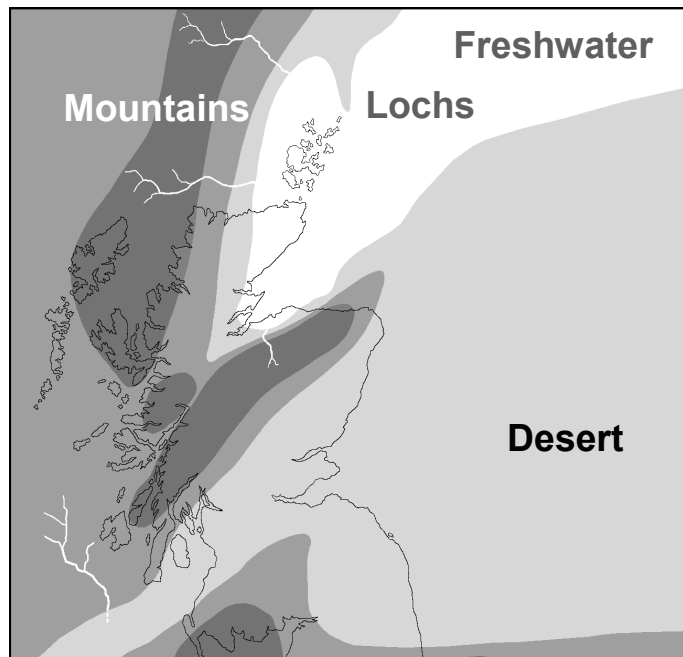


The Age of Fishes

During the Devonian period (408 - 360 million years ago) the Highlands lay on the edge of a hot desert continent. However meandering through this arid landscape were extensive river systems feeding huge freshwater lakes.



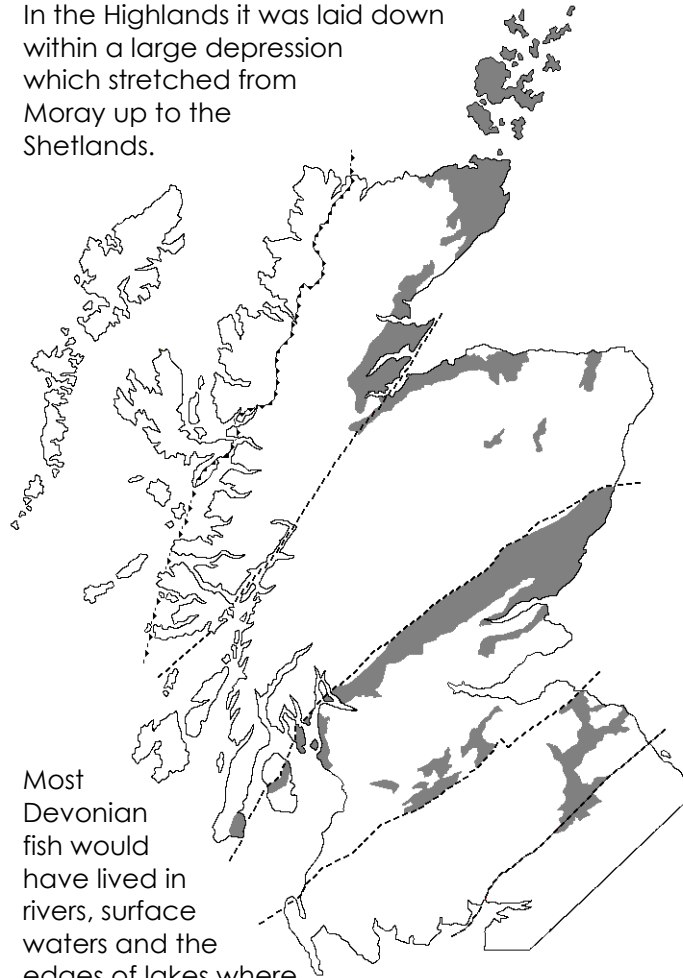
Such an environment was ideal for fishes and saw the rapid evolution of a wide range of forms. Fishes dominated life on earth and towards the end of the period one group even made the final move onto land to become amphibians.

This is why the Devonian is also known as **'The Age of Fishes'!**

The evidence of this remarkable period of earth's history is preserved within the **Old Red Sandstone** of Caithness and the East Coast.

THE OLD RED SANDSTONE

The 'Old Red Sandstone' is scattered throughout Scotland as well as much of the British Isles. In the Highlands it was laid down within a large depression which stretched from Moray up to the Shetlands.



Most Devonian fish would have lived in rivers, surface waters and the edges of lakes where preservation was very unlikely.

However a few dead fish, floating on the lake's surface, eventually sank into deep, oxygen poor, water and were covered by layers of mud. Rubble washed down from the mountains and windblown desert sands formed thick sediment layers. Over thousands of years rivers changed course, lakes dried up and the sediments, baked by the sun, built up to form the Old Red Sandstone.

A COLLECTION OF FISHES

Preserved within the Old Red Sandstone are the world famous Devonian fishes of the Highlands. Below are examples of each major group of fishes.



Palaeospondylus

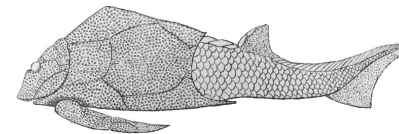
This mysterious little fish was probably an Agnathid or Jawless fish.

Diplocanthus

An Acanthodian or spiny fish, *Diplocanthus* relied on the spines supporting its fins for protection.



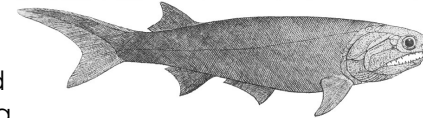
Pterichthyoides milleri



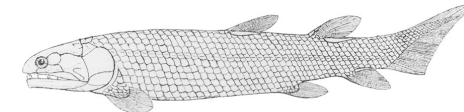
Named after Hugh Miller this Placoderm or armoured fish lived on the lake bottom, sifting its food from mud.

Cheirolepis

A fast swimming predatory Ray-finned fish, *Cheirolepis* was a distant ancestor of modern bony fishes such as the Salmon.



Osteolepis



This Lobe-finned fish is thought to be an ancestor

of the amphibians. The paired pectoral and pelvic lobed fins, which evolved into limbs, are clearly visible.

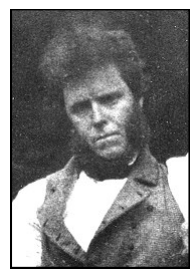
OUR COLLECTIONS AND COLLECTORS

Inverness' first museum was set up by the 'Northern Institute' in 1827, its exhibits, donated by public subscription, included fossil fishes from the early Caithness quarries and a box of 67 minerals and fossils presented by Hugh Miller in 1834.

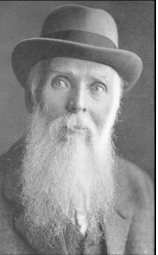
Sadly a large part of this early material was lost after the Institute folded in the 1840s.

The present museum was established in 1881 and, in addition to inheriting the remainder of the Institute's material, received several important collections from local geologists. These still form the bulk of the museum's geology and palaeontology collections.

Hugh Miller (1802-1856) Miller's donation was accompanied by a letter giving detailed descriptions of its contents. This has recently allowed the museum to rediscover seven of Miller's fossil fishes. They represent some of the earliest fishes ever collected by Miller and the first from fish beds he discovered at Eathie.



William Smith (1830-1907) A little known, but very talented collector, Smith was a civil engineer on the Highland Railway. He collected some of the museum's finest fossil specimens including superb fishes from Edderton and quarries in Morayshire.



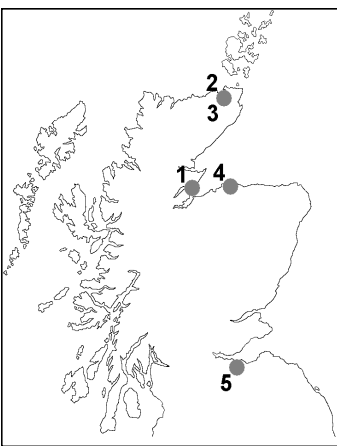
Thomas Davidson Wallace (1841 - 1926) The Rector of Inverness High School, Wallace was a founder member of the Inverness Field Club and an honorary curator of the museum. His collection of 50 fossil fishes from Nairnside and Caithness forms the bulk of the museum's collection.

Charles MacLeod (late 19th century) Virtually nothing is known of MacLeod other than the fact that he died young and his mother presented his geological collection to the museum in 1908. Of his 212 mineral and fossil specimens only twelve, mostly fossil fishes, have survived.

COLLECTING TODAY

It is still possible to collect fossil fish specimens from the Old Red Sandstone. Nodules can be picked off the beaches at Cromarty and Eathie whilst fish can be split from slabs at Achanarras quarry. However, many of these sites are now protected by law. Amateur collecting is still permitted, but please get permission and obey any regulations and safety instructions before collecting at these sites.

OTHER PLACES TO VISIT



Want to learn more about the Devonian fishes of the Highlands?

- 1. Cromarty
- 2. North Coast Visitor Centre, Thurso
- 3. Achanarras Quarry
- 4. Elgin Museum
- 5. Museum of Scotland

1. Cromarty and Eathie

Lying at the tip of the Black Isle, Cromarty was Hugh Miller's home town and Eathie beach the site of some of his earliest and most famous discoveries. A good place to start is the National Trust for Scotland's new **Miller House Museum**, which has an exhibition on his life and a collection of his fossil specimens.

Open Easter - October 12pm - 5pm
A leaflet, 'Hugh Miller - Cromarty Trail', is available giving details of other sites in the local area.

2. North Coast Visitor Centre (NCVC), Thurso

NCVC holds material collected by Robert Dick, a contemporary of Miller and one of the first to investigate the fossil fish beds of Caithness. The coastline on either side of Thurso gives some idea of the extent of the Old Red Sandstone and at nearby Castlehill is the 'Flagstone Trail' which charts the history of the Caithness flagstone industry.

North Coast Visitor Centre, Thurso

3. Achanarras Quarry

This classic fossil fish site is now a National Nature Reserve under the protection of Scottish Natural Heritage. It is open to the public, but you need a permit from SNH Golspie if you wish to collect fossils. Scottish Natural Heritage, North Highland Area, Main Street, Golspie, Sutherland KW10 6TG

4. Elgin Museum

The museum has an excellent collection of Devonian fishes as well as some of the Permian reptiles unique to this area.
Www.elginmuseum.org.uk
Winter by appointment Tel: 01343 543675

5. Museum of Scotland

The museum's 'Beginnings' gallery presents the story of Scotland's geological origins and its Devonian sections has many superb specimens and dioramas depicting life in the Devonian lakes.
Chambers Street, Edinburgh, EH1 1JF
Monday to Saturday 10am - 5pm, Sunday 12 - 5pm

FURTHER INFORMATION

- M. Gostwick (1993) The legend of Hugh Miller. Cromarty Courthouse, Cromarty. (A brief biography)
- J. Maisey (1996) Discovering Fossil Fishes. Henry Holt & Company, New York. (The evolution and rise of the fishes)
- H. Miller (2002) My Schools and Schoolmasters. Black and White Publishing, Edinburgh. (A reprint of Miller's autobiography)
- J. Roberts (2000) The Highland Geology Trail. Luath Press Ltd, Edinburgh. (A guide to Highland geology!)
- J. Saxon (1978) Fossil Fishes of the North of Scotland. (Now out of print, but the author is currently writing a new book: The Palaeozoic Fishes of the Orcadian Basin)



Inverness Museum & Art Gallery
Castle Wynd, Inverness, IV2 3EB
www.inverness.highland.museum