



Scotland's
National Nature
Reserves

The Story of Taynish National Nature Reserve



2nd Edition

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Scottish Natural Heritage
Dualchas Nàdair na h-Alba

All of nature for all of Scotland
Nàdar air fad airson Alba air fad



The Story of Taynish National Nature Reserve

Foreword

Taynish is a National Nature Reserve (NNR) on the west coast of Scotland, 20 km west of Lochgilphead near the village of Tayvallich. Situated on a scenic peninsula in the heart of Knapdale, Taynish is one of the finest examples of ancient Atlantic oak woodland in Europe. With its parallel wooded ridges (“knaps”) and waterlogged valley mires (“dales”), Taynish forms a core area of mixed deciduous woodland, a microcosm of the former Knapdale landscape.

Having survived here for over 7000 years, this “temperate rainforest” is home to a wealth of wildlife. Mosses, lichens and ferns thrive in the mild, humid climate of the west coast. A wide range of insect life including butterflies, moths and dragonflies flourish in flower rich grasslands and water-logged mires. The marsh fritillary, one of Europe’s most threatened butterflies, is one of the special attractions at Taynish. Coastal communities around the Taynish and Loch Sween foreshore add further interest to this special place and it is here that you also have a good chance of seeing one of the reserve’s other star attractions – the otter.

Taynish is one of a suite of NNRs in Scotland and is one of our finest reserves. Scotland’s NNRs are special places for nature, where some of the best examples of Scotland’s wildlife are protected. Whilst nature comes first on NNRs, they also offer special opportunities for people to enjoy and find out about the richness of our natural heritage. Visitors to Taynish can enjoy a range of different self-guided trails for a variety of abilities, taking in the coast, Loch Sween, the woods and Barr Mor.

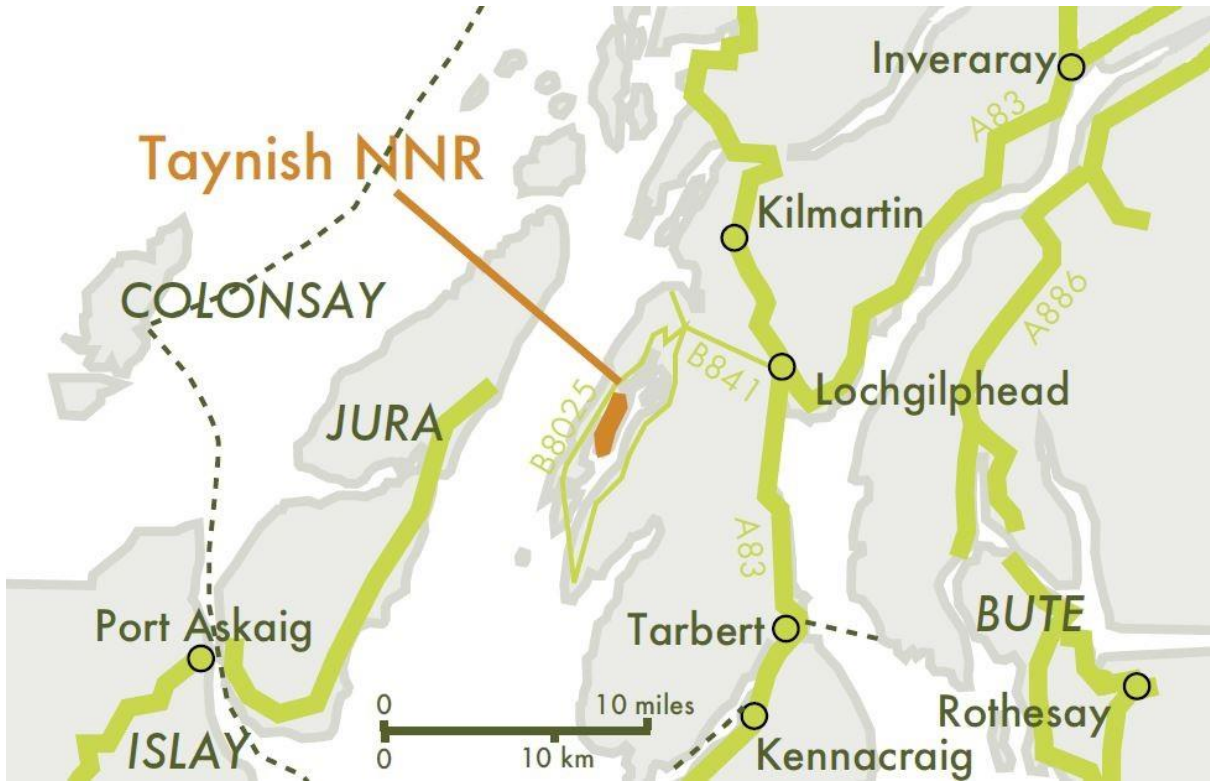
The Reserve Story contains background information about the reserve, describing the wildlife interest, its land use history and management since it became a reserve. The Taynish NNR Management Plan 2015-2025 covers the future management of the reserve.

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1 Maps of Taynish NNR

Location map



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Map of Taynish NNR



2 Introduction to Taynish NNR

Taynish NNR is on the west coast of Scotland, some 20 kilometres (km) west of Lochgilphead in Argyll. The Taynish peninsula is approximately 5 km in length and 1 km wide, with the reserve covering an area of 330 hectares (ha). The reserve occupies almost the entire peninsula on the west shore of Loch Sween, protected and sheltered from the west by the larger parallel Kiells peninsula jutting into the Sound of Jura.

This whole area is dominated by a series of parallel ridges and valley systems aligned in a north-east/south-west direction, following the geological trends. The crests of the ridges are relatively flat and rounded in contrast to their steep sides which are often stepped, with crags or rock outcrops followed by less steep sloping areas of scree or soil. The Barr Mor (big summit) at 126 metres (m) is the highest point. Between the ridges, the narrow, steep sided hollows are infilled with waterlogged peat to a depth of up to 9m in the main central valley. This main valley extends the length of the reserve and is thought to be floored with raised beach material suggesting that, the Taynish peninsula may once have been a series of islands. Raised beaches fringe much of the coastline and are particularly prominent at the southern end of the reserve.



Aerial view of Southern end of Taynish peninsula

There are two rock types on the Taynish peninsula, the Loch Awe series of Crinan grits and quartzites and the associated parallel bands of fine grained intrusive igneous rock. Associated with the varied geology and topography are a range of soil types. It is these attributes that have resulted in the rich mosaic of habitat types we have on the reserve.

The Gulf Stream is responsible for Taynish's' mild and moist oceanic climate. The autumn and winter months are generally the wettest with an average of 192

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millimetres (mm) in November. Spring is drier with an average of 93 mm in May and the summer months tend to be unpredictable. Frosts are not usually severe and snowfall is light and rarely prolonged. South-west gales sweeping up the Sound of Jura strike the ridge of Barr Mor with considerable force. The wind shaped nature of the woodland on this hill gives some indication of the degree of exposure. Streams flow into Lochan Taynish from the valleys immediately to the north and from the Barr Mor ridge. Fen and swamp habitat can be found at the southern tip of the lochan. A deep drainage ditch also flows from Lochan Taynish along the length of the central valley through the peat bog and becomes a natural stream near the southern end of the peninsula. The drains in the central valley are now dysfunctional and open areas of bog, fen and wet grassland have developed.

Geology, hydrology, climate and topography combine to produce one of Taynish's most significant attributes, its biodiversity. There is a range of woodland types, dominated by oak and locally by ash, birch or alder according to soils and natural drainage. With a mosaic of closed canopy woodland, scrub, open areas of heath, mire and grassland, maritime heath and saltmarsh, Taynish presents a tremendous diversity of habitats and associated plant and animal communities.

The comparatively mild and moist climate provides ideal conditions for a great variety of lichens, mosses, liverworts and ferns. A wide range of insects including butterflies, moths, dragonflies, beetles and flies are found both within the woodland and in the open woodland edge habitats. Though the reserve boundary stops at the high water mark, coastal communities both above and below the foreshore are of outstanding interest. It is here that two of Taynish's star attractions can be seen, the threatened marsh fritillary butterfly on the herb-rich maritime heath and the otter on the foreshore.

The reserve is located immediately south of Tayvallich just off the B8025. It is easily accessible, only 500m from the car park on the southern edge of the village. Information signs and leaflets available at the reserve car park offer visitors a choice of self-guided trails for a variety of abilities. These include an all-abilities trail to the Mill picnic site, a longer woodland trail circuit of 5 km, a circular trail to the viewpoint at the top of the Barr Mor and the reserve track leading to the coastal paths. Benches and interpretation posts are provided to facilitate visitor's enjoyment of this special place.

Scottish Natural Heritage (SNH) owns Taynish NNR. The reserve was declared in 1977 and also hosts a number of other designations at UK, European and international level. The reserve forms part of the Taynish Woods Site of Special Scientific Interest (SSSI) and the Taynish and Knapdale Woods Special Area of Conservation (SAC). The reserve lies within the Knapdale National Scenic Area.

Protected areas and special features

Feature	Protected Area
Saltmarsh	Taynish Woods SSSI
Clear-water lakes or lochs with aquatic vegetation and poor to moderate nutrient levels	Taynish and Knapdale Woods SAC
Marsh fritillary (<i>Euphydryas aurinia</i>)	Taynish and Knapdale Woods SAC Taynish Woods SSSI
Dragonfly assemblage	Taynish Woods SSSI
Beetle assemblage	Taynish Woods SSSI
Fly assemblage	Taynish Woods SSSI
Moth assemblage	Taynish Woods SSSI
Fen meadow	Taynish Woods SSSI
Otter (<i>Lutra lutra</i>)	Taynish and Knapdale Woods SAC
Rocky shore	Taynish Woods SSSI
Bryophyte assemblage	Taynish Woods SSSI
Lichen assemblage	Taynish Woods SSSI
Upland oak woodland	Taynish Woods SSSI
Western acidic oak woodland	Taynish and Knapdale Woods SAC

3 The Natural Heritage of Taynish NNR

Taynish presents a mosaic of oak dominated woodland, smaller areas of birch, alder and ash woodland, scrub, open areas of fen, mire, heathland grassland, saltmarsh and foreshore. This tremendous diversity of habitats, associated animal and plant communities and important species populations, including the threatened marsh fritillary butterfly, contribute to the international significance of Taynish's rich natural heritage.

Habitats

Woodland

The ancient oak woodland at Taynish is undoubtedly one of the most impressive features of the reserve. Approximately 250 ha (75%) of the Taynish peninsula is wooded, most of which is oak (about 200 ha). It is known from pollen analysis that there has been a continuity of native woodland at Taynish for about 7000 years, the trees having colonised northern Britain from the far south where they survived the Ice Age. Taynish is one of the largest remnants of the ancient woodland in Knapdale and a core area of oak woodland within the wider fragmented landscape of farmland, forestry and native woodland.

Oak is dominant and widespread in the woodland and often grows in pure stands on block scree areas. In the sheltered area of the main valley the trees reach 20m with straight trunks and are about 130 years old. In more exposed areas the trees are smaller and often stunted in growth with twisted trunks. The block scree and steep crags afford little anchorage for the tree roots and there are many wind-blown trees scattered throughout the reserve. Locally there is an understorey and shrub layer



Barr Mor and Lochan Taynish in spring

of hazel, birch, rowan and holly. The oak woodland also supports an incredibly rich diversity of mosses, ferns, liverworts (bryophytes) and lichens, as well as rare plants. In Europe, ancient oak woodlands are virtually confined to the UK and Ireland, with the richest woodlands found in the western Scottish Highlands. The reserve is no exception and is one of the finest examples of this woodland type in the UK.

Though the woodlands have a history of management dating to Neolithic times, the vegetation and landscape at Taynish is not believed to have changed significantly. Comparison of the oldest maps (1750) with the present day shows a marked similarity in the position of woodland and open areas. The woodland canopy

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composition strongly reflects past woodland management as oak coppice and the woodland structure has been modified by grazing with livestock.

Birchwood is also relatively extensive and often closely associated with oak on a range of more acidic soil conditions. Regeneration of birch has been particularly successful on the edges of pure stands of oak since the removal of stock grazing about 30 years ago. Alder carr has developed on the fringes of valley bogs in the wetter wooded hollows. There are also small areas of ash and wych elm on steep base rich rocky slopes in the north-east and north-west corners of the reserve.

Valley mires

Though not part of the reserve, albeit surrounded by it, Lochan Taynish represents the only large area of standing freshwater on the Taynish peninsula. The outflow from the lochan leaves at its southern tip and flows into the sea by the Old Mill. This outflow was dammed in 1931 and as a result, the loch itself was extended in size and areas of fen and swamp were created between the dam and the loch within the reserve area.

Extending southwards from Lochan Taynish is the main valley mire system. Though drained, grazed and cultivated in the past, important bog communities of plants and insects have survived on the deep peat and along the old flooded drains. These open boggy areas are dominated by heather, cotton grass, bog myrtle, purple moor grass and bog mosses. This important mire habitat is now limited in extent (about 10 ha) due to natural woodland succession.

Saltmarsh and maritime grassland (fen meadow)

On the old raised beach at the south-west end of the peninsula there are herb-rich fen meadows with sharp-flowered rush, marsh bedstraw and the all-important devil's bit scabious, food plant for the marsh fritillary butterfly. Towards the coast, the fen meadows and coastal grasslands dominated by purple moor grass grade into saltmarsh. Here, the vegetation is characterised by salt tolerant plant species such as, saltmarsh rush and saltmarsh flat-sedge. The total extent of this rich habitat mosaic is limited to about 15 ha, only about half of which is suitable for marsh fritillary (the fen meadow component).



South end of Taynish peninsula

Gorse thickets have developed on the marshy grassland vegetation around the southern coast. The rapid transition from scrub woodland and gorse through fen, marshy grassland vegetation and iris beds to saltmarsh, adds further interest to Taynish's amazing habitat mosaic.

Flora and Fauna

Mosses, lichens and bryophytes

The combination of the oceanic climate and the humid woodland environment provide ideal conditions for ferns, mosses and liverworts. The trees and rocky slopes support a staggering variety of mosses and liverworts with 250 species now recorded; this is about 25% of the British bryoflora. Of these, the assemblage of Atlantic species (species



Mosses, lichens and filmy ferns

confined to the Atlantic seaboard and with a limited global distribution) is particularly notable with 31 species recorded, 7 of which are nationally scarce. Filmy ferns and hay-scented buckler ferns are relatively common and widespread at Taynish and are notable components of this oceanic community of lower plants. Like the oak woodlands that support these communities, this diversity of mosses, ferns and liverworts is restricted in Europe and confined mostly to the western Scottish highlands and Ireland.

Taynish is also notable for its outstanding lichen communities, most species of which have no common names. The lichen communities include species with a predominantly southern distribution, such as the rare *Physcia clementei*. *Lobarion* communities are particularly well developed and on smooth bark, especially hazel, the *Graphidion* community, an internationally important feature of the west of Scotland woods, is present in abundance. Where trees grow adjacent to the Linne Mhuirich shore there is an unusual mixture of upper shore lichen species and some of the *Lobarion* community together on a rock substrate. An incredible, 475 species of lichens have been recorded at Taynish including, 91 nationally scarce species and one priority Biodiversity Action Plan (BAP) species, the Norwegian specklebelly.

Vascular plants



Narrow-leaved helleborine

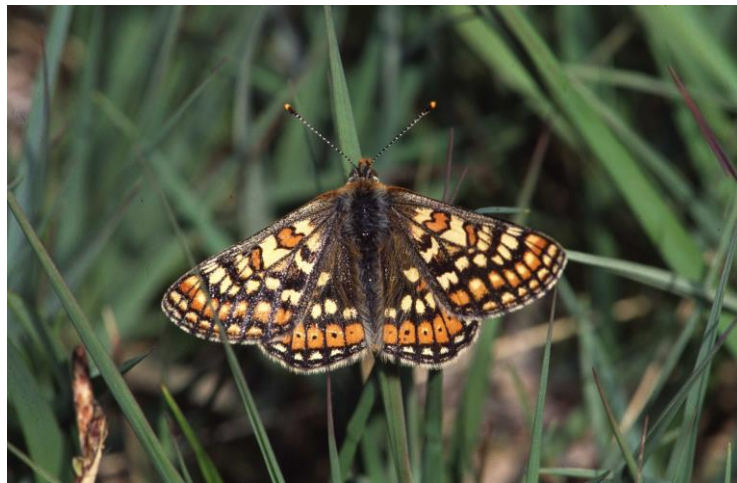
There is a rich flowering plant community throughout the reserve with over 300 species of plants being recorded. The woodland floor is carpeted with bluebells and other flowers in May and the Barr Mor ridge is well worth a visit at this time of year. The most notable flowering plant is the narrow-leaved helleborine, a BAP and Local Biodiversity Action Plan (LBAP) species. In Britain, there has been a disastrous decline of this orchid, with populations of 50 or more plants occurring in only 9 locations. With around 200 plants, the reserve has one of the most important populations of this rare orchid in the UK.

The other plant of particular note on the reserve is found in the fen meadow. It is here that you find the meadow thistle, Taynish being only one of two Scottish mainland localities for this species.

Invertebrates

The reserve has an outstanding assemblage of invertebrates associated with the rich habitat mosaic. Taynish is home to a wide range of butterflies, moths, dragonflies, beetles, flies and other groups of insects, many of which are nationally scarce.

Most importantly, Taynish is a stronghold for the marsh fritillary, one of Europe's most threatened butterfly species. The Scottish population is now largely confined to the Argyll mainland and islands. It is the only British species of butterfly protected by European law and is a UKBAP priority species. The reserve is one of the key sites in mid Argyll, supporting one of the highest mainland populations, with smaller satellite colonies on neighbouring farmland on the Tayvallich Estate.



Marsh fritillary butterfly

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Of the 22 species of butterflies recorded at Taynish, large heath and small pearl-bordered fritillary are BAP species of conservation concern. These species are very scarce at Taynish. The large heath is confined to the mires south of Lochan Taynish whilst, only a few small pearl-bordered fritillary are recorded each summer on the damp grassland areas.

Some 450 different species of moth have been found on the reserve and many more are still likely to be discovered. This huge list includes a rare woodland micro moth *Clepsia rurinana*, a red data book (RDB) species. Of the 12 UK BAP priority moths in Scotland, three are found at Taynish, argent and sable, narrow-bordered bee hawk moth and square spotted clay. Research suggests that there is probably a healthy population of square-spotted clay in the Taynish woodlands. While there have been several recent records of the narrow-bordered bee hawk on the coastal grassland, argent and sable has not been seen recently on the valley mires.

Lochan Taynish and the main valley mires provide ideal habitat for a thriving dragonfly assemblage with 13 species recorded. This includes the southern hawker, a common species in southern parts of England but with a limited distribution in Scotland. Keeled skimmer was also recorded for the first time in recent years.

The wide range of habitats at Taynish, particularly the open water habitats, mire systems and woodland clearings favour an important fly assemblage which includes nationally scarce and RDB species. Likewise, the Taynish woodlands and clearings with their wealth of micro-habitats including an abundance of dead wood provide ideal conditions for an important beetle assemblage which like the moths and flies includes nationally scarce and RDB species.

Mammals

The reserve is home to a thriving otter population. Taynish is well used by otters, a species of European importance and UKBAP species. Numerous holts, resting up sites, trails and other otter signs are found throughout the reserve. Foraging otters are regularly seen on the foreshore and numerous trails cross the peninsula linking foraging areas in Loch



Otters

Sween and Linne Mhuirich, as well as a network of holts within the woodland. The presence of plenty of freshwater to wash salt out of their pelts is of equal importance to otters.

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Other mammals found on the reserve include red squirrel, badger, fox, pine marten and pipistrelle bat (other bat species e.g. Daubenton's may also occur), both of which are also BAP species.

There is a small resident population of deer on the reserve, mainly roe deer and smaller numbers of sika and occasional red deer. Roe deer are a key component of the woodland ecosystem and there is free movement of deer between Taynish and neighbouring properties.

Birds

Taynish has a rich breeding bird community reflecting the range of woodland and open habitats available. Over 100 species have been seen at Taynish, about 40 of which are regular breeders. Breeding species include six UK BAP species, skylark, linnet, reed bunting, spotted flycatcher, bullfinch and song thrush. Wood warblers and redstarts are notable summer visitors to the oak woodland. Rarities have included spotted crane in the sedge mire at Lochan Taynish and golden oriole in the oak woodland. Sea eagles, golden eagles, hen harriers and ospreys are occasionally seen over the peninsula.

Summary

Taynish NNR is an exceptionally rich site for wildlife. This temperate rainforest is an ideal habitat for the many mosses, liverworts, lichens and ferns which thrive in the mild and moist conditions of the Atlantic coast. The range of woodland habitats with ample scrub and deadwood, open areas of fen, mire and grassland provide a varied mix of plant communities which in turn, attract a huge range of invertebrate communities including the rare marsh fritillary butterfly. The foreshore adds further interest to this outstanding assemblage of plants and animals, and the sighting of a foraging otter will often be the highlight for many visitors to this special nature reserve.

3 Management of Taynish before it became a NNR

History of Taynish

7000 years ago	Pollen analysis shows that there was woodland at Taynish. It also shows that there has been little change in the pollen composition over the years.
Iron Age	Decline in tree pollen suggesting clearance of small areas of woodland at the southern end of the peninsula and on the summit of Barr Mor.
Iron Age	Iron age hill fort possibly located at the northern end of the Barr Mor ridge.
1650	MacNeill, the Laird of Ross Estate, built Taynish House & the peninsula supported a number of families until 1900.
1724	Taynish Mill built
1773	Campbells of Inverneill bought Tayvallich Estate and implemented a number of changes including the planting of beech, lime and sycamore, building Gate House, Bath House and the Piggery.
1800	New road to Taynish House was built.
c1800	Intensive coppicing of the oak woodland commenced.
1929	The estate was bought by Colonel Strutt and run as a sporting estate.
1935	The Pease family bought the estate.

Land use history

Generally, the irregular topography of most of Taynish makes the peninsula quite unsuited to agriculture. Tillage lines (“lazy beds”) are still visible on the Barr Mor where oats, flax and “black corn” or rye were probably grown, perhaps from Iron Age times until the 19th century. The fields to the north of Taynish House would have also been cultivated throughout that period, probably by a rotation of oats, roots (potatoes and turnips) and under sown with grass seed for hay. The crofts at Duntaynish would also have been occupied and cultivated until 1900.

Taynish Mill was built in 1724 and continued working for about 150 years. In its day Taynish Mill was an impressive building by Knapdale standards. Two stories high it was a status symbol, illustrating the wealth and power of the Estate lairds. At that time the area around Loch Sween was well populated and nearly all the food was



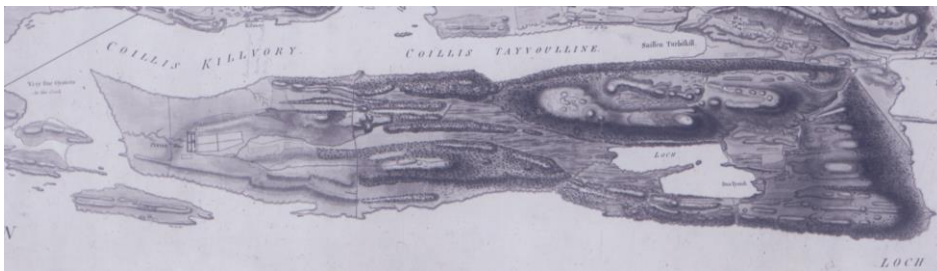
Taynish Mill

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produced locally. Farmers grew grain crops and tenants on the Ross Estate were expected to take their harvested corn to Taynish Mill to be ground into meal. As the Mill was used by the tenants the road constructed by the Campbells was a public road (and still is) as far as the Mill. The road continued to Taynish House. Interestingly, in those days water from the main drain flowed beneath the house where it gathered kitchen waste and delivered it to the Piggery via a constructed water channel.

Much of the Taynish peninsula has been grazed by livestock probably since Neolithic times. During the crofting period it would have been mainly the traditional breed of small highland black cattle, before the shorthorn and Ayrshire breeds came in from the south to replace them. Taynish Home Farm was initially a dairy farm with small numbers of cattle until about 1850. The old stone dyke marking the northern boundary of the farm, crosses the entire peninsula from east to west. Old stone dykes at Duntaynish, Barr Mor and the Mill are testimony of this period of extensive grazing when tenancies existed and small areas were set aside to grow oats and hay for fodder. Hay was cut from permanent meadows at Duntaynish, in the central valley mires and the "Piggery Parks" south of Taynish House.

The Estate map of 1786 shows a similar distribution of woodland and open areas of farmland and bog to what exists today. However, the woodland south of the northern boundary wall at Taynish Farm, at Duntaynish and on Barr Mor is much more open, a mix of wood pasture and arable land. This reflects the relative intensity of grazing over the peninsula.



1786 Map of Taynish Estate

The end of the 18th century heralded the most significant change in land management at Taynish. At this time, around the time of the Napoleonic wars, the demand for iron and leather was at a peak and the Taynish woodlands like many oak woodlands throughout Argyll and beyond, entered the industrial era. Oak bark, rich in tannin, was used to turn raw hide into supple, durable and water-resistant leather. Though far from the iron furnace at Bonawe the Campbells of Taynish eventually agreed to their woodlands being coppiced to produce charcoal to supply the furnace. At the peak of the tanning industry oak bark was more valuable than the timber. Taynish oak trees were so valuable that the Campbells fined locals for taking wood! Also at that time peat was being cut from valley bogs, which again indicated that the timber was too valuable to be used for firewood.

The Taynish woodlands were intensively coppiced for about 70 years until 1870. The cut stumps were protected from grazing, regrew and re-harvested every 20 years, a sustainable form of coppice management which favoured the growth of oak

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at the expense of other species like birch, alder, willow and hazel, collectively known as “black woods” or barren timbers. This activity has greatly modified the canopy composition and structure of much of the woodland. In addition, grazing by livestock and browsing by deer, particularly during the first half of the 20th century would have prevented the development of the woodland understorey.

The charcoal was produced on circular recessed platforms, over 80 of which have been found scattered throughout the Taynish woods. Originally thought to have been constructed by the charcoal burners, archaeologists have found evidence of foundations of round timber-framed huts which could date back 1500 years.



Reconstruction of a charcoal burner on the Barr Mor trail

Excavation work at Taynish by Betty Rennie in the 1980's revealed such evidence in the form of concentric post holes on the original floor under the charcoal layers.

Taynish was briefly managed as a sporting estate from 1929 to 1935. Grouse, partridge and pheasants were shot on what was at that time open moorland. Also during this period, the Lochan Taynish dam was built to improve the fishing in the loch and to try and get the water to flow down the ditch to Taynish House.

When the Pease family took over the estate, they quickly moved back into farming. The fields were cultivated until 1953 and extensive grazing by cattle and sheep continued until 1975. In 1973, when the woodland was threatened with conifer underplanting, the Pease's, knowing Taynish's true value, sold it to the nation to become a National Nature Reserve. The Pease family retained the Mill and access track until 2000 when SNH successfully purchased this small but vital component of Taynish NNR.

Summary

Intervention by man, particularly during the last two centuries has contributed to the diverse range of semi-natural animal and plant communities at Taynish. Past woodland management whilst having a profound effect on canopy and species composition, is thought to have had a less dramatic effect on the associated woodland flora and fauna.

4 Management of Taynish NNR

Key events in the history of Taynish since it became a NNR are as follows:

1973	Nature Conservancy Council (NCC) purchase 327ha of the Taynish Estate from the Pease family.
1977	Declaration of Taynish National Nature Reserve and appointment of a warden to cover all Argyll NNRs (a post occupied by Dave Batty until 1992).
1977	Designation by UNESCO of Taynish Biosphere Reserve.
1985	New colony of narrow-leaved helleborine discovered by D Batty.
1986	Production of first management plan (1986-1995).
1989	Appointment of John Halliday as Warden for Taynish and Moine Mhor NNRs (John continued in various guises as Reserve Manager in Argyll until 2014)
1996	Production of second management plan (1996-2003).
2000	SNH purchase 2 ha of land at Taynish Mill from Pease family including the old Mill and access track. To celebrate, an Open Event is held at Taynish Mill, attended by 200 visitors.
2001	Completion of all ability access facilities including car park extension and trail to Taynish Mill picnic area. An Open Event for less-abled groups and individuals is held to celebrate the new access provision.
2002	Development of woodland trails linking the Mill with the southern end of the track and to the viewpoint on top of the Barr Mor.
2005	Visitor numbers increase significantly to a peak of 9000 following improvements in access and provision of new interpretive panels and leaflets.
2005	Designation of Taynish and Knapdale Woods Special Area of Conservation.
2005	Taynish selected as one of 16 “spotlight” NNRs out of the 55 NNRs in Scotland, on the basis of its high standard of visitor facilities.
2008	Snapberry, a collaboration with SNH and Lochgilphead High School using photography to study nature launched
2008	New trail built at northern end of Barr Mor allowing a high level circuit along the ridge and affording expansive views.
2009	Work on the old Piggery carried out to stabilise the building and allow access into it. Path built as a spur from the Coastal trail.
2013	Mill refurbished and access provided to explore this historic building. New oak boardwalk built at Lochan Taynish
2014	SNH take over control of owning and managing cattle grazing on the reserve.

Management of the Natural Heritage

Taynish NNR has been managed primarily for nature conservation since the reserve was acquired in 1973. The aim of management on the reserve has focussed primarily on sustaining the native woodland communities and the diversity of other habitats, their associated communities and important species populations,

particularly the threatened marsh fritillary butterfly. Associated with this management and to help achieve conservation objectives, monitoring and research have been given high priority at Taynish.

Woodland management

Since the mid 1970's and the removal of stock grazing from most of the reserve area, there has been a significant increase in scrub woodland and shrub layer development, mainly birch, on the fringes of the oak woodland and wherever gaps occur in the canopy (except in dense bracken glades). Although natural regeneration has been successful over the last 30 years deer, mainly roe and a few sika, are still causing damage to regenerating shrubs and trees particularly, hazel and holly. Their browsing also reduces tree seedling survival in the closed canopy woods. Deer control has therefore been ongoing throughout the woodland area, the policy being to eradicate the non-native sika deer and maintain the roe population at a level where tree regeneration is successful. Small-scale experimental deer exclosures have been established to demonstrate the impact of deer grazing.

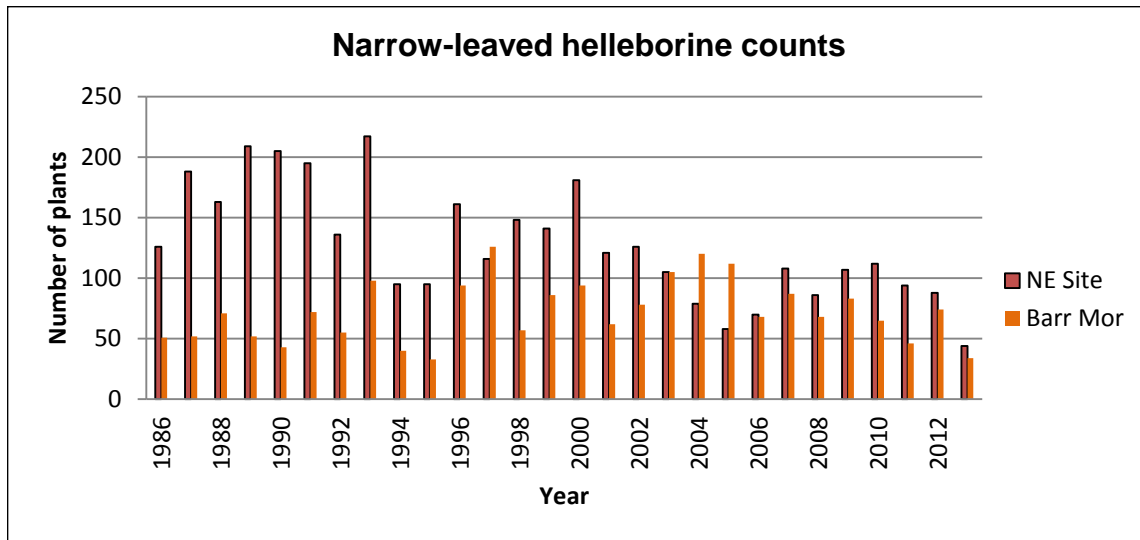
The greatest threat to the natural character of the Taynish woods was the spread of invasive non-native trees and shrubs, mainly beech and rhododendron. Beech has been particularly invasive, expanding extensively northwards. We have made a huge effort to control these non-natives at Taynish over the years, including the eradication of the rhododendron seed source from neighbouring properties. Several hundred mature beech and sycamore, scattered throughout the woodland, have been felled, sold as firewood or left as dead wood habitat. Some non-native trees have been left, mature beech for example, where they are contributing to the designed landscape around Taynish House and the non-invasive limes. The removal of non-natives is now virtually complete, with just the control of non-native regeneration, to keep a check on.

Following the clearance of the non-native trees, we planted approximately one thousand native trees throughout the reserve. These were sourced from a local tree nursery and protected using tree tubes. These have been very successful thanks to lots of tender loving care and the many oak, ash and hazel are now contributing greatly to the understorey of the woodland at the southern end of the reserve. No trees have been planted in recent years with the emphasis now being on natural regeneration.

An important aspect of woodland management is monitoring the extent, composition and structure of the woodlands. We do this in a number of ways including monitoring of permanent transects, regeneration transects and deer transects. Other long-term monitoring projects within the woodlands have included herbivore impact assessments and annual monitoring of the narrow-leaved helleborine. Results suggest a decline at one site, possibly due to competition with wood rush and an expansion at the other.

As part of our Site Condition Monitoring (SCM) programme, we monitor the condition of all the designated features of Taynish. Monitoring has shown that the mosses and liverworts are thriving in the damp, sheltered and rocky conditions of the woodlands. It has also raised concerns about the threat of scrub encroachment on key lichen

habitats and the risk to lichen species which are less shade tolerant. Our clearance of non-native trees and shrubs will hopefully have benefited the lichens by releasing them from dense shaded conditions. Other woodland communities monitored as part of our SCM programme include moths, beetles and flies. All were found to be in favourable condition, benefiting from the varied nature of these damp sheltered woodlands and the abundance of dead wood, mature trees, scrub and damp sheltered glades.



We have also experimented a little with management on the reserve. In 1988, we established a small scale oak coppicing demonstration area. This was to see if a suitable management strategy could be found to meet both the economic and conservation needs of the oak woodland. Though successful oak regeneration was achieved, large scale coppicing of oaks at Taynish would be hard to justify given the importance and diversity of the oak woodland habitat. We have also carried out bracken cutting and rolling trials to try and encourage tree regeneration in areas dominated by bracken. Our results so far have shown that regeneration has been more successful in areas cleared of bracken. In 2009 we also introduced cattle into the woodlands. This is to try and create the conditions which will help tree seedling regeneration by breaking up the bracken and understory. Ongoing monitoring will inform us if this is proving successful though early indications show that positive effects are already happening with the cattle starting to break up the dense purple-moor grass within some of the birch dominated woodland.

Coastal grassland management (fen meadow, saltmarsh and marsh fritillary)

Traditionally, these coastal grasslands were grazed and hay was made from the permanent meadow known as the “Piggery Parks”. Grazing has prevented these open communities developing into scrub woodland, while keeping red fescue and purple-moor grass from spreading and suppressing flowering plants like, devil’s bit scabious. Light grazing by cattle has been maintained at Taynish for this reason and the coastal area is grazed by small numbers of cattle during key periods of the year. Grazing also includes all of the ground south of the boundary wall including woodland.

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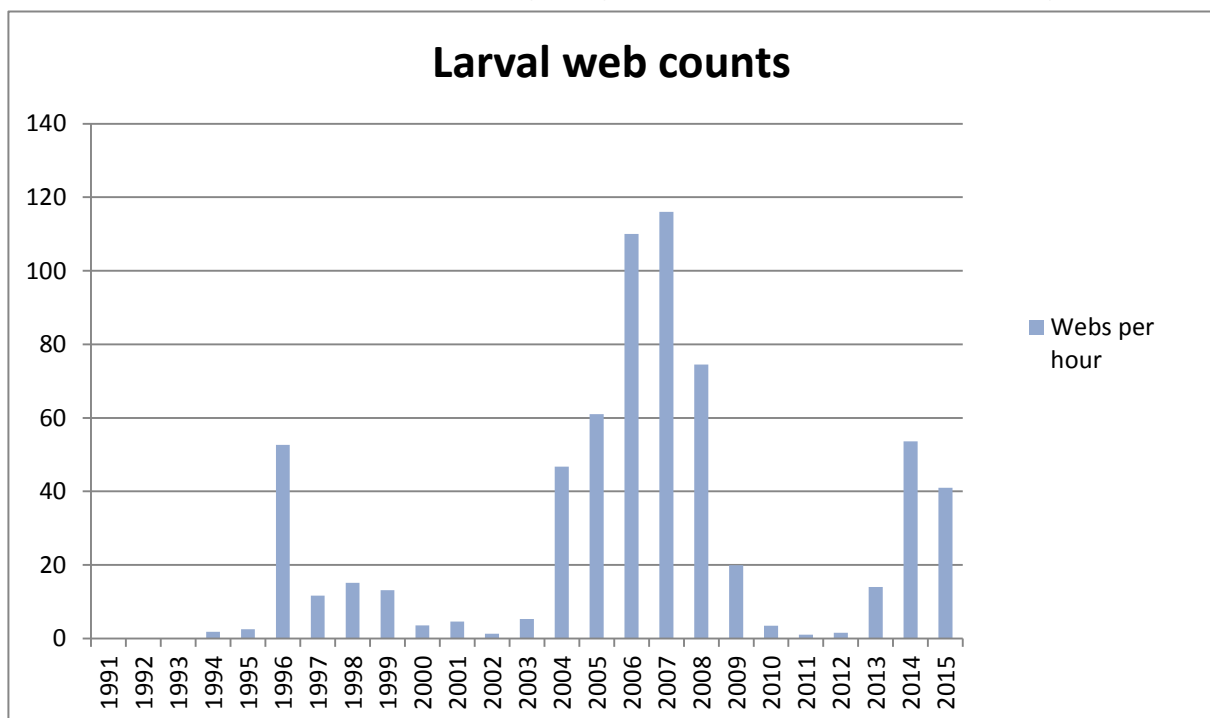
Permanent vegetation quadrats established in 1991 and repeated in 1997 and 2004, confirm that the diversity of vegetation has been maintained by grazing and devil's bit scabious has been shaded out on parts of the coast not grazed. Subsequent monitoring has shown that extending the grazing has improved the habitat available for potential butterfly colonisation.



Cattle grazing on the coastal grasslands.

Gorse scrub invasion is a threat to these coastal grasslands and there is also evidence that the important colony of meadow thistle has declined, possibly due to the spread of gorse. We have controlled the spread of gorse by a rotational programme of cutting and burning of the cut material. This also maintains core areas of gorse in various age classes, which is important for birds like linnet (a UKBAP species) and invertebrates.

The marsh fritillary population and the fen meadow have been subject to detailed monitoring and research to determine habitat requirements. It is vital to know the vegetation height and structural diversity as well as the abundance of the food plant, devil's-bit scabious. The best way to monitor the butterfly is to count the conspicuous larval webs in the autumn. It is subject to tremendous fluctuations as the graph above shows, the web counts having ranged from 2 webs per hour during a very



poor year in 1994 to 116 webs per hour in 2007 a bumper year. Since 2007 numbers declined to very low in 2011 (1.04 webs) and 2012 (1.06 web) but increased again through 2013 and 2014 (53.6 webs). Vegetation heights are also measured annually, this being a good indicator of suitable grazing levels.

Valley mires

The mires are of particular interest for invertebrates, the dragonflies probably being the most conspicuous. The open freshwater habitat at the southern end of Lochan Taynish is maintained by controlling the water levels at the Lochan Taynish outflow sluice, timber dams and by rotational clearance of vegetation along the drain at Gate House. We also clear of invasive birch scrub from the open valley mire near Gate House. The dragonflies seem to have responded well to this management, the keeled skimmer having been added to the Taynish list in recent years and the rare southern hawker reaching record levels in 2005.



Gate House mire ditch

Research and demonstration

Throughout the reserves history, survey, monitoring and research have been given a high priority, particularly where this will help achieve conservation objectives. Links with universities particularly, Edinburgh and Glasgow are well established.

Rymer (1974) included the Taynish peninsula as a study site in his investigation “The Palaeoecology and Historical Ecology of the Parish of North Knapdale”, which had an important bearing on the future management and interpretation of the reserve. Bohan (1997) followed this up in his study of the “Historical Ecology of the Woodlands in Western Scotland” which included Taynish.

Key research projects completed in recent years have included studies of marsh fritillary butterfly. O’Keefe’s (1995) study in particular contributed greatly to the understanding of the habitat requirements of this key species, not just at Taynish but in Argyll generally. McCluskie (1998) completed a PhD on the foraging behaviour of otters around the Taynish peninsula. He has subsequently followed this up with studies of otters to help inform us on the location of new access routes at Taynish, to minimize disturbance to this key species. Edinburgh University honours students visit the reserve annually and many return to complete small research projects.

Demonstrating conservation management, has also been a key aspect of previous management plans for the reserve including, woodland and grassland management projects. Most of these projects have been interpreted to the local community and educational groups, with a few open days for demonstration projects to land managers.

Management for People

For the first 15 years up until the early 1990's, Taynish NNR had a low public profile and received minimal numbers of visitors. In the early 90's, a small car park was constructed at the end of the public road, about 2 km from Tayvallich. With new welcoming signs and information panels at the car park and a reserve leaflet, available at the car park, Tourist Information Centre in Lochgilphead and in the local shop, visitor numbers steadily increased through the late 90's. Our second management plan for the reserve also gave greater prominence to accommodating visitor access and providing interpretation.

Probably the most significant development came after the purchase of the small but strategically important piece of land at Taynish Mill, including the access track leading to the old Mill from the reserve car park. This gave us the opportunity to make the most significant improvements in visitor provision at Taynish in its entire history as a reserve. The muddy Mill track was upgraded and the steep section realigned to allow all abilities access to a new picnic area at the Mill and the Loch Sween shore. An interpretation panel was installed at the Mill providing visitors with information on its interesting history.

Anticipating more visitors, the car park was extended to accommodate 12 cars. The Mill picnic area was also linked to the south end of the reserve track via a new woodland trail taking visitors into the heart of the oakwoods and allowing them to follow one of the most scenic woodland trails in the area. In 2008 a new trail up Barr Mor was built at the north end. This allowed the creation of a high level, circular walk along the Barr Mor ridge with its spectacular views over the reserve and the wider landscape. The coastal path was upgraded in 2009 by resurfacing and with a spur path built to the old Piggery which was also refurbished that year. With a new oak boardwalk to the lochan off the mill path, Taynish now offers visitors a comprehensive choice of routes for a variety of abilities.

Provision of good access and interpretation facilities so visitors can enjoy a range of activities safely is a key aspect of our reserve management. The opportunity to see wildlife, take part in volunteering activities and to experience the health and well-being benefits that visits can bring are just some of the provisions that are central to our management. Since 2008, 73 events have attracted over 900



Lothian Conservation Volunteers

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people who have come to take part in activities such as dry-stone walling, photography workshops, guided walks, charcoal-burning demonstrations and archaeological surveys. Regular volunteering opportunities have attracted a good level of participation and this has assisted us greatly in many of our management tasks as well as providing valuable experience for our volunteers.

A visitor survey conducted in 2014 showed us that the reserve is popular with both local people and tourists on holiday showing figures of 21% and 70% respectively. Most visitors come to the reserve to walk (23%) some to just dog walk (22%) and others with a more specific wildlife interest. Peace and quiet appears to be the most important attribute appreciated by visitors as well as the natural landscape, scenery and walks.

Visitor numbers do, for now, appear to have levelled off after a spike of over 10000 in 2009/10. Figures since show have remained at around 9500 visits per annum. Survey results show car use is the highest mode of transport (55%) for visiting the reserve.

The reserve has been regularly used in the past by the local primary school in Tayvallich and Lochgilphead High School as well as university groups and students. Tayvallich Primary School have helped us in 2013 with archaeological work and in 2014/15 carried out an arts project which culminated in an exhibition at the Mill. Pupils from Lochgilphead High School have used the reserve for the Snapberry project every year since 2008 and we have also accommodated 6th year pupils for long term work experiences, joining us for one day a week during term time. This has proved successful in that we have seen many of them go on to higher education in an environmental discipline. In addition to Snapberry, art is being used increasingly as a means of attracting more visitors. Exhibitions by artists from Argyll and further afield such as Rob Mulholland, Derek Robertson and Lesley Burr have all proved popular and lend an added attraction for visitors. Artmap, an Argyll wide arts group are this year (2015) installing a temporary sculpture trail along the Mill path to further promote the link between art and nature.

Property Management

SNH own Taynish NNR and we have a 20 year foreshore lease with Crown Estate Commissioners, which was renewed in 1996. We currently maintain a seasonal deer shooting licence which is issued and reviewed annually.

There are three private properties on the peninsula, all surrounded by the reserve, Taynish House (including the Bath House and Taynish Island), Gate House and Duntaynish (including Lochan Taynish). The Pease family also retained the right to moor a boat at Taynish Mill and have a small plot of ground on the foreshore. Taynish House and Gate House have a right of vehicular access along the reserve track and are jointly responsible with us for its maintenance.

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Access to the reserve car park is along a 1.5 km section of public road which is the responsibility of Argyll and Bute Council. The road is tarmacked as far as Duntaynish (0.5 km), the remaining section generally being in a bad state of repair, due to drainage problems. The Council maintain the road once or twice a year and we have recently installed more passing places. We believe that the condition of this road has an important bearing on the number of visitors accessing Taynish by car.



Refurbished mill in 2013

Taynish House, Gate House and Duntaynish have the right to extract water from the reserve for domestic purposes. Taynish House and Gate House still exercise that right and depend on this private water supply.

Scottish and Southern Energy have a short section of wayleave running across the north western part of the reserve to Duntaynish. They remove trees and scrub encroaching on the line. There is also a telephone cable which follows the line of the road from Tayvallich to Taynish House and is now mainly buried along the road verge.

The only buildings on the reserve, which we own, are the three storage sheds and workshop and a small caravan at the sheds for use by deer stalkers, students and volunteers. Old buildings like the Mill and Piggery still exist as testimony to Taynish's rich cultural heritage and through refurbishment have found a new lease of life as venues for art exhibitions and interpretation.

With the recent improvements in access facilities, regular safety and condition checks are carried out on all related infrastructure and maintenance is planned and prioritised to achieve high safety standards for visitors. Some of the trails have recently been resurfaced using local materials to keep it as natural as possible while, providing a sustainable and secure walking surface. Like any other property owner affected by a designated site, we have to carry out a detailed assessment to ensure that projects such as the creation and upgrade of paths do not adversely affect the primary conservation interests. It is heartening that the significant increase in visitors at Taynish in recent years has not impinged on the property nor on the wildlife – long may visitors continue to enjoy the experience of Taynish in all its glory!

Conclusion

Taynish has seen many changes, from wildwood, to wood pasture, to coppiced woodland, to farmland, to National Nature Reserve. Despite sometimes intensive periods of management throughout its history Taynish remains a very special place. We aim to ensure that Taynish retains its natural woodland character and rich biodiversity and to enhance this where possible. However, will this be maintained in the long term by a limited intervention management policy? Maintaining traditional cattle grazing clearly benefits the flower rich coastal grasslands and the marsh fritillary butterfly and in the woodland we are already seeing the positive effects of experimentation with grazing management. In the valley mires, some limited clearance of vegetation has been necessary to maintain this open habitat and dragonfly populations have benefited. We are now looking at extending this type of active management project such as cattle grazing, bracken control and deer management into hitherto relatively unmanaged parts of the reserve. This will be closely monitored and should inform our aims for the future as well as giving us the opportunity to demonstrate our management to a wider audience.

The future management of Taynish is reviewed in the follow up document, the Reserve Proposals. Management options are presented which hopefully will achieve our prime aim to ensure that the native woodland and the diversity of other habitats, associated communities and important species populations are sustained in the long-term. People will be given the opportunity to comment on these Proposals. With continued support from the local community, Taynish should have outstanding woodlands until the next Ice Age.

5 Document Properties

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Photographs

Photography by John Halliday, Laurie Campbell/SNH, David Miller and Dr James Black.

Maps by Eleanor Charman, SNH

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This second edition of The Story of Taynish has been edited by Gordon Campbell (Reserve Officer), and approved by Alan McDonnell (Operations Officer – Forth & Argyll NNRs).

Links

For information about Scotland's National Nature Reserves and further information about Taynish NNR please go to: www.snh.org.uk/nnr-scotland

For information on the protected areas associated with Taynish NNR please go to: www.snh.org.uk/snhi/

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Other useful links:

Scottish Natural Heritage www.snh.org.uk

Historic Scotland www.historic-scotland.gov.uk

Joint Nature Conservation Committee www.jncc.gov.uk