



Scottish Natural Heritage

**SHIEL BURN  
SITE OF SPECIAL SCIENTIFIC INTEREST**

**SITE MANAGEMENT STATEMENT**

**Site code: 1421**

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**Purpose**



This is a public statement prepared by SNH for owners and occupiers of the SSSI. It outlines the reasons it is designated as an SSSI and provides guidance on how its special natural features should be conserved or enhanced. This Statement does not affect or form part of the statutory notification and does not remove the need to apply for consent for operations requiring consent.

We welcome your views on this statement.

**Description of the site**

Shiel Burn Site of Special Scientific Interest (SSSI), located 6km west of Douglas, comprises fossil-bearing rocks along a 325m length of stream (Shiel Burn) which runs into the Monks Water. It illustrates a sequence of sedimentary rocks which were formed around 430 million years ago during the Silurian geological period. The site is important for the fossils found in the rock exposures, which have yielded rare and very important early fish.

The Silurian rocks at Shiel Burn are part of what is known as the 'Hagshaw Hills Inlier'. An 'inlier' is an area of older rock surrounded by younger rocks. The Hagshaw Hills Inlier comprises eight different rock layers, five of which lie within Shiel Burn: the 'Gully Red Beds'; the 'Fish Bed Formation'; the 'Dovestone Red Beds'; the 'Douglas Water Arenite'; and the 'Parisholm Conglomerate'.

The Fish Bed Formation contains the fish remains, which are found within the finely bedded (laminated) siltstones that form a 1.2m to 1.5m thick bed. The laminated siltstones of the Fish Bed were deposited at the bottom of an ancient lake that lacked dissolved oxygen at depth. Consequently there were no lake-bottom creatures to disturb the fine sediment layers and the remains of fish and other animals.

Up to ten species of fossil fish have been found within the site, including the three jawless fish groups; thelodonts, anaspids and cephalaspids. Jawless fish (Agnathans), which may have fed by filtering small prey or particles of food, are considered the most

primitive vertebrates (animals with backbones) and are important because they yield a lot of information about the early origins of vertebrates and the lifestyles of the earliest fish. The abundance of fossil fish preserved within the Fish Bed indicates that on occasion entire fish populations within the lake died together in mass mortality events, likely due to adverse environmental conditions at the time.


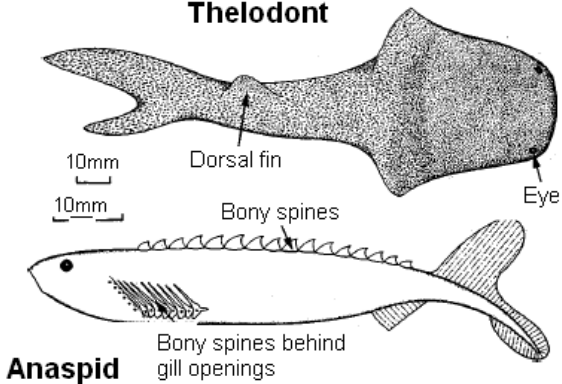
Shiel Burn is part of a network of four Silurian age fossil fish sites in the area that extends roughly between Lesmahagow and Muirkirk. These sites represent most of the Silurian age fossil fish sites in Scotland, all of which show significant dissimilarities. Silurian fish are very rare internationally, and Shiel Burn is the most prolific fossil site in the Hagshaw Hills area.

Fossil discoveries at Shiel Burn date back to the nineteenth century, and the site still produces abundant new fossil material. As in other sites, the fossils can be difficult to discern on the freshly split rock slabs, but are more obvious when immersed in water, and those present on rock surfaces that have been exposed to weathering are easier to see.

The site contains some of the oldest fossil fish in the world and is a nationally important palaeontological locality for vertebrate studies.

Shiel Burn is considered to be in a favourable condition; the extent, composition and structure of the exposures have been maintained, with the exception of the area of the fossil fish bed (the 'higher Fish Bed'), where some further excavation has occurred, however fossil material and *in situ* outcrop (fossils found in loose shale) are still present and there are no recent signs of irresponsible collecting. The visibility of the rock outcrops and access to them has been maintained.

Natural feature of Shiel Burn SSSI	Condition of feature (date monitored)
Silurian-Devonian Chordata	Favourable, maintained (February 2002)

	 <p><b>Thelodont</b></p> <p>10mm Dorsal fin Eye</p> <p>10mm Bony spines</p> <p><b>Anaspid</b> Bony spines behind gill openings</p>
The higher Fish Bed on the banks of Shiel Burn as exposed by quarrying.	Illustrations of the types of primitive jawless fish found within the Fish Bed.

## Past and present management

In the late 1970s irresponsible fossil collectors used a pneumatic drill to remove pieces of fossil-bearing rock from the site. Since then fossil permits have been in use, requiring collectors: to seek access permission from the landowner; collect responsibly; and to submit details of the fossils collected to SNH. Amateur collectors and research workers still visit the site to collect fossils, but evidence of damaging irresponsible collecting hasn't been recorded since 1994.

Rough grazing occurs within the site which has helped to control vegetation growth and thereby maintain access and visibility of the fossil-bearing rocks.

## Objectives for Management (and key factors influencing the condition of natural features)

We wish to work with the owner to protect the site and to maintain and where necessary enhance its features of special interest. SNH aims to carry out site survey, monitoring and research as appropriate to increase our knowledge and understanding of the site and its natural features.

1. **To maintain the extent, composition and structure of the rock beds** by ensuring protection from damaging impacts, in particular irresponsible fossil collecting, by continuing the permit system and encouraging compliance with the Scottish Fossil Code (SNH, 2008 or later editions) and the Geological Code.

The site yields a spectacular fossil fauna that is particularly vulnerable to large-scale and irresponsible collecting. Irresponsible fossil collecting damages the limited fossil-bearing rock exposure. The permit system regulated by SNH places restrictions on fossil collecting, such as the timing and manner of collecting. Irresponsible collecting can therefore be prevented by ensuring that access permission is given only to collectors showing a current permit issued by SNH, and by alerting SNH immediately should any unauthorised access occur.

The Scottish Fossil Code provides advice on best practice in the collection, identification, conservation and storage of fossil specimens found in Scotland. The Code encourages fossil collectors to collect responsibly and to manage collections in such a way that they will be useful to future generations. Responsible collecting means that permission is sought from the owner to access and collect from the site. It is recommended that at Shiel Burn only a few representative samples from *in situ*, loose and fallen rocks should be taken. Details of the location and position of the fossil within the rock layer sequence should be recorded and submitted to SNH. Collected material should be labelled and looked after. If exceptional or unusual fossils are found they should not be extracted, but an expert should be contacted for advice.

2. **To maintain visibility and access to the fossil-bearing rock beds** by ensuring that they do not become overgrown with vegetation by continuing to allow access by grazing animals.

Vegetation encroachment can obscure visibility and hinder access, however rough grazing currently prevents vegetation from obscuring the rock beds.

Front page photograph: The view downstream over the waterfall on Shiel Burn.

Date last reviewed: 11 December 2008