CITATION

FOULDEN BURN
SITE OF SPECIAL SCIENTIFIC INTEREST
Scottish Borders

Site code: 657

NATIONAL GRID REFERENCE: NT 921549

OS 1:50,000 SHEET NO: Landranger Series 74
1:25,000 SHEET NO: Explorer Series 346

AREA: 6.44 hectares

NOTIFIED NATURAL FEATURES

Geological	**:**	**Palaeontology**	**:**	**Permian-Carboniferous Fish/Amphibia**
	:	**Palaeontology**	**:**	**Arthropoda (excluding insects and trilobites)**
Biological	**:**	**Lowland grassland**	**:**	**Lowland calcareous grassland**
	:	**Lowland grassland**	**:**	**Lowland neutral grassland**

DESCRIPTION

Foulden Burn Site of Special Scientific Interest (SSSI) is situated 5 miles north-west of Berwick-upon-Tweed and approximately 0.5 miles south-west of Foulden, just above the Whiteadder Water. It is a steep, south facing valley with rocky outcrops that are important for their fossil content. Surrounding the rocky outcrops, the valley sides contain a mosaic of scattered dry and flushed calcareous and neutral grassland with some scrub development, a habitat which has undergone severe decline since 1940.

This is one of the few Berwickshire Cementstone Group (early Carboniferous [Tournaisian-Visean] sedimentary rock sequence) localities which yields a significant fossil flora and fauna. The fish bed itself is unique within the Cementstone Group. The sequence at Foulden represents unusual conditions in that the fish bed is evidence of a semi-permanent lake on an alluvial coastal plain. Detailed analysis of the vertical and spatial distribution of fauna in the fossil bearing beds at the site provides important evidence of the living relationships between the fossil groups that are present. Particularly striking is the mutually exclusive distribution of palaeoniscids and malacostracan crustaceans.

Foulden is the type locality for seven species of fishes, and it is the only locality in the world for three; Actinopterygian (‘ray-finned’- primitive bony fish) fishes are the commonest vertebrate fossils occurring at Foulden and these include four rare and important species which are ranked as stem-group neopterygians. They are

therefore critical for studies of the early evolution of all living bony fishes and of the relationships between the Neopterygii and Chondrostei. Foulden is the type and only locality for one of these species, and the type locality for a further two. Acanthodian (closely resembling modern bony fish) remains also occur here, and include complete specimens of the juvenile *Acanthodes ovensi*, which is the earliest known acanthodid and which is unique to this site. The first known complete rhizodont has also been found in the fish bed. The Rhizodontidae is an important but poorly known family of crossopterygian fishes ('lobe-finned' fish which are probable ancestors of amphibians). The rhizodont was a large fish with a widespread distribution, but which easily broke apart after death with the result that only scattered fragments are commonly found in the Upper Devonian and Carboniferous throughout the world. The species from Foulden is a small juvenile (c. 0.5m long) which was found whole and it has been used to interpret the morphology and lifestyle of the family. Bones from another, large, species are also found here.

The arthropod fauna (segmented invertebrates which have an exoskeleton and jointed limbs) of Foulden is typical of the Scottish Lower Carboniferous, comparable to River Esk, Glencartholm SSSI for example. These faunas are unique to the Scottish Lower Carboniferous, and rare, presenting the earliest Carboniferous fauna with well preserved terrestrial/non-marine representatives. *Rolfeia* (king crab*)*, the earliest limuloid, is known only from this locality, as is *Trachyscorpio* (large scorpion*)*. The Foulden *Bairdops* (shrimp) is the oldest occurrence of the genus. The eurypterid *Cyrtoctenus* (water scorpion) is highly unusual and comparable to a South African form described by Waterston.

The grassland communities of Foulden Burn SSSI are botanically rich with over 150 species recorded and cover several of the more restricted and declining neutral grassland and calcareous grassland types. The latter group includes good stands of the Scottish and Borders rarity small scabious *Scabiosa columbaria*. Other more typical species now in decline in the Borders include agrimony *Agrimonia eupatoria*, common restharrow *Ononis repens*, zig-zag clover *Trifolium medium*, black medick *Medicago lupulina*, northern marsh orchid *Dactylorhiza purpurella*, fairy flax *Linum catharticum*, field scabious *Knautia arvensis*, glaucous sedge *Carex flacca*, meadow oat grass *Helictotrichon pratense*, quaking grass *Briza media*, yellow oat grass *Trisetum flavescens* and rock rose *Helianthemum nummularium*. Around 15 species of dandelion *Taraxacum* spp., normally associated with old meadows, are also present.

The scrub is mostly dominated by hawthorn and blackthorn with hazel, ash and wych elm. The scrub is used by a wide range of passerine and near-passerine birds including green woodpecker which feed on grassland invertebrates.

NOTIFICATION HISTORY

First notified under the 1949 Act: 1961 and 1972
Re-notified under the 1981 Act: 30 March 1989 with a 6.44 ha reduction in area.
Notification reviewed under the 2004 Act: 3 February 2011

REMARKS

Measured area of site corrected (from 6.4 ha).