



SPNHC Cardiff 2014 Excursion Guide



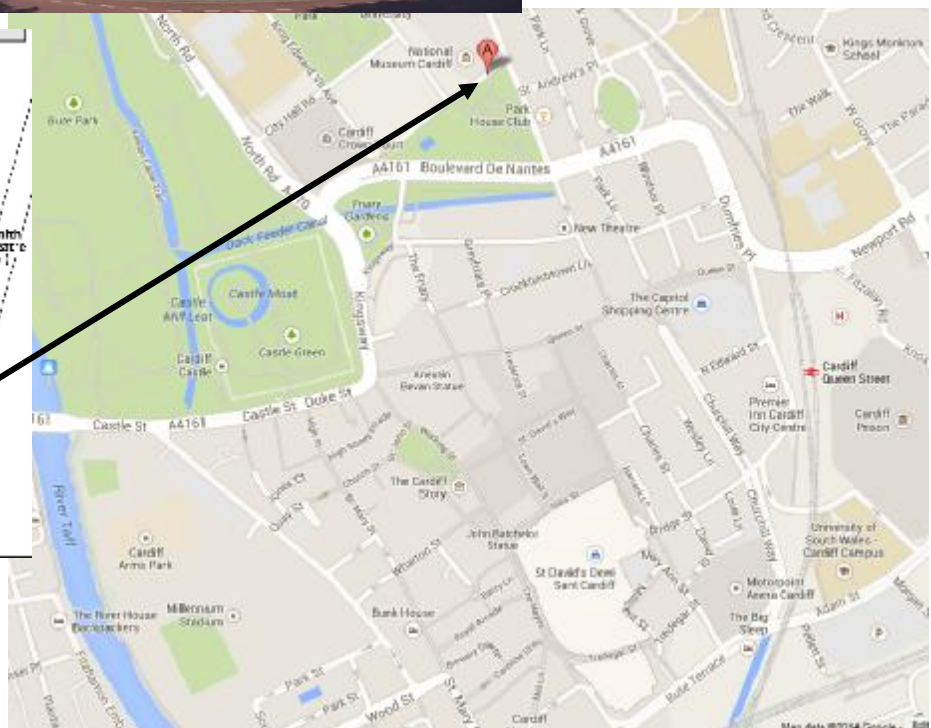
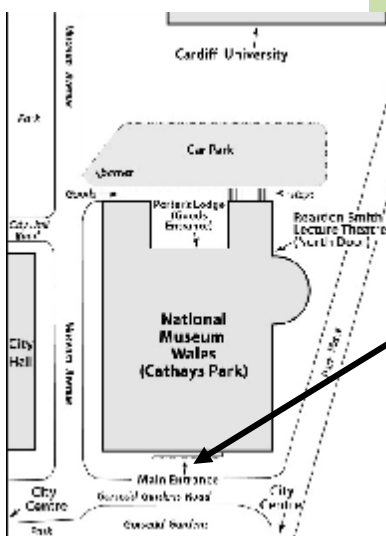
Summary

Trip	Destination	Departure	Leader	Lunch	Return
1	Diamonds, Diggers & Distilleries *	09:00	Ben Evans	Lunch provided	18:00
2	Grassland Conservation and DNA bar-coding *	09:30	Sally Whyman	Lunch provided	17:00
3	Caught between a Celtic tribe and a hard place *	09:00	Christian Baars	Picnic lunch **	17:00
4	Orchids, adders and crested newts *	10:00	Vicky Purewal	Picnic lunch **	17:00
5	Glamorgan Heritage Coast *	09:30	Cindy Howells	Picnic lunch **	17:00
6	Big Pit	10:00	Helen Kerbey	Lunch provided	17:00

* Please bring sturdy shoes/boots and appropriate weather protection. In Wales, this means being prepared for beautiful sunshine (sun protection) and, half an hour later, the occasional rain shower (water proofs).

**Please collect your lunch pack prior to boarding the coach.

All coaches depart from the front entrance of National Museum Cardiff, Gorsedd Gardens, Cathays Park, Cardiff CF10 3NP (please see map overleaf). The coach company for all of the trips is A&B Coaches. Each coach will be clearly marked with their destination. Lunch will be provided either at your destination or as picnic lunch. All coaches will return to National Museum Cardiff at the end of the day. The contact telephone number on the day is 07738 056638.



1. Diamonds, Diggers and Distilleries

A field excursion in the South Wales Coalfield to find out how conservation and management of contemporary and historically important geological localities can help provide context to and greater understanding of museum collections.

Stop A: Ffos-y-fran Land Reclamation Project, Merthyr Tydfil (UK Grid reference SO 0945 0591)



Ffos-y-fran has been at the heart of industrial Merthyr Tydfil for over 250 years and is one of Europe's largest land reclamation projects. Surface mining and extraction of around 30 coal seams from the lower part of the Coal Measures is funding the remediation and restoration of a large area of derelict, once industrial, land. The extensive spoil heaps contain a wealth of fossil plant material and a range of coal measure minerals that are typically associated with bands of ironstone nodules, such as Merthyr Diamonds (clear, double terminated quartz crystals) and Millerite (nickel sulphide). We will visit the opencast where we will see the extensive coal extraction operation and learn about the exceptional temporary geological exposures that make up the South Wales Coalfield.

Stop B: Cwm Gwrelych Geo Heritage Trail, Glyn Neath (UK Grid reference SN 8960 0540)

Streams have cut through the edge of the South Wales Coalfield and exposed an important section of the Upper Carboniferous stratigraphy in this secluded valley. The site is protected as a Site of Special Scientific Interest (SSSI) for the exceptional geology found here. The remains of 300 years of mining and quarrying for iron ore, coal and stone can still be seen if you know where to look. More recently, since the decline of the heavy industries, nature has been reclaiming this special place, with acid-loving grasses and wild flowers colonising the old spoil tips, newts thriving in previously industrial ponds and bats roosting in disused mines.

A community-based geological conservation project at Cwm Gwrelych was created by the British Institute for Geological Conservation as part of its South Wales Coalfield Geo Heritage Project. The site forms an important cornerstone of our network of Coalfield sites. Trails created as part of this project use a network of footpaths to access the lower part of the SSSI, providing spectacular landscape views and opportunities for safe, close up access to a wealth of geological features.

Stop C: Penderyn Distillery (UK Grid reference SN 9510 0830)

At the last stop of the day you will be able to relax and unwind with a tour and tasting at Wales' best distillery. Penderyn Distillery sits on the edge of Brecon Beacons National Park and within the Fforest Fawr Geopark, using water filtered by the local Carboniferous rocks. It produces just one cask of whiskey per day, with strict allocation to markets outside of Wales, making it one of the rarest, finest and most delicate malt whiskies available.



2. Grassland Conservation and DNA barcoding

National Botanic Garden of Wales (UK Grid reference SN 5199 1802)



Opened in May 2000, the National Botanic Garden of Wales is a charity dedicated to conservation, education and inspiration. Situated in rural Carmarthenshire and spread across 568 acres, the Garden is a mosaic of themed planting beds, restored Regency features and parkland, and stunning modern architecture and art. Under the world's biggest single span glasshouse is the largest Northern Hemisphere collection of Mediterranean climate plants. The formal garden area is surrounded by Waun Las National Nature Reserve, a working organic

farm managed to encourage biodiversity.

During your visit, the Garden's Director, Dr. Rosie Plummer, will introduce the Garden's role in making Wales the first country in the world to create a DNA barcode for all of its native flowering plants and conifers. DNA barcoding enables identification of any plant species using the tiniest leaf fragment, seed or pollen grain, including from stomach contents or environmental samples. Rosie will talk about the scientific process, the impact this has had on plant conservation, honey research, trade in endangered species, and the inspirational response of artists.

We will also visit a species-rich hay meadow which forms part of the National Nature Reserve and symbolizes the Garden's conservation work. In 2000, the meadow was species-poor but by managing it organically and in a traditional one-cut-a-year pattern, the floral diversity has blossomed. Highlights now include hundreds of greater butterfly orchids, burnet-saxifrage, greater burnet, eyebright and devil's-bit scabious. The Garden's Interpretation Co-ordinator, Bruce Langridge, will explain how this in-situ conservation success story has inspired events, projects and others to re-introduce traditional hay meadow practices onto their land.



3. Caught between a Celtic tribe and a hard place

Llandoverly and Llandeilo, mid Wales

The study of Geology in Wales has been of considerable historical significance in the development of Geology as a science. The Ordovician (488 – 443 million years ago) and Silurian (443 – 416 million years ago) are of particular importance; both are named after Celtic tribes (Ordovices and Silures) which used to live in the approximate areas where these rocks outcrop today.



During the Ordovician, the Welsh Basin was affected by volcanicity and rapid post-volcanic subsidence in North Wales and, in South Wales, deposition of anoxic muds, later switching to an oxygenated depositional environment. Towards the late Ordovician, a large global sea level fall (ca. 100m) is linked to the beginning glaciation centred on the large southern continent of Gondwana. During the early Silurian, a region of enhanced subsidence in the North-West was separated from a more stable region to the South-East, reflected by a shelly facies in the South and East, and a graptolitic facies in the North and West.



Falls of the Towy, and Golden Grove, as seen from Dynevor Park near Llandeilo, sketched by Mrs. Murchison.

The area is of important historic interest, as Sir Roderick Murchison (1792 – 1871) undertook some of his geological mapping here in the 1830s which led to the definition of the Silurian System and the Llandoverly Series. Murchison, however, had made some mapping errors, which contributed to him falling out with his close friend and colleague, Professor Adam Sedgwick (1785 – 1873), who

had defined the Cambrian System following his geological mapping of North Wales. This resulted in one of the largest and longest-lasting geological controversies, only to be resolved in 1879, after both men had died, by Charles Lapworth's (1842 – 1920) suggestion of the Ordovician System.

Stop A: Scrach Forestry Quarry (UK Grid reference SN 8471 3962)

We will see the unconformity caused by the end-Ordovician tectonic deformation and sea level lowstand. At some further exposures along forest tracks we are going to follow the rock sequence from the upper Ordovician into the lower Silurian and learn how the fossils and sediments tell the story of a changing environment and climate. One of the exposures is the Aeronian Global Boundary Stratotype Section and Point (GSSP).

Stop B: Home Farm Quarry (UK Grid reference SN 6146 2286)

We are briefly stopping to take a look at some mid Ordovician rocks (Llandeilo Flags) containing abundant trilobites (*Asaphus buchii*, now called *Ogygiocarella debuchii*), which Murchison himself described finding in this very quarry.



4. Orchids, adders and crested newts

Parc Slip Nature Reserve and Wildlife Trust Visitor Centre (UK Grid reference SS 8155 8420)



The Wildlife Trust of South and West Wales (WTSWW) is a membership charity which manages over 4,000 acres of some of the region's most precious wild places in the form of over 90 nature reserves. WTSWW has been working on behalf of wildlife for over 40 years. As well as managing land, we also campaign against damaging developments and help people of all ages to understand, and get pleasure from, wildlife.

Parc Slip Nature Reserve is one of WTSWW's flagship reserves, just outside Bridgend in South Wales. Until the 1980's, the area was an opencast coal mine, unrecognisable from the wildlife haven it has become. Now, the fields near to the Visitor Centre are ablaze with colour as oxeye daisy, ragged robin, orchids, fleabane, red bartsia and numerous other beautiful wildflowers come into bloom. Open water ponds, the wader scrape and wetlands provide habitat for many species of water bird, including teal, lapwing and common sandpiper. There are a number of open access hides and viewing areas throughout the reserve, overlooking the wetland areas and ponds and the lapwing breeding area. Deciduous and coniferous woodland provide home to green woodpecker and jay, tawny owls, foxes and wood mice.

A variety of different habitat types support many different species for wildlife enthusiasts, a safe area for families to discover and enjoy nature, well-maintained traffic-free cycle tracks, including a 4km stretch of Sustrans National Cycle Route 4 for cyclists and more than 10km of tracks for dog walking, with water and free dog waste bags available at the Visitor Centre. There are accessible paths on the Nature Reserve for wheelchairs, walking sticks and for those with sight problems. The Centre and Coffee Shop are fully accessible.

WTSWW's People and Wildlife Officer, Rose Revera, will lead us on a survey of the reserve's healthy population of reptiles and seeing what birds we can spot on the way. This will be followed by some time for independent exploration of the reserve.



5. Glamorgan Heritage Coast

Fieldtrip sponsored by the Geological Curators' Group

Much of the south Wales coastline is dominated by cliffs of Carboniferous Limestone, overlain in places by Mesozoic deposits. The Carboniferous Limestone of Ogmore is of Chadian/Arundian age (350 million years old) and was deposited in tropical shallow seas with Wales then being close to the equator.



Around 150 million years later, in the late Triassic Period, this part of Wales was a low lying arid landscape, bounded by higher ground to the north, and shallow seas to the south, in much the same configuration as today. The tropical climate would have caused periods of drought as well as extreme storm events, and this is reflected in the red Triassic rocks of the area, with their evaporites, baked ripples and footprint horizons and also flash-flooded wadi conglomerates. The early Jurassic marine transgression that slowly drowned these Triassic

deserts initially created a number of small islands of Carboniferous Limestone, around which a marginal (coastline) facies was deposited. These are represented at Ogmore by coarse 'beach' deposits, and are overlain by deeper-water limestones and shales at Southerndown and also further along the coast. The Jurassic rocks of South Wales are limited to only the very earliest beds, the Blue Lias, which is contemporaneous to the famous rocks at Lyme Regis. This alternating succession of limestone and mudstone is fully marine, and contains many fossils including marine reptiles, and also very rare dinosaur bones.

Stop A: Ogmore by Sea (UK Grid reference SS 8617 7560)

We will explore the Carboniferous Limestone at Ogmore, looking for fossils and examining the relationship between that and the overlying Triassic, and Jurassic marginal facies. There are many corals, gastropods, brachiopods and trace fossils in the Carboniferous, although there will be little opportunity to collect here.

Stop B: Dunraven Bay, Southerndown (UK Grid reference SS 8852 7313)

At Southerndown, we will be able to see the deeper water Jurassic deposits sitting directly on Carboniferous Limestone, and have a chance to collect a few fossils from the Blue Lias.



6. Big Pit – National Coal Museum

Stop A: Blaenavon Ironworks (UK Grid reference SO 2493 0922)



Blaenavon Ironworks is an industrial museum and forms part of the Blaenavon World Heritage Site, being the most significant feature within the Blaenavon Industrial Landscape. The ironworks was of crucial importance in the development of the

ability to use cheap, low quality, high sulphur iron ores worldwide, and as one of the most important producers of iron in the world during the early nineteenth century. The ironworks commenced production in 1789 and comprise the best preserved blast furnace complex of its period, as well as being one of the most important monuments to have survived from the early part of the industrial revolution. The site has been carefully restored.

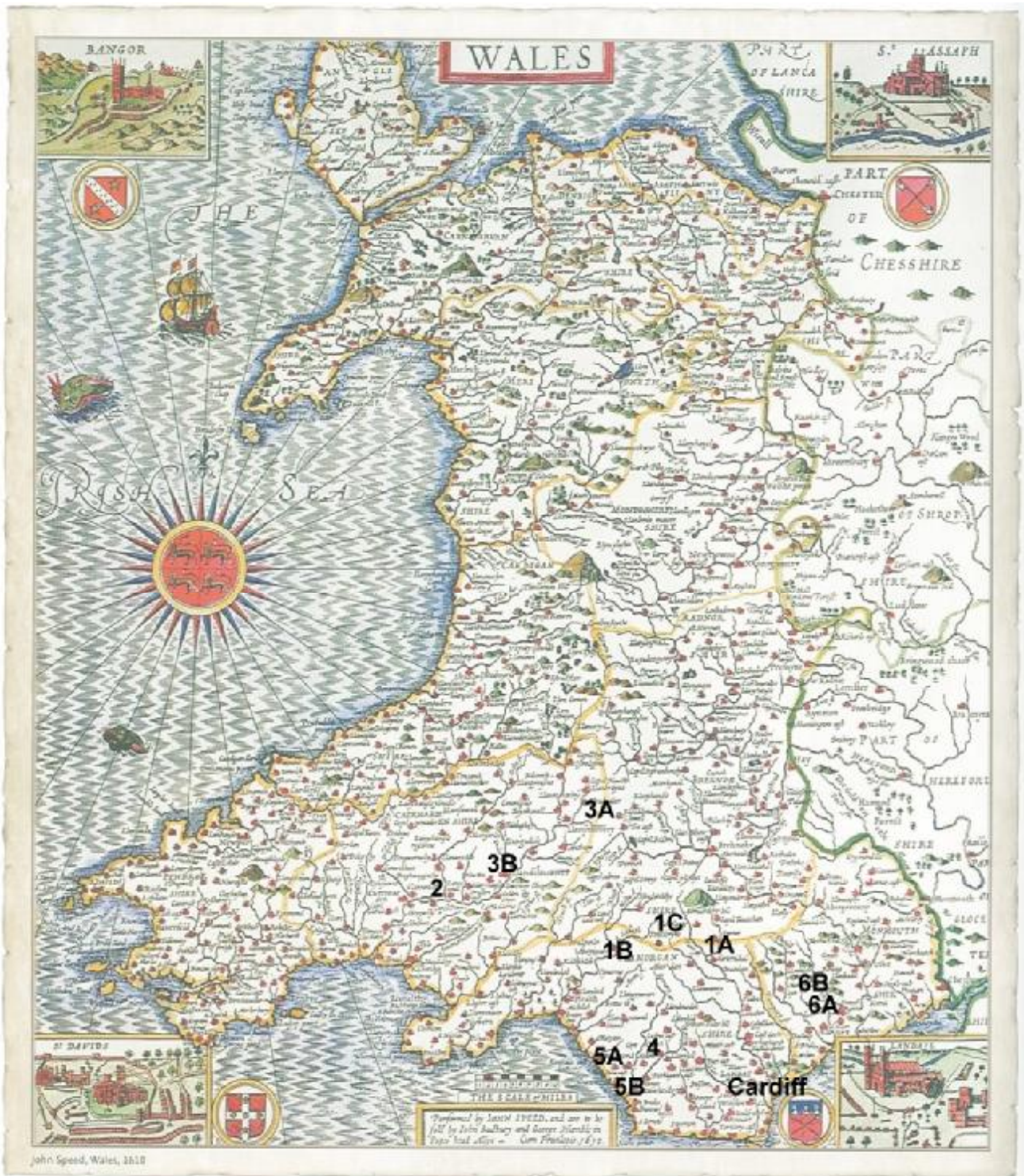
We will visit the extensive remains of the blast furnaces, the cast houses and the impressively restored Water Balance Tower. Exhibitions and reconstructions explain the international significance of the iron industry and the scientific processes involved in the production of iron. A fascinating insight into the social history of industrial Britain can be gained by glimpsing into the past at the reconstructed company shop and the refurbished workers' cottages, at Stack Square and Engine Row.

Stop B: Big Pit – National Coal Museum (UK Grid reference SO 2387 0876)

Big Pit is a real coal mine and one of Britain's leading mining museums, also forming part of the Blaenavon World Heritage Site in recognition of its international importance to the process of industrialisation through iron and coal production. The museum still retains many traits of its former role as a coal mine, standing high on the heather-clad moors of Blaenafon, the tunnels and buildings that once echoed to the sound of the miners now enjoy the sound of the footsteps and chatter of visitors from all over the world. Original features include the Pithead Baths which bring life at the coalface vividly into focus.

However, perhaps its most famous feature is still the trip 90 meters down the shaft to explore working conditions underground; an underground tour will form part of our visit.





This map was drawn by John Speed (1552 – 1629), England’s most famous mapmaker at the time. The localities visited during the conference field trips are indicated by the black numbers.