



**Scottish Natural Heritage**  
All of nature for all of Scotland

## **GARRON POINT**

Site of Special Scientific Interest

### **SITE MANAGEMENT STATEMENT**

**Site code: 674**

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#### **Purpose**

This is a public statement prepared by SNH for owners and occupiers of the SSSI. It outlines the reasons why Garron Point is notified 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**

Garron Point is a rocky promontory and adjoining coastal strips, about 15 km south of Aberdeen and just north of Stonehaven. It is notified as an SSSI to protect a combination of geological and biological features.

<b>Natural features of Garron Point SSSI</b>	<b>Feature condition</b> (date monitored)	<b>Other relevant designations</b>
Dalradian	Unfavourable, no change (October 2001)	
Ordovician Igneous	Unfavourable, no change (October 2001)	
Non-marine Devonian	Not yet assessed	
Silurian - Devonian Chordata	Favourable, maintained (February 2012)	
Maritime cliff	Favourable, maintained (July 2010)	
Narrow-mouthed whorl snail <i>Vertigo angustior</i>	Favourable, maintained (September 2011)	SAC
Northern brown argus butterfly <i>Aricia artaxerxes</i>	Favourable, maintained (September 2011)	

## *Geological*

The rock types and formations lying between Garron Point and south of The Toutties are exceptionally important for illustrating the evolution of Scotland's geological history over a period of about 300 million years.

The area from Garron Point to Slug Head illustrates the Highland Boundary fault, which marks the southern geological boundary of the Scottish Highlands and represents a major junction in the Earth's crust in Scotland. Within the site the fault brings together rock of the 'Southern Highlands Group' of the ancient **Dalradian** with younger rock. The Dalradian rock was originally deposited as sea-floor sediment around 600 million years ago. Around 460 million years ago this rock was heated, compressed and folded during continental collisions, known as the 'Caledonian Orogeny', that eventually brought together the blocks of the Earth's crust which were to form the foundations of Scotland. The heating and compression turned the rock into hard 'metamorphic' rock. The Dalradian rock types include submarine landslide deposits (now 'metagreywackes'), coarse gritty sediments (now 'grits') and muddy sediments (now 'pelites'). The maximum temperatures and pressures reached by the rock, indicated by which minerals are present, increase towards the north; and up to four episodes of folding are recorded.

Within the Garron Point site, the Highland Boundary Fault brings Dalradian rock into contact with rock of Ordovician age (around 460 million years old) belonging to the 'Highland Border Complex'. Fault-bounded exposures of the Highland Border Complex crop out intermittently along the Highland Boundary Fault Zone between Arran and Stonehaven and are thought to be late Cambrian to Ordovician in age (between about 500 and 470 million years ago). The Highland Border Complex rock within the Garron Point site is mostly 'igneous' rock, formed from cooled molten rock, but also includes some rock formed from sediments.

Southwards towards Stonehaven the Highland Border Complex rock is overlain by younger sedimentary rock (mostly sandstone and siltstone) of late Silurian age, assigned to the Stonehaven Group within the Lower Old Red Sandstone. This contact is a geological 'unconformity' because there is a large time gap (~ 40 million years) between the formation of the Ordovician rock (~460 million years ago) and the formation of the Old Red Sandstone rock (around 420 million years ago) West of the SSSI boundary near Castle of Cowie, the Highland Boundary Fault brings Dalradian rocks into direct contact with the Old Red Sandstone rocks.

The Dalradian, Highland Border Complex, and the Old Red Sandstone are major subdivisions in the geological history of the British Isles. This site is of national and international importance for explaining the structural relationship between these subdivisions.

This area is also important for the **Ordovician Igneous** rocks within the Highland Border Complex. The section between Garron Point and Slug Head provides one of the thickest and most extensive sections of igneous rocks in the Highland Border Complex. The rocks are ocean-floor lavas (sometimes with a distinctive 'pillow' shape) with layers of sediment deposited in the same marine environment (including cherts, siltstones and mudstones). There are also 'intrusions' of cooled

molten rock of compositions known as 'gabbro' and 'dolerite' (both dark-coloured rocks); and a very silica-poor rock known as serpentinite, that has been highly altered by addition of carbonate: 'carbonated'; and silica: 'silicified'. This altered serpentinite is yellow-coloured, and it occurs at the contact of the Ordovician rock with Dalradian rock.

These rocks are thought to be part of an 'ophiolite', a slice of ocean crust that became incorporated within a continent – in this case during the Caledonian Orogeny. The geochemistry of the lavas within the ophiolites indicates that these erupted at an ocean ridge, similar to the mid-Atlantic ocean ridge of today. Understanding of the Highland Border Complex is an essential part of any interpretation of the movement of continents and deformation of rocks which occurred during the Caledonian Orogeny.

The Old Red Sandstone Rocks at Garron Point are also important. Old Red Sandstone rocks are a sequence of sediments that were eroded from the Dalradian Highlands under hot semi-arid climate conditions and laid down in extensive river and flood plain environments as the continental collisions which began around 460 million years ago were ending. 'Old Red Sandstone' rocks in Britain are mostly of Devonian age (416-359 million years old), and because they are formed in river and lake environments rather than marine environments, are classed as '**Non-marine Devonian**'. However, the range of Old Red Sandstone ages is wider than just the Devonian, and stretches from late Silurian (422-416 million years ago), or even mid Silurian (428-422 million years ago), to early Carboniferous (359-345 million years ago). The 'Old Red Sandstone' at Garron Point is late or mid-Silurian in age, and is important as some of the earliest Old Red Sandstone in Britain. Old Red Sandstone rock is found from just south of Slug Point extending southwards. It is divided into two rock formations known as the 'Cowie Sandstone Formation' and the 'Carron Sandstone Formation'. The Carron Sandstone Formation is found in the intertidal zone furthest from the shore and is predominantly composed of brown, reddish brown and grey sandstone deposited by braided rivers. The Cowie Sandstone Formation is found closer to the shore and is made up of river sediments, which are now brown, grey and red sandstones, and conglomerate (contains pebbles); and lake sediments (within a rock unit known as the 'Cowie Harbour Siltstone Member') including siltstone, and a grey mudstone layer known as the 'Cowie Harbour Fish Bed'. The site is internationally important for fossil fish, fossil arthropods and fossil terrestrial millipedes.

The Cowie Harbour Fish Bed is best exposed at **The Toutties**. The Fish Bed can be located by walking to the end of the old concrete jetty on the south side of Cowie harbour and by scrambling eastwards over the intertidal exposures. Fossil freshwater fish were first found here in 1911 and since then many good specimens have been found. The site is important for this fossil evidence, since it is the only one in Scotland (and also in similar 'fish province' areas of the Baltic) where fossil fish of late Silurian age can be found. This permits comparison with similar aged rocks elsewhere, such as Wales and the Baltic. The fish fossils are of jawless fish known as 'Agnatha'; and the site is internationally important for its unique variety of these fish, having yielded an entirely new and unique fish genus, and a new fish species of another genus. The site is also internationally important

for the fossil remains of the world's oldest-known air-breathing millipede. This is the oldest record anywhere in the world of a fully land-based, air-breathing animal.

More can be found out about these geological interests in the Scottish Natural Heritage's Earth Science Documentation Series for The Garron Point and Crawton Bay SSSIs (MacFadyen 1996), which is available at SNH's Aberdeen office.

Site condition monitoring carried out by SNH in 2012 found the Palaeontological feature to be favourable. Monitoring in 2001 found the Dalradian and Ordovician Igneous geological features both to be in unfavourable condition. The latter was primarily due to the accumulation of waste materials (soil, grass trimmings, material left over from erosion stabilisation), around rock outcrops, causing these to be obscured.

### *Biological*

The area around Skatie Shore, Garron Point, Craigeven Bay and Cowie has one of the richest coastal floras in Aberdeenshire. Cliff grassland predominates and comprises species such as false and yellow oat-grasses, red fescue and Yorkshire fog, with locally frequent thrift, sea plantain, sea campion, and common scurvygrass. The grassland is locally rich in herbs including some that are uncommon in Aberdeenshire such as meadow saxifrage, carline thistle, and bloody crane's-bill. The latter two species are associated with base-rich soils, which contribute to the floral diversity of the area. Another uncommon species that has been recorded is the purple milk-vetch. Other species associated with the base-rich soils include common rock-rose and kidney vetch, both of which are locally abundant on the slopes by Cowie and in Craigeven Bay.

Small areas of sand dune, salt marsh and shingle, uncommon habitats in the south of Aberdeenshire, are also found around Garron Point and Craigeven Bay. The dunes of Skatie shore are dominated by marram grass, with sea sandwort at the top of the beach. Dune systems and their associated species are very restricted in their distribution in Aberdeenshire. Saltmarsh plants include sea milkwort, sea spurrey, sea arrow-grass, mud rush and saltmarsh grass.

Scots lovage, an infrequent plant in Scotland, grows in rock crevices on the point itself and locally along the cliffs and beach, including at Skatie Shore. Another uncommon plant is sea rush, which is very rare in NE Scotland. There are also (historical) records of the very rare curved sedge from Garron Point.

The cliff grasslands support a population of European importance of the rare narrow-mouthed whorl snail at its most northerly locality in the UK, and one of only two in Scotland. This tiny snail is listed on Annex II(a) of the EC Habitats and Species Directive and is also included on the Red List of Threatened Species (category Lower Risk, sub-category Conservation Dependent), of the International Union for the Conservation of Nature (IUCN). At Garron Point it inhabits two small areas of unshaded, damp but freely-draining grassland, near the base of the cliffs. A low-intensity survey carried out in 2004 recorded the number of snails in samples in these two areas. The density of snails from each area was used to give an approximate population estimate for each of these areas, totalling 58,700.

Areas of the cliff grasslands also support a number of local species of butterfly, in particular the nationally scarce northern brown argus, whose caterpillars feed on rockrose. The grayling is also found, and two nationally declining species, the small pearl-bordered fritillary and the small blue, whose caterpillars feed on violets and kidney vetch respectively, have also been recorded.

Site condition monitoring carried out by SNH in 2010 found the maritime cliff communities to be in favourable condition. The populations of whorl snail and northern brown argus were found to be in favourable condition in 2011.

### **Past and present management**

In the past the site may have been grazed by domestic livestock but it is currently grazed only by rabbits and roe deer.

In 1989 and 2005 Grampian Regional Council and Aberdeenshire Council made emergency wall repairs to 200m of sea defence at the southern-most part of the SSSI. Further work was carried out in 2006. The southern-most part of the site has also been affected by the laying of sewage outfall pipes across the intertidal rock exposure and the construction of a concrete jetty. This obscured a minor amount of exposure but did not damage or compromise the scientific interest.

In the historical past, limpet shells may have been abundant enough to collect, process and produce lime, as suggested by the Limpet Burn at the northern end of the site, and nearby buildings and woods (Limpet Mill and Limpet Woods).

Informal recreational access and the golf course bordering the western margin of the site are the principal "land uses" affecting the site. Access is mainly at either end of the site: a coastal pathway, maintained by Aberdeenshire Council, runs from Cowie to St Mary's Church, and also provides informal access to the adjacent SSSI; and a path, marked Highland Boundary Fault, from a council car park on the former A92, gives direct access to Garron Point itself, via the Den of Cowie. The Skatie Shore and Garron Point area is well visited by locals, including picnickers and young families, as well as geology students. The sections to the north and south are less often visited.

Works to the golf course have affected the site. Waste was tipped over the edge of the cliffs, and part of the exposure of the Highland Boundary Fault has been obscured by earthworks. There are other possible dumping sites and tipping is likely to have occurred elsewhere along the coast. Gorse is regularly controlled by burning along the coast.

The SSSI is used informally for instructive walks for earth science students.

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

We aim to work with the owners and occupiers 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.

The EU Habitats and Birds Directives oblige Government to avoid, in SACs and SPAs, the deterioration of natural habitats and the habitats of species, as well as disturbance of the species for which the areas have been designated, in so far as such disturbance could be significant in relation to the objectives of these Directives. The objectives below have been assessed against these requirements. All authorities proposing to carry out or permit to be carried out operations likely to have a significant effect on the European interest of this SSSI must assess those operations against the relevant Natura conservation objectives (which are listed on our website through the SNHi -SiteLink facility).

**1. To maintain fescue grasslands, in particular those areas supporting narrow-mouthed whorl snail.**

**2. To maintain grasslands with rock rose for the northern brown argus butterfly.**

The narrow-mouthed whorl snail populations occupy two small areas of damp, but freely-draining red fescue grassland, one, measuring 34 x 1-2m, below the cliffs at Red Man and the other, measuring 20 x 10 m, in turf and around rocks on the cliffs of Garron Point itself. The soils in both areas have a high content of seashell fragments. The species requires open conditions quickly warmed by the sun. The habitat is located several metres above MHWS so it is thought to be secure from rising sea-levels. The red fescue grassland is thought to be relatively stable, being prevented from maturing into false oat-grass grassland by exposure to salt spray, the shallow depths of soil, and rabbit grazing.

Although the grassland supporting the populations of narrow-mouthed whorl snail is maintained by a combination of grazing and exposure, these could possibly be affected by the loss of rabbit grazing or by the introduction of livestock. These areas could possibly also be affected by an increase in levels of informal recreation or works to the adjacent golf course, affecting, for example, seepage down the cliffs.

The northern brown argus butterfly depends on areas of rock-rose on the cliffs for feeding. Rock-rose, which is unpalatable to rabbits, is thus favoured by rabbit grazing, along with other factors that suppress competition from stronger-growing species. As for the whorl snail, it is important that an open sward is maintained.

**3. To maintain appropriate access to outcrops and seek to re-expose important areas that have been obscured.**

SNH is discussing with the golf course the possibility of re-instating the exposure of the Highland Boundary Fault that has been obscured by earth works.

**4. To maintain un-obscured rock outcrops.**

Dumping of waste is the principal threat to the geological features and could also affect the cliff grassland. SNH will seek to work with relevant owners and occupiers to safeguard the geological and biological interests and to ensure that dumping ceases.

It is similarly important that any development of the coastal footpath from Cowie avoids damaging the rock features by obscuring them. SNH will work with Aberdeenshire Council to identify acceptable routes and construction methods.

**5. Any proposals to upgrade the present sewage outlet at Cowie must take account of the natural features.**

**6. To maintain and encourage the use of the site as an educational resource.**

SNH will work in partnership with the owners to promote and manage access at a level and of types which are compatible with the conservation of the natural features.

Date last reviewed: 15 March 2017