



Roudsea Wood and Mosses

National Nature Reserve





Roudsea Wood in Spring

Roudsea Wood and Mosses

Lying at the head of the Leven Estuary off Morecambe Bay, Roudsea Wood is one of Britain's most important woodland sites. Its varied geology, from limestone in the east to slates in the west together with areas of alluvial soils and fens, has allowed the development of a rich mosaic of woodland types.

To the east of the woodlands lie the bogs of Roudsea Moss and Holker Moss which have formed over thousands of years because of the very high rainfall of the area. These bogs have laid down deep peat deposits below the extensive **Sphagnum** mosses on the bog surface.

The NNR entrance is at SD 330827 and is covered by OS Explorer OL7 map.

A place for all seasons...

Spring

On a sunny morning in early spring, you can hear the songs of the many woodland birds like **marsh tit** and **nuthatch**, with the wild flight calls of **buzzard** and **raven** as they establish their territories.

Look out for the territorial sky-dance of the **male osprey** as he swoops over the bogs of Roudsea Moss with a fish in his talons, all the while uttering his wild call to tell other ospreys that this is HIS territory!

In late spring the **hazel dormice** will be beginning to explore their leafy territories looking for food after so long living on their stored body fats.



Osprey



Wild daffodils



Silver-washed fritillary

Autumn

In early autumn, the **speckled wood butterfly** is at its most abundant and **migrant hawker dragonflies** can be seen hunting for late-flying insects. Later in the season, the autumn colours of the trees can be spectacular in the low afternoon sun, including the salmon-pink leaves of the **wild service tree**.

Summer

Through summer enjoy the rich butterfly life which includes **small pearl-bordered fritillary** and **silver-washed fritillary** in the woodland glades, and **large heath** on the bogs.

Along the woodland paths look for the spectacular **greater butterfly orchid** and **early purple orchid**. Look out for Britain's largest wasp, the impressive **hornet**, as it flies along woodland paths looking for its prey. Despite its size, it is a harmless creature to humans if left alone!



Hornet



Wild service tree leaves



Pink footed geese

This is the time of year when **hazel dormice** are most active. They spend the autumn nights feeding on tree berries and seeds to build their body fat to see them through their long winter's sleep.



Migrant hawker dragonfly

Look for the fungi that Roudsea Wood is renowned for, but be careful – many are very poisonous including **death cap** and **destroying angel**! Listen for the high squeaking calls of migrating **pink-footed geese** as they fly high over Roudsea Wood on their way to their wintering grounds around Morecambe Bay.



Death cap fungus

Winter

Enjoy the stillness of an icy morning and look out for footprints of mammals like **otter** and **badger** which have passed by the same way in the depths of a frosty night. The woodlands will be full of wintering birds like **redwing**, **fieldfare**, **siskin** and **redpoll**, while you may be lucky enough to see the very elusive **hawfinch** in the woodland canopy.

Winter is the time when much of the woodland coppicing management is carried out, so you may also hear the distant buzz of **chainsaws**.



Roudsea Wood and Mosses through time...

The development of the landscape at Roudsea Wood starts far back in the early eras of geological time. The Silurian slates that erupt out of the soil through much of the woodland were formed 450 million years ago when muds settled out of the ancient Tethys ocean, full of marine creatures like trilobites and the first bony fish.

The limestone outcrops in the east of the wood are a younger, having been laid down as corals in the warm shallow Carboniferous seas 300 million years ago.

Intense pressures in the Earth's crust uplifted and modified these many layers of rock into low hills. The passage of glaciers 12,000 years ago moulded the landscape to the familiar profile we see today.

With the retreat of the ice sheets vegetation began to recover, eventually developing into the woodlands of Roudsea.



Roudsea Tarn



Roudsea Wood

At the same time, the estuarine muds surrounding the ancient rock outcrops were exposed as the seas retreated. These low lying plains were fed by groundwater and high rainfall, stimulating the first peat-forming plants like sedges and trees. In these very wet conditions the peat deposit began to accumulate, and the deep bogs we have today are now entirely fed by the rainfall that falls in South Cumbria.

The influence of man has been playing its part in the development of this landscape for thousands of years. It was in the 17th and 18th centuries when Roudsea Wood began to be managed on an industrial scale, producing materials like charcoal and potash for the local gun-powder factory at Low Wood. Meanwhile tan-bark from oak trees was used in the local tannery at Ulverston.

Today, Roudsea Wood and its adjacent bogs are a much quieter place, where any management is carried out for the rich wildlife that has developed over the many centuries.

Roudsea Wood and Mosses NNR Jubilee Nature Trails

The Bog Trail

Start point:

Follow the brown trail from the NNR Office

Distance: 1.5 km

Grade: Easy (tramper-friendly)

1. This is an area of wet woodland that has developed between the **limestone** outcrop to the right and the gently rising **peat bog** in the distance to the left.

These wildlife-rich areas on the periphery of the bog are called **lagg** habitats and should include fens, reed beds and wet woodland to provide a natural protective boundary to the peat bog. Unfortunately, most have been lost to agriculture and are now rare in the landscape.

The wet ground here encourages trees like **alder**, **aspen** and **willow** to grow. Look for the **violet coloured buds** of the alder in early spring.



Aspen leaves



© Peter Wakely / Natural England

Sphagnum moss

2. Historically, the peat on the edge of the bog was cut and removed here and the low 'cliff' onto the raised mire is where the cutting stopped.

In this area Natural England is encouraging the restoration of active **sphagnum moss** with the construction of **low bunds** to restore the wet conditions where these mosses flourish.

Bog myrtle also grows in this wet area and its buds provide food for the larvae of the **rosy marsh moth**. This lovely moth had been believed to be extinct in England since the 1860's but was discovered living at Roudsea Wood in 2005.



Rosy marsh moth larvae



Four-spotted chaser dragonfly

3. You are now standing on the ancient bog of **Fish House Moss** which has been slowly growing since the last Ice Age 12,000 years ago, helped by the very high rainfall that occurs in South Cumbria.

Such bogs have very slowly grown above the surrounding lower land and in some areas the peat deposit is now between 8 and 12 metres deep. The peat growth still continues as dead plant debris created by the **sphagnum mosses** accumulates on the wet bog surface.



Bog rosemary



Bog asphodel

Natural England is steadily restoring the wet conditions by blocking the many ditches that criss-cross the bog surface. These blocked ditches create temporary pools that attract many types of insect like **four-spotted chaser** and **black darter dragonflies** before the **sphagnum moss** finally takes hold.

Other bog plants flourish here, including the bright yellow **bog asphodel**, the trailing **cranberry** and the delicate **bog rosemary**.

4. In early summer the bogs turn white with the fluffy heads of **cotton grass** which loves to grow in the wet peat. This plant provides food for the caterpillars of the **large heath** butterfly that flutters over the heather in June and July.

The bog pools are full of life and are the hunting ground for the spectacular **raft spider**, able to chase down insect prey under the water, across the water surface, and in the surrounding vegetation. The **bog bush-cricket** with its amazingly long antennae loves to sit on the warm boards of the boardwalk on late summer afternoons.



Cotton grass



Adder

Look out for **adders** and **common lizards**, which hunt for their prey across the bog but can often be seen sunning themselves on the boardwalk. If you are quiet you may see the lizards' small youngsters as they scurry for cover as you approach.



Raft spider



Common lizard



Bog bush cricket

5. The Otter Dike is a natural stream flowing off the surface of the raised mire. Natural England has constructed sluices along the course of this stream to maintain the high ground water at levels so critical for the growth of healthy Sphagnum moss.

In spring, look out for the tiny **green hairstreak** butterflies and **argent and sable** moths that flutter quickly around the low **birch** trees that grow here.

Between April and August you can watch the spectacular **ospreys** from here, if they are nesting on the artificial nest platform 600 metres to the south.

6. This area of wet woodland contains a lot of **dead and dying wood** which provides essential habitat for many types of wildlife, including fungi like the common **birch bolete** and many hundreds of insects that use dead wood in their life cycles.



Large yellow sedge

The **bilberry** under these trees provides food for larvae of the **beautiful snout** moth that can often be seen in early summer as it flutters from its hiding places as you pass by.

7. The peat in this narrow strip of wet woodland is charged with lime-rich water from the limestone outcrops and this unusual combination creates rich fen conditions that favour a broad range of plants like **marsh marigold**.

This is the site of the largest population of the **large yellow sedge** in Britain and its distinctive yellow-green flower heads can be seen in June and July.

If you only want a short walk, you can return to the Reserve Office along the track to the right. To continue with the nature trail through the woodland, take the track up the slope to the left.

The Woodland Trail

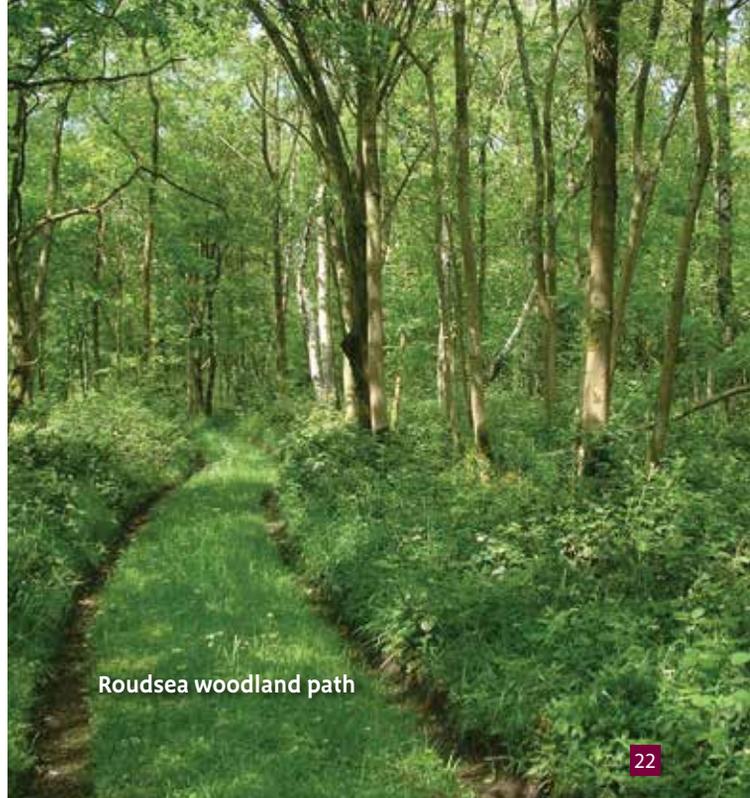
Start point: Follow the purple trail from the track past the NNR Office

Distance: 2.5Km

Grade: Medium (uneven ground)

8. The large multi-stemmed trees you can see here are **small-leaved lime** which is rarely able to propagate from seeds because of the relative coolness of the British summer over the past centuries.

However, at Roudsea Wood there is an increasing number of small-leaved lime saplings that have grown from seed and this is likely to be the result of climate change and increasingly warmer summer temperatures.



Roudsea woodland path

9. Several species of trees here are at the northern edge of their range in Britain including the **wild service tree**, a type of **whitebeam** whose maple-like leaves turn bright salmon pink in autumn.
10. Much of the limestone woodland is being managed by **coppicing**, where small areas are cut each year to promote fresh growth that diversifies the structure of the woodlands.

Coppicing is a traditional management practise that used to produce a wide range of timber but which virtually ceased when more modern materials became available. Coppicing was restored in the 1980s to restore the structural variation and micro-habitats for a broad range of wildlife, including the secretive **hazel dormouse**, which is at the very northern limit of its British range in Roudsea Wood. These tiny nocturnal mammals flourish where coppicing has produced the dense tangles of regrowing tree stems and brambles.



11. There are two permanent **deer exclosures** in Roudsea Wood erected in 1976 since when they have been free from browsing deer. This exclosure now has a dense tangle of bramble and tree stems that is ideal habitat for **hazel dormice**.
12. Aspen is a native poplar tree whose scientific name ***Populus tremula*** accurately describes the way the leaves tremble in the slightest breeze.

Aspen is now absent in many of Cumbria's woodlands because it is very palatable to browsing herbivores like deer and sheep. This makes the remaining stands at Roudsea very valuable, with the trees supporting a wide variety of insects, lichens and fungi rare to northern Britain.

13. The oak trees here are only middle-aged at 250 years old. These multi-stemmed trees have grown from former coppice rootstocks of the 18th and 19th centuries when Roudsea Wood was extensively coppiced to produce charcoal and tan bark.

The **tan bark peeler's hut** here would have been home for a woodman and his family while they worked to fell and strip the bark from the oak stems in late spring, a time of year when the high sap content made bark stripping easier.

14. In 1943 Roudsea Wood was divided by the construction of this major power line that now carries electricity to south-west Cumbria. The land beneath the lines is maintained as a permanently open area, providing sunny warm conditions that are beneficial for many plants and insects including the large **silver-washed fritillary** and **gatekeeper** butterflies that can be seen here from June until August.



Gatekeeper butterfly



Juvenile chiffchaff

© Allan Drewitt / Natural England

15. The shortage of timber in Britain in the early 20th century encouraged a policy to under-plant many of our ancient native woodlands with **non-native softwoods**.

This area of Roudsea Wood was planted with **sitka spruce** but these non-native trees were removed in the 1990s before too much damage to the natural woodland could be done, and this area is now recovering well. In spring, these woodlands resonate with the songs of **willow warblers** and **chiffchaffs**.

16. This ancient 16th century structure is an old potash kiln where limestone was burned with charcoal and bracken to produce **slaked lime** or **potash**, a substance that was used in the washing of locally produced sheep fleeces.



Bluebells

17. The tan bark that was produced in Roudsea Wood was brought to this building, the old **Tan Bark Barn**, which has the 'rubble' walls typical of old buildings in Cumbria.

After drying in the barn, the bark was shipped across the Leven Estuary to tanneries in **Ulverston** where **tannic acid** was extracted for use in the curing of leather.

In order to maintain the integrity of this old building and for your safety, please do not enter this site.

18. This old structure is the **Powder House** which was used for the storage of gunpowder manufactured at the factory at **Low Wood**, near Haverthwaite. This highly dangerous material was transported (very carefully!) from Low Wood and through Roudsea Wood on a track that today is still called **Powderhouse Lane**.

This building now privately owned and is not in the National Nature Reserve. Please respect the privacy of the owners by not entering the area.

19. Many early plants make full use of the available spring sunlight by flowering before the leaves in the forest canopy have fully opened. These **vernal** species include **bluebell** and the aromatic **wild garlic**. They will have wilted away long before the end of June.



Herb Paris

Look out for **herb Paris** with its strange four-leaved structure and bizarre yellow and purple flower lying centrally between the leaves.

20. This woodland was formerly managed as **coppiced oak** where timber was regularly cut for the production of **charcoal** and **tan bark**. More recently these trees were thinned to single stems to return the woodland to oak high forest.

The open structure under the forest canopy supports a dense cover of bilberry, while some young stems of **rowan** and **holly** are becoming established.



Bilberry flowers



Small-leaved lime seedling

21. This flat circular area by the side of the path is an old pit stead where a charcoal kiln used to stand. Here, timber from the surrounding coppice was converted into charcoal within large steaming, turf-covered mounds or '**clamps**'.

The process of converting timber to charcoal would take several days to complete, and the clamps had to be tended day and night by skilled charcoal burners.

22. The fence to your right was erected in **1976** to exclude deer from this part of the oak woodland to see what would develop without the impact of browsing deer. Since then, the woodland has developed a more natural structure and supports a wider variety of plants and animals than areas outside the fence where deer still browse.

Storms can cause dramatic changes to the woodland landscape but such events are ecologically valuable and the fallen trees will provide a great deal of dead wood habitat that is vital for so many creatures in a wild wood.

23. National Nature Reserves are ideal places for the development of long-term ecological research, and much of the woodland at Roudsea has long been a study area for scientific research into how woodlands operate and function.

The old trees here are part of the one-acre **Steele Plot**, one of only eight such plots across Britain set up by **Dick Steele** in 1961 to measure the rate of growth on individual trees.



Blue-tailed damselfly



Water rail

24. This area of fen woodland and its reed bed only floods at the very highest of Spring tides, while the reed-fringed Roudsea Tarn is the last remnant of permanent freshwater. It is home to many types of dragonfly like the **migrant hawkler** and the **blue-tailed damselfly**. The reeds provide safe nesting areas for **water rail**, **reed bunting** and **sedge warbler**, while the Tarn is occasionally visited by **kingfisher**.

Water shrews might be seen diving in the shallow waters, while **grass-snakes** can be occasionally seen swimming across the surface as they hunt for **frogs**. The dense masses of the **great tussock sedge** provide refuges for the scarce and secretive **water vole**, while **otters** very occasionally swim up from the **River Leven** to visit the Tarn. Large stands of **royal fern** can be seen on the west side of the tarn.

This area of water is dangerously deep, so do not go too close to the edge.

25. This old yew tree shows the presence of deer in the woodland. Yews sometimes grow small leafy '**epicormic**' stems across their bark and here these have been grazed by passing deer to create a '**yew lawn**' effect. Other yew trees in the area have a pronounced '**browse line**', with their lower braches having been nibbled away by hungry deer.

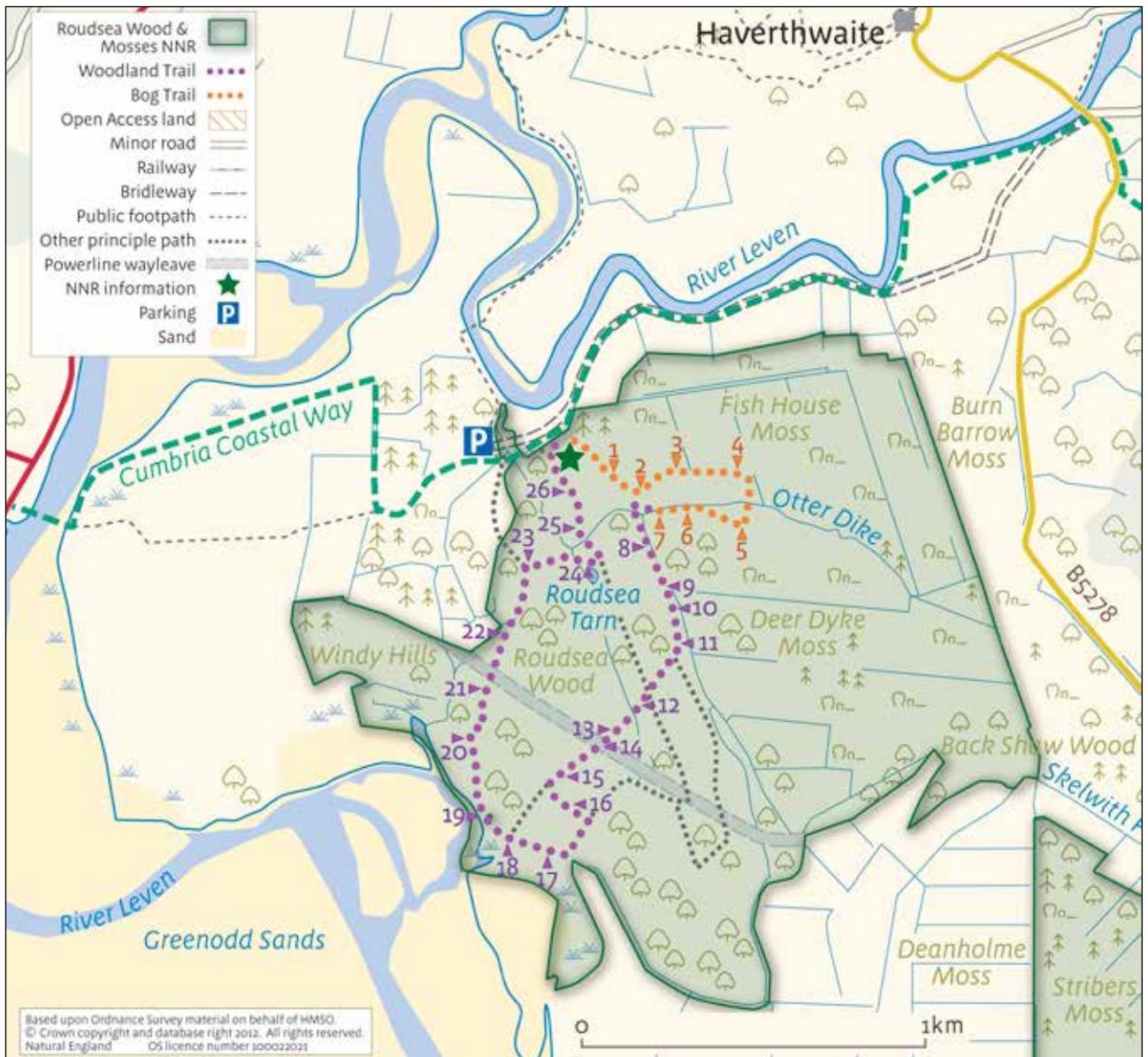
26. These truly ancient **small-leaved lime**, **elm** and **yew** trees are a testament to the thousands of years these woodlands have taken to develop. This giant small-leaved lime hangs from the limestone crag as if hovering in mid-air while other ancient trees seem to flow out of the solid rocks along the edge of the path.

The nature trail finishes here and you re-join the Cumbrian Coastal Way ahead. Turn left there to return to the car park.

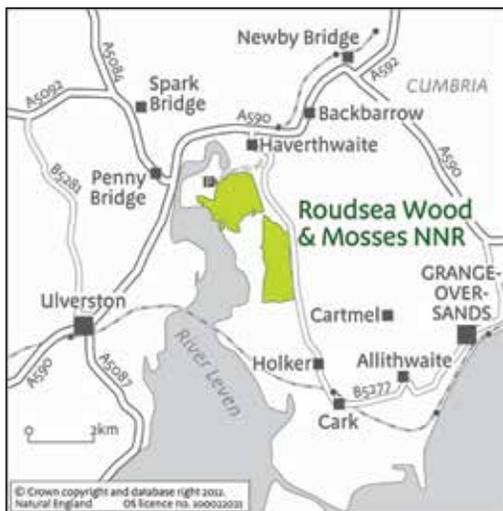


Roudsea ancient yews and roots

Fish House Moss



How to get there



Roudsea Wood and Mosses NNR lies on the northern reaches of the Leven Estuary in Morecambe Bay, south Cumbria, 2.5km south-west of Haverthwaite and 5 miles north of Holker Hall, near Cark-in-Cartmel. The site entrance is at SD 330827.

By car, leave the A590 at Haverthwaite, (four miles west of Newby Bridge) and take the B5278 south towards Cark. Take the narrow private road immediately south of the River Leven road bridge at Low Wood. Follow this private road for 1.5 miles to the NNR car park on the south side of the road. Please do not park anywhere along this private road as this will impede access for other users.

National Cycle Route 70 passes the entrance to the National Nature Reserve, and there is a bicycle rack in the car park. The nearest train station is at Cark-in-Cartmel, on the Lancaster-Barrow West Coast line. The Kendal-Barrow express bus (X35) stops in Haverthwaite.

Call Traveline on 0871 200 22 33 to plan your public transport.

Take Care

- To visit the NNR you need to obtain a free permit from: Roudsea Wood NNR Base, Fish House Lane, Haverthwaite, ULVERSTON, LA12 8PE. Alternatively permits can be obtained by telephoning 015395 31604
- The NNR is closed to visitors on Thursdays during the period October-March.
- If the ospreys are nesting, some paths will be closed for the duration of the nesting period, but viewing facilities will be available for excellent views of the nesting birds.
- Roudsea Wood lies at the top of the tidal range of the Leven Estuary, and the approach road and parts of the NNR can flood on very high tides. Visitors are advised to consult local tide tables and plan their visit accordingly.
- Nature trails, woodland paths and the boardwalks are open to permit holders. However, there is no access away from these routes. The pathways are uneven and care should be taken when walking these routes.
- The nature trail is accessible for all-terrain wheelchairs. There are several slopes and rough stretches which make this unsuitable for other types of wheelchair.
- To avoid disturbance to wildlife, dogs must be kept on a short lead at all times. The site is very important for dormice and these animals are extremely vulnerable to any disturbance.
- Ticks are present on this reserve and visitors are advised to take adequate precautions against these.
- Please follow the Countryside Code.

Front cover photograph:

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Rob Petley-Jones (except where indicated)

For further information about the nature reserve contact:

Natural England, Roudsea Wood Base, Fish House Lane,
Haverthwaite, ULVERSTON, Cumbria LA12 8PE
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Natural England is here to secure a healthy natural environment for people to enjoy, where wildlife is protected and England's traditional landscapes are safeguarded for future generations.

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