

The geology of **WREN'S NEST** National Nature Reserve

INTRODUCTION

Wren's Nest National Nature Reserve is a geological site of exceptional importance and is one of the most notable geological locations in the British Isles. It is internationally famous for its large numbers of beautifully preserved Silurian limestone fossils, collections of which can be found in museums throughout the world. Over 600 fossil species are known at Wren's Nest, and Dudley was the first place in the world where a third of these were found.

In recognition of its geological significance, Wren's Nest was declared a National Nature Reserve in 1956 and also a Site of Special Scientific Interest in 1990. In 2006 Wren's Nest celebrated its 50th anniversary.

SILURIAN TIMES

Wren's Nest and Mons Hill are composed of Wenlock limestone deposited 420 million years ago when the area now known as Dudley was covered by a shallow, tropical sea. The limestone contains the remains of ancient sea creatures that inhabited the area during a period in geological history known as the 'Silurian'. At this time Britain was situated near the equator and there was very little life on the land. Coral reefs provided homes for many species of animal and early plant life, a number of which have been preserved as beautiful fossils.

At Wren's Nest it is easy to find fossils in the loose material on the floor of the quarry and in the fossil trench. The types of fossil that can be found include compound corals such as chain coral, solitary 'rugose' corals, sea lilies or crinoids, and abundant brachiopods. Trilobites are probably the most

famous of our fossils, especially the 'Dudley Bug' as nicknamed by quarrymen in the 19th century. These look a bit like modern woodlice but are actually more closely related to crabs. Several types of brachiopod or seashell can be found. These were



Leptaena depressa
a common brachiopod

more prevalent in Silurian times than modern-day bivalves like oysters and mussels. Occasionally you can find a gastropod or early sea snail. Ammonites appeared much later in the fossil record during Cretaceous and Jurassic times and cannot be found at Wren's Nest. Wren's Nest also had sea scorpions and hard-shelled relatives of the squid and cuttlefish inhabiting the reef, however these are much harder to find.

INDUSTRIAL TIMES

Wren's Nest played a vital role in the industrial development of the Black Country. The limestone was first exploited as a source of building stone, then for lime mortar and agricultural fertiliser. During the height of the industrial revolution up to 20,000 tons of rock were removed annually from Wren's Nest and used in the many local blast furnaces. The lime ash acted as a flux, driving off the impurities in the iron-making process. Mining and quarrying ceased in 1924, leaving the hills honeycombed with a network of underground workings and caverns. However, without the industrial revolution, the rocks at



Poleumita, a gastropod or early sea-snail

Wren's Nest might never have been exposed or the fossils discovered. It was during the mid-1840s that many of the best fossils were found, including the Dudley Bug trilobite, which became an important local symbol and was once featured on the town's coat of arms.



Calymene blumenbachii
The Dudley Bug

The first Abraham Darby, the father of the industrial revolution, was born at Wren's Nest in 1678 and reputedly learnt the secrets of how to smelt iron with coke from his great uncle Dud Dudley. The Darbys later moved to Coalbrookdale in Shropshire to develop these techniques and went on to construct the famous Ironbridge in 1781. Wren's Nest has numerous archaeological points of interest including several early lime pyes for burning limestone which date from mediaeval times and some later brick-lined draw kilns which are listed features. In recognition of Wren's Nest's contribution to the lime industry and development of the Black Country, together with Castle Hill, the area was declared a Scheduled Monument in 2004.

NATURE CONSERVATION

Today, Wren's Nest is also important for its wildlife interest and supports a diversity of rare flora and fauna. The occurrence of species-rich limestone grassland and ash-elm woodland communities are uncommon in the West Midlands region. Several county rarities are present, including autumn gentian, small scabious, common gromwell and bee and pyramidal orchids. Some of the underground workings have since become a key hibernation site for seven species of protected bat, whilst the locally uncommon white-letter hairstreak butterfly is also present in small numbers.



THE GEOLOGICAL TRAIL

Begin your visit at point **1** on the geological trail north of Wren's Hill Road. Here you will see a sculpture of the Dudley Bug and a mosaic artwork by local primary school children celebrating the 50th anniversary. At point **1** you are standing in a north-south linear trench where a large quantity of limestone has been removed. The layers of limestone making up the ancient Silurian sea bed are clearly visible and incline at about 50 degrees.

Cross over the road south and proceed to point **2** known as the NCC cut. This trench is the only one on site running east-west and was excavated by the then Nature Conservancy Council in 1977 for the purposes of education and scientific study. As you walk through the trench you pass through three million years of earth history and can view the many layers of strata which make up the internal structure of the hill. Periodically there are softer clay layers between the more resilient beds of limestone. These are ash-derived deposits from volcanic eruptions which upon settling became trapped in the sea sediments.

Continue to point **3**, take the entrance into the reserve past the college and past the Caves pub on the left. The first thing to notice is the layers of sea bed are now leaning the opposite way because you are now standing on the west side of the hill. The surface texture of this rockface is not caused by wave action but by the action of the Silurian sea creatures moving across and through the soft sediments.

Further along the same path you come to the quarry or reef mounds at point **4**, which is one of the best places on the reserve to look for fossils. Fragments of corals, sea lilies,

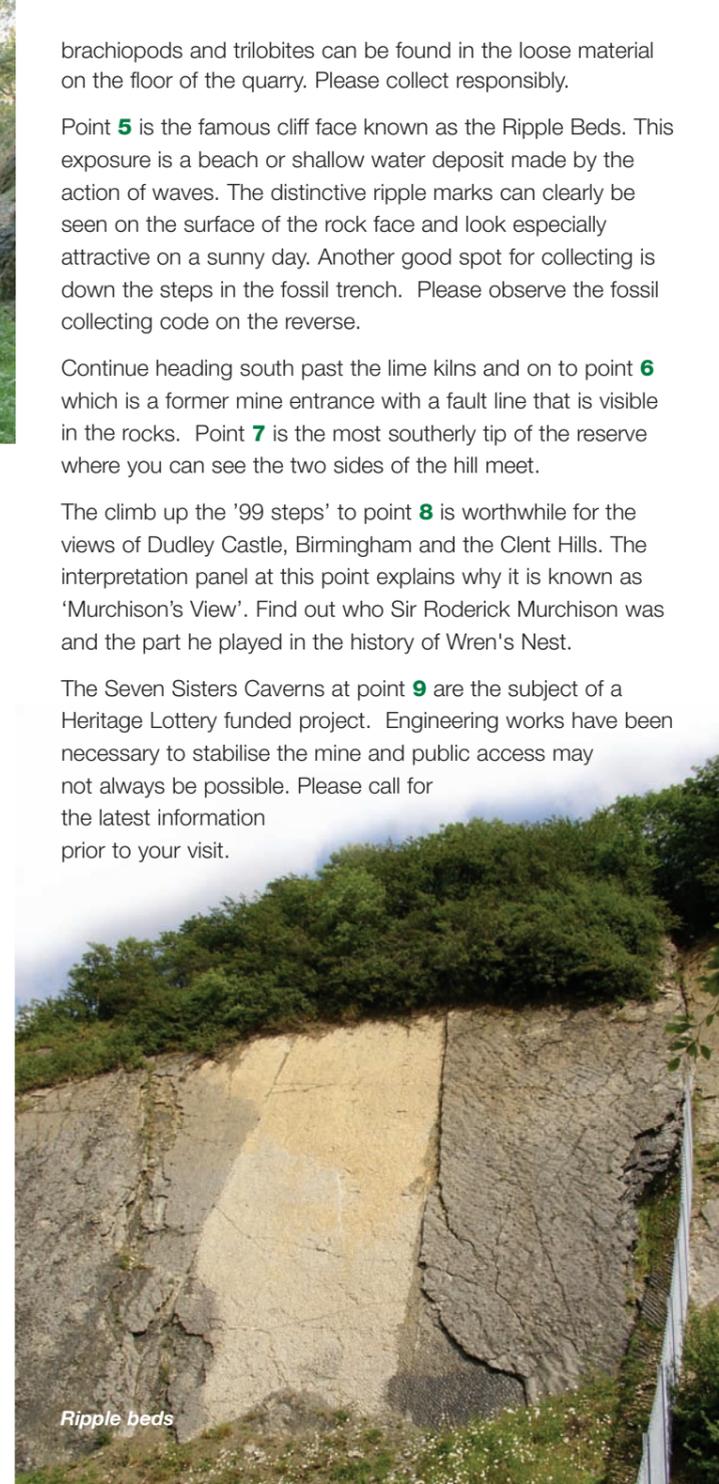
brachiopods and trilobites can be found in the loose material on the floor of the quarry. Please collect responsibly.

Point **5** is the famous cliff face known as the Ripple Beds. This exposure is a beach or shallow water deposit made by the action of waves. The distinctive ripple marks can clearly be seen on the surface of the rock face and look especially attractive on a sunny day. Another good spot for collecting is down the steps in the fossil trench. Please observe the fossil collecting code on the reverse.

Continue heading south past the lime kilns and on to point **6** which is a former mine entrance with a fault line that is visible in the rocks. Point **7** is the most southerly tip of the reserve where you can see the two sides of the hill meet.

The climb up the '99 steps' to point **8** is worthwhile for the views of Dudley Castle, Birmingham and the Clent Hills. The interpretation panel at this point explains why it is known as 'Murchison's View'. Find out who Sir Roderick Murchison was and the part he played in the history of Wren's Nest.

The Seven Sisters Caverns at point **9** are the subject of a Heritage Lottery funded project. Engineering works have been necessary to stabilise the mine and public access may not always be possible. Please call for the latest information prior to your visit.



Ripple beds

Background: Fossil reef mound



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National Nature Reserve

OTHER PUBLICATIONS

The Wildlife of Wren's Nest leaflet
Wren's Nest Geological trail guide for children by Bramford Primary School
The Limestone Way walk leaflet
For a more detailed explanation of the trail route the Wren's Nest Geological 'A' level field guide is available from the warden service or Dudley Museum & Art Gallery.

WREN'S NEST WARDEN SERVICE

The nature reserve has a team of full-time wardens who maintain and care for the site's geological, wildlife and archaeological features. To book a guided walk or group visit, or to enquire about volunteering with the Friends of Wren's Nest call the senior warden on 01384 812785.

Why not combine your visit with a trip to Dudley Museum & Art Gallery? The museum has an extensive geological collection and fine displays of fossils from Wren's Nest. The museum shop sells books, fossil replicas and minerals. Admission is free.

Dudley Museum & Art Gallery
St. James's Road, Dudley, West Midlands DY1 1HU
Telephone: 01384 815575
Open Monday to Saturday 10am - 4pm

Geological Society - The Black Country Geological Society is based in Dudley and meetings usually take place once a month, lectures being held at Dudley Museum & Art Gallery. Telephone: 01384 815575. For more information please visit www.bcgs.info

CONTACT DETAILS

More information can be found at www.dudley.gov.uk/wrensneestntr
To speak to a warden call **01384 812785**
or e-mail wrensnest.country@dudley.gov.uk



Background: Reef limestone



The Seven Sisters Caverns prior to engineering works

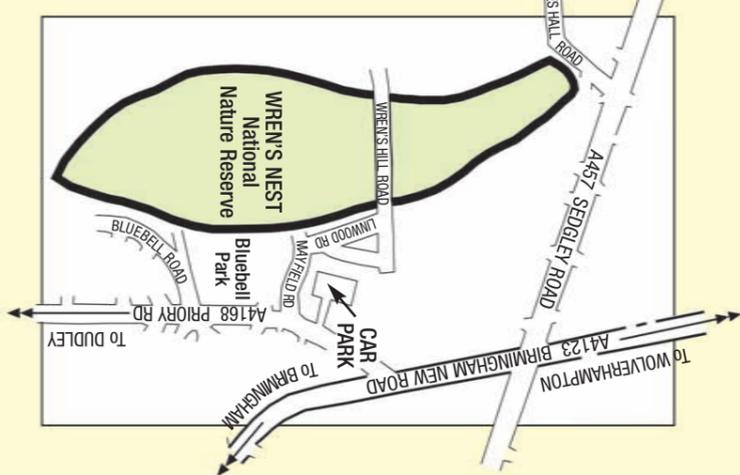
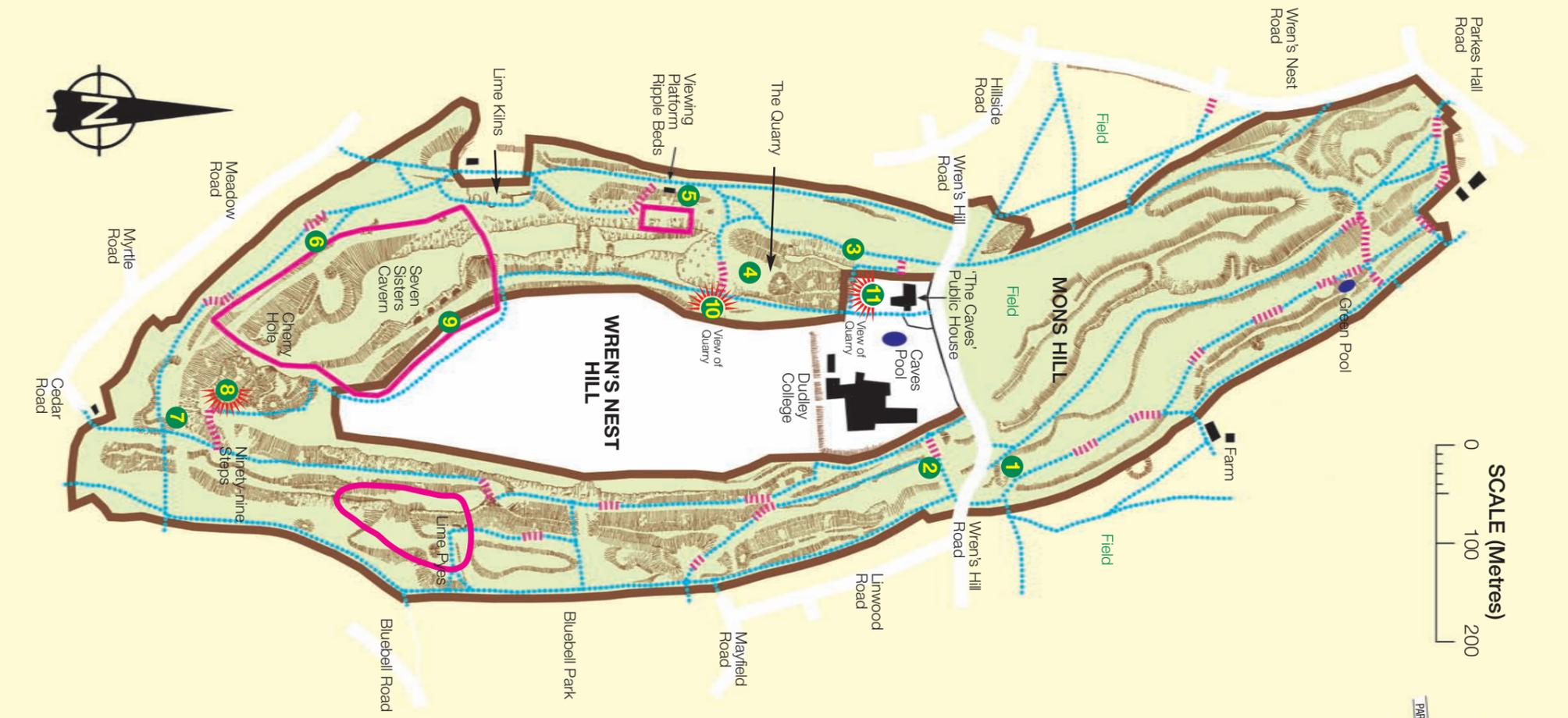
The trail route concludes with attractive views of the quarry, Ripple Beds and reef mounds at points **10** and **11**. Looking in a north-westerly direction from point **10** you will be able to see Sedgley Beacon.

SAFETY INFORMATION

Visitors are requested to remain on designated footpaths and not to enter safety fenced areas. The geological trail route provides good access to all the main features of interest. Due to the engineering works it has been necessary to extend the fencing in certain areas and re-route paths. Please refrain from climbing rock faces. The use of hammers is strictly prohibited.



Side view of the Ripple Beds



- Fossil collecting code**
1. For your own safety please **DO NOT** climb on the rock exposures. Remain outside of safety fenced areas and keep to designated paths.
 2. The use of hammers or other tools on the reserve is **STRICTLY PROHIBITED**. Never collect fossils directly from rock faces.
 3. Fossils may be collected from the loose material on the ground. Please only take away a few small representative samples.
 4. For help with identification please contact the warden service or Dudley Museum & Art Gallery. See contact details on reverse.
 5. Keep a note of the exact location your fossils were found and if you no longer wish to keep them, please donate them to the Museum or the warden service for others to enjoy.
- THANK YOU

KEY

- Geological trail markers
- View point
- Footpaths
- Steps
- Safety fence
- Reserve boundary

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