

Location & Access:

Crackington Haven is located on the North Cornwall coast, seven miles south of Bude, and four miles north of Boscastle.

Crackington Haven can be reached via a minor road leading from the A39 Atlantic Highway at Wainhouse Corner. There is a car park at Crackington Haven at SX143 967, just a few metres from the beach.

Crackington Haven is served by two public buses - the 95 service (Bude to Newquay) and the 181 service (from Bodmin).



Cliffs at Crackington Haven — photo: Paul Berry

Key Geography: Folding in the cliffs, sandy beach, wave cut platform, ripple marks, tourism.

Description:

The North Cornwall coastline is important geologically, and the specific set of rocks found at Crackington Haven has given its name to the Crackington Formation, turbidite beds of dark blue-grey mudstones and grey sandstones and siltstones deposited in the Carboniferous period approximately 320 million years ago.

Crackington Haven is located on the North Cornwall coast, seven miles south of Bude, and four miles north of Boscastle. The site is an SSSI, and also lies within the bounds of the Cornwall AONB. The hamlet began as a small port importing limestone and coal, and a lime kiln once stood on the beach here. Slate was the main export. There was no quay or jetty here, ships sailing right up onto the beach at high tide. Evidence of an ancient donkey path connecting to Strangles Beach can still be found, where goods were hauled up to the top of the cliffs from the sea. In 1836, plans were drawn up to create a development here by the name of 'Port Victoria', with 12 acres of harbour, a breakwater, docks, a new town, and a rail link to Launceston. The scheme never materialised, but could have looked very different today if it had gone ahead. There is very little evidence left of this old industry today, but Crackington Haven has become a popular tourism location, and next to the car park is an excellent pub (once the house belonging to the manager of the local slate quarry) and a couple of cafe / tea rooms.

The North Cornwall and Devon coastlines provide numerous opportunities to study the amazing geological events of the Variscan Orogeny, a period of mountain building that took place in the late Carboniferous / early Permian periods, and lasted for around 100 million years. At this time, the Atlantic Ocean did not exist, and plate movements resulted in the northern land mass of Laurasia (containing Europe and North America) colliding with the southern continent of *(continued overleaf)*

Curiosity Questions:

- # Crackington Haven sits within the Cornwall AONB. What do these letters mean?
- # Crackington Haven is part of an SSSI. What do these letters mean?
- # A couple of miles south of Crackington Haven lies Cornwall's tallest cliff - High Cliff. But how high is it?
- # If you were to eat a traditional cream tea at Crackington Haven, what would you put on first, cream or jam?

Further information:

<https://devongeography.wordpress.com/2023/07/04/romancing-the-geology-at-crackington-haven/>

Reviewer: Paul Berry B Ed (hons) M Sc FRGS

Former Assistant Vice Principal and Head of Geography at South Molton Community College with 35 years of classroom experience. Now an Iceland Field Studies Tutor with Rayburn Tours. Blog: www.devongeography.wordpress.com Twitter: @unicorn4275

Gondwanaland (containing South America, Africa, Antarctica, Australia and India). This closed the Rheic Ocean that was located between these two giant land masses, and buckled the sea bed up into mountain summits high above sea level while also creating the new super-continent of Pangea.

The mountains created have been eroded away over the years, leaving a landscape from around 145 million years ago dominated by the actions of the sea. In the Carboniferous period, 290 – 350 million years ago, and before the plate collision, erosion of the mountains to the south fed vast quantities of muddy sediment via rivers draining the northern slopes and a series of deltas into the basin containing a shallow, brackish sea. As flow velocity of these rivers decreased, heavier grains of sand settled out, followed by silts, and then finally muds. Some of these layers may have been deposited in just a matter of hours.

At Crackington Haven (and along much of the North Cornwall and Devon coastlines) these sedimentary layers can be clearly seen in the 91 metre cliffline on the north side of the bay, while the top surfaces have been eroded away to create a flat inland plateau. The sandstones appear lighter in colour, while the mudstones show as much darker layers, 30-45 cm thick. Although originally deposited over 300 million years ago as flat, horizontal layers, these turbidite beds have been lifted and twisted into majestic folded shapes, and it is almost impossible to pick out a single layer and follow its path through numerous upfolds and downfolds. The rocks are generally northerly dipping, with a number of low angle faults visible. While the chaos of folding is evident in the cliffs, on the beach, the sedimentary layers have been eroded by the sea to produce a wave cut platform of ridges and gullies exposed at low tide. The sandstones are more resistant to wave action, meaning they stand prouder as ridges, while the less resistant mudstones have been worn away faster to produce gullies. Numerous fault lines are clearly visible.

There are numerous other interesting geological features to search for at Crackington Haven. Huge slabs of sandstone and mudstone have been eroded from the cliffs, and these display clear ripple marks – impressions of an ancient sea bed from over 300 million years ago.



Vertical beds on Crackington Haven beach
— photo: Paul Berry

Closer inspection of the slabs on the wave cut platform show how these turbidite layers have been flipped right over, and now sit literally upside-down. Proof of this is offered by the flute casts that can be seen on the rock surface – the best examples being found on the south side of the beach. These were originally created by fast flowing water dragging pebbles along the sea bed and scouring out narrow channels which were later infilled by sediments. These features now show up as upstanding ridges (or ‘flutes’) in the rock as the whole surface has since been flipped upside-down by the intense folding that took place at the end of the Carboniferous.

Flute casts like this are known as ‘sole structures’, and are valuable as indicators of which way up (or down) rock layers are when we see them at the surface. The scours are often deeper at their upstream end, and shallower at their downstream end – evidence of the direction of water current at the time the sediments were deposited. In the photo below, this would have been from lower right to top left, ie south to north. Rocks here are dipping (sloping) to the north at around 30 degrees, having been completely inverted by folding. To restore the original position of these rocks, the slab would need to be flipped over like closing the left-hand side of an open book. The ridges then become grooves on the underside.

A brown / orange mush, a matrix of stones set in earth and other debris called can be seen at the top of the cliffs on each side of the beach. This is known as ‘head’, and was formed during the peri-glacial or tundra-like conditions similar to Siberia today. This involved a seasonal freeze and thaw of the surface, and as melt water could not penetrate **(continued overleaf)**

the deeper frozen ground, a pasty sludge of water, debris, and frost-shattered stones slipped down valleys towards the cliffs – a process known as gelifluction.

The rock surfaces at Crackington Haven are criss-crossed by quartz veins, the result of silica being forced into fissures in the surface by heated water at high pressure.

The area around Crackington Haven has evidence of early quarrying and mining. On the northern flank of Penkenna Point, slate was procured at the Barton Quarry, and huge stacks of cut slates are still visible on the lower slopes of the cliffs. Further stacks exist along the coast path above Tremoutha Haven, having been extracted from the cliffs below, above the arch of Northern Door. However, these have since long been hidden below a dense cover of vegetation. Three significant mines used to operate in the area, and one of these was at Tremoutha, where an old adit can be seen in the cliff face. Great Hill zinc mine was the most prominent in the parish, giving the tiny hamlet of Mineshop its name. This was where the mine's blacksmith had his workshop. The mine was worked up to 1914 when its German labourers left at the outbreak of war. Zinc ore, galena (lead ore), wolfram (tungsten ore) and copper ores were mined here in the heydays of Cornish mining industry.

CRACKINGTON HAVEN WALK

A short, circular walk from the car park at Crackington Haven (SX19 143968) can enhance the visit to this location, taking in a number of geographical features before building up to the grand finale of a visit to the beach itself. To begin the walk, leave the car park and turn left to walk uphill on the road past the public toilets. A yellow-topped way mark post on the right just past the turning to Trevigue marks the way to East Wood.

The route continues along a drive to its end, and then a narrow path leads into an ancient mixed woodland of oak, ash, hazel and holly. The path runs through a steep-sided valley cut by the river into an older eroded platform which existed some 45 to 60 million years ago. The path crosses two separate streams before heading left up the valley, signposted to Sheep Dip.

Another wooden fingerpost indicates the route to Trevigue, heading uphill and then across farmland (a very steep climb!) to the stone and slate farmhouse. This 800- acre working farm was first mentioned in 1327, and is thought to have been built around an earlier Saxon settlement. The current farmhouse dates from the sixteenth century, although many of the surrounding buildings have been converted for use as holiday accommodation. Once it reaches the road, the route takes a left turn. After a short distance a sign and information board for Strangles Beach can be found on the right, and the path heads from here towards the coast. Rather than continue straight on to descend to the beach, take a right turn to follow the wild flower-lined coast path at the top of the flat cliffs. There are tremendous views from here southwards to Tintagel, and on a clear day to numerous headlands beyond including Trevoze Head. The cliff geology here is unstable (but not dangerous), and much of the rock surface has collapsed and slumped seawards due to a line of listric faults. Progressing northwards, the route reveals views of the chaos of boulders at Strangles Beach, before passing above the small stack of Samphire Rock.



Cam Beak Head — photo: Paul Berry

A view to a natural arch carved out of softer shales called Northern Door soon appears, surrounded by cliffs decorated by a random pattern of white quartz veins.

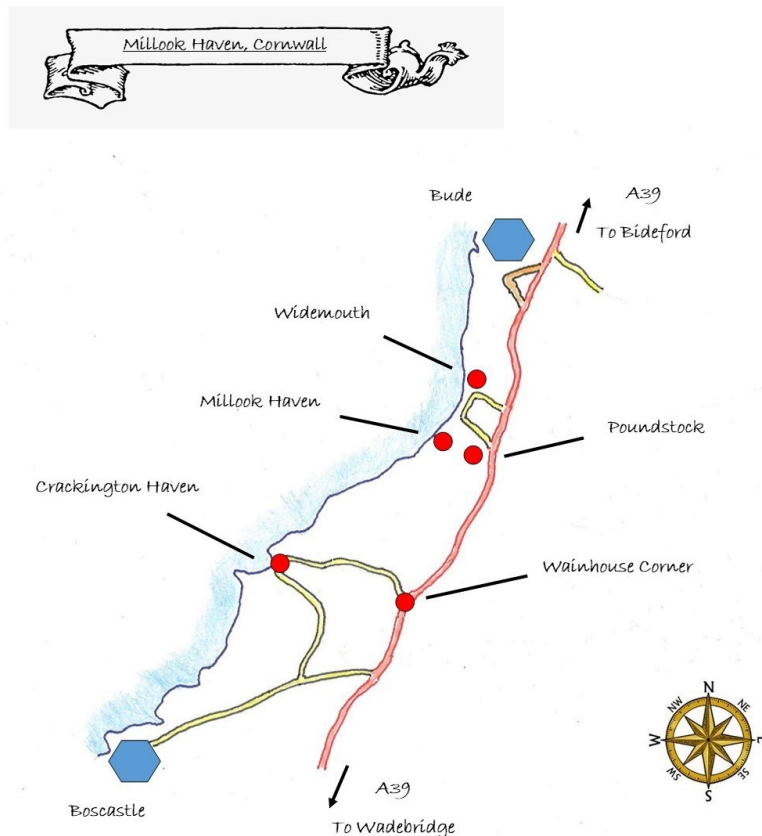
(continued overleaf)

The path moves on towards the headland of Cambeak (328 feet), where clear evidence of folds from the Variscan can be seen in the rock face, some almost recumbent, ie lying on their sides. The name of the headland derives from an old Cornish word for 'crooked point', and from here, Hartland Point and Lundy Island can be seen in the distance to the north.

The coast path climbs steeply over Cambeak, and then descends equally steeply down a zig-zag route (to help prevent erosion) on the far side. Alternatively, it is possible to turn right at the foot of the headland, and follow a path down into a marshy area called Cam Draught. The path passes across a couple of valleys that have been cut since the ice age and have been left as hanging valleys ending in small waterfalls that drop down to the sea.

The route continues along Tremoutha Haven cliffs where the first view is offered of the upended sedimentary strata of a wave cut platform, with Crackington Haven beach and its clifflike beyond.

The path passes a couple of tennis courts before leading to the beach which can be explored before returning to the car park. The bridge over the stream by the road displays a stone plaque commemorating its rebuild following a major flood in 2004, which brought extreme damage to the village of Boscastle to the south.



Answers to Curiosity Questions:

- # Crackington Haven sits within the Cornwall AONB. What do these letters mean? (*Area of Outstanding Natural Beauty*)
- # Crackington Haven is part of an SSSI. What do these letters mean? (*Site of Special Scientific Interest*)
- # A couple of miles south of Crackington Haven lies Cornwall's tallest cliff - High Cliff. But how high is it? (*735 feet ASL*)
- # If you were to eat a traditional cream tea at Crackington Haven, what would you put on first, cream or jam? (*Jam first as you are in Cornwall! If you were in Devon, it would be cream first*)

