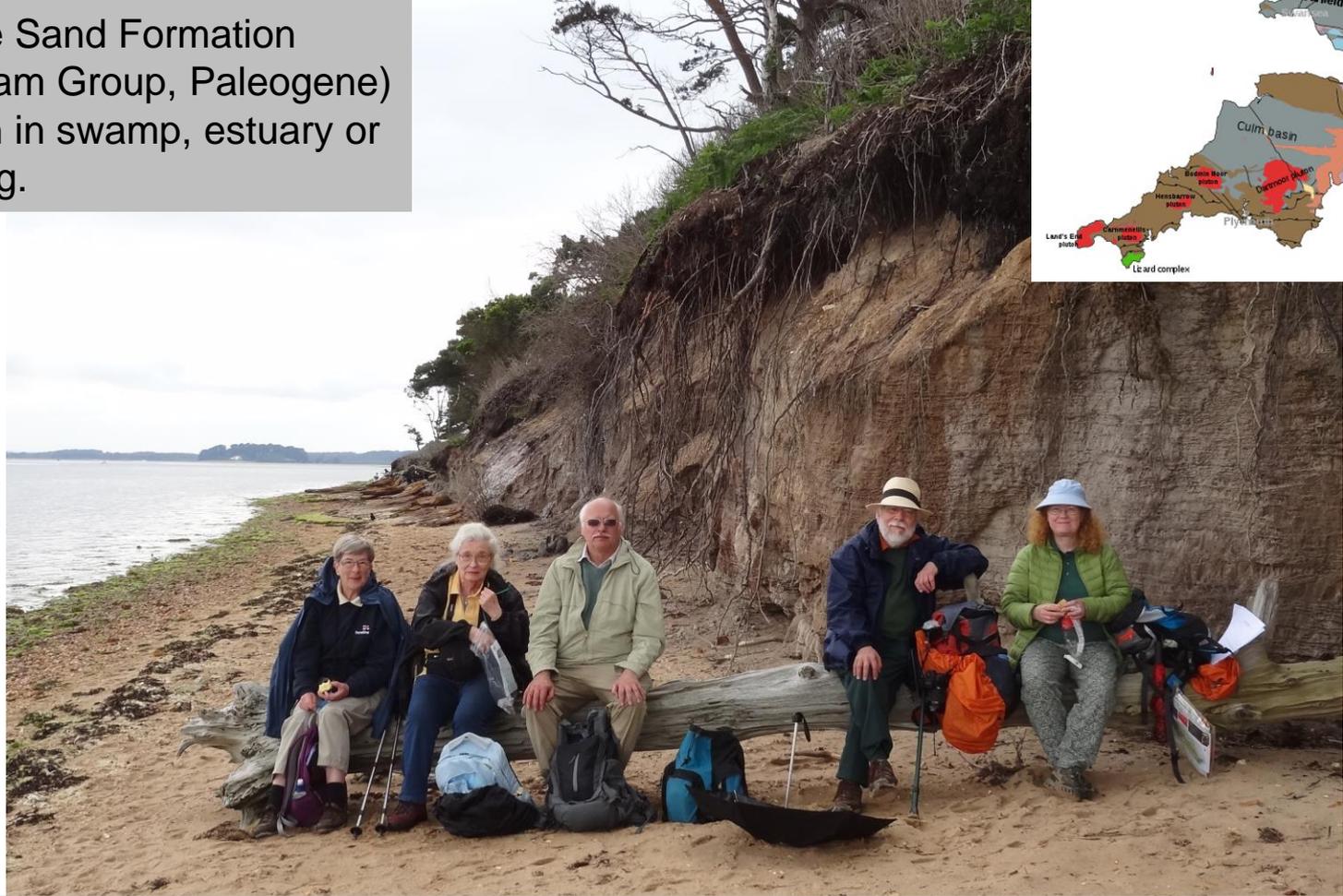
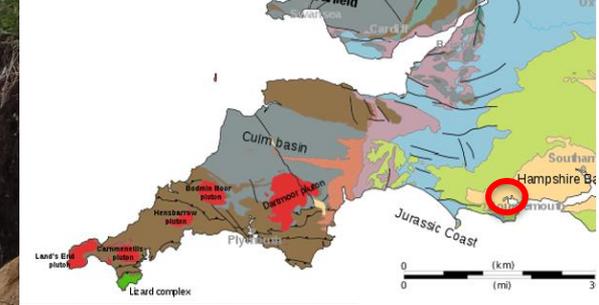
Jurassic Coast

Studland Bay. Red staining by haematite in sands of the Poole Formation (Bracklesham Group, Palaeogene).



Studland Bay, 2009

Branksome Sand Formation
(Bracklesham Group, Paleogene)
– laid down in swamp, estuary or
delta setting.

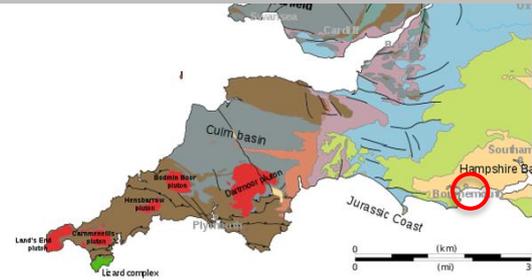


Brownsea Island, Poole Harbour, Dorset, 2016



Ironstone (siderite) nodule.
These were quarried in the 19th century.

Cliffs of Paleogene (Eocene) strata of the Barton Group with c.2m of Pleistocene gravels at the top. Dark carbonaceous sands near the base.



Hengistbury Head, near Bournemouth, Dorset, 2009