



Highland

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Woodland Conservation News

Conservation grazing in woodland management

Woodland grazing – introduction



Dunwich Forest ponies

Steve Aylward

“Grazing and browsing by large herbivores are natural features of woodland ecosystems and grazing management should be considered from the outset, in management of semi-natural and native woods”ⁱ

Within the Holocene period the British landscape has evolved with the impacts of grazing animals. Pre-Neolithic woodland was subject to the effects of herbivorous grazers such as red deer, aurochs, wild boar and beavers. It is believed they drove woodland-grassland processes to create a shifting mosaic of habitats across the landscape.

As humans increased their influence on the countryside they seriously reduced the numbers

of wild herbivores, but introduced their own grazing pressures in the form of domestic livestock such as pigs, goats, sheep and cattle. Initially these were small transient herds. However, by the 18th Century increasingly sophisticated land management techniques and a more stable social structure allowed for increases in herd sizes managed in fixed field systems. This reduced dependency on woodland and increased the use of grassland.

Over the last century human activities have moved away from using woods for their food and livelihoods. The loss of woodland management allowed many sites to become neglected, overgrown and shady. This led to a serious decline in many species that require disturbance and more open conditions, including rare lichens and ground flora.

Overstocking of woodland grazers can cause a loss of plant and animal species and prevent natural regeneration, through soil compaction and overgrazing. But balanced regimes with appropriate grazing pressure can increase habitat diversity, support important wildlife populations and encourage natural regeneration. A lack of grazing often allows more aggressive plants to outcompete and dominate sites.

Different grazers have different impacts and effects on the land and vegetationⁱ. The specific attributes and conservation objectives of the site will determine which are best.

Cattle are not particularly selective in their grazing, and will eat dead herbage, sedges, rushes and other tall, fibrous elements of the sward not palatable to other grazers. Cattle need to feed for 60% of the day. They are large and have a greater trampling effect than smaller species, poaching the ground and creating micro-habitats. Their size also allows them to move through tall, dense bracken stands. They create an uneven, tussocky sward.

Sheep are highly selective grazers, eating more live vegetation, other fine-leaved grasses and tender shoots, but less fibrous material. Sheep have a greater compaction issue on the ground, and are unsuitable for tree regeneration. They can also browse tree saplings and seedlings, preventing natural regeneration, and strip bark – especially in harsh winters. They create a short, tight sward.

Ponies are selective grazers. But hardy native breeds will eat coarser grasses and less palatable forage, creating a varied sward structure and producing open, herb-rich swards.

Goats are browsers, tending to eat above ground level, and favour high quality grasses. They can control bramble and other thorny species. They browse broadleaf seedlings more than other species, preventing natural regeneration. They create uneven, tussocky swards.

Pigs are omnivorous and have a low selectivity. Pigs root in the ground. This behaviour can clear dense

ground vegetation such as bracken and reduce the need for weed control, and create seed beds for natural regeneration. But overstocking can cause soil compaction, and excessive rooting can damage roots, uproot seedlings and prevent natural regeneration.

To assist the creation of appropriate grazing plans by managers, the [Woodland Grazing Toolkit](#)ⁱⁱⁱ was developed by the West Highland Woodland Grazing Project. It explains the benefits of grazing, the effects of different grazers and grazing intensities, principles behind developing an effective plan, how to write one and effective monitoring to ensure it delivers the outlined objectives.

Another useful resource is the [Grazing Animals Project](#) website^{iv}. It has links to a range of publications, news and events, case studies, training and access to the Nibblers Discussion Forum.

The following case studies look at a number of woodland sites across the UK using grazing within their management. They also include a range of different livestock, which each have their own benefits and impacts.

ⁱ Mayle, B. (1999) *Domestic Stock Grazing to Enhance Woodland Biodiversity*. Forestry Commission Information Note. Available online:

[http://www.forestry.gov.uk/pdf/fcin28.pdf/\\$FILE/fcin28.pdf](http://www.forestry.gov.uk/pdf/fcin28.pdf/$FILE/fcin28.pdf).

ⁱⁱ Rodwell, J.S. & Paterson, G. (1994). *Creating New Native Woodlands*. Forestry Commission Bulletin 112, HMSO, London

ⁱⁱⁱ Sumsion, L. & Pollock, M. (2005) *Woodland Grazing Toolkit*. West Highland Woodland Grazing Project. Available online: <http://www.grazinganimalsproject.org.uk/pub/File/Woodland%20Grazing%20Toolkit.pdf>

^{iv} Grazing Animals Project website <http://www.grazinganimalsproject.org.uk/index>

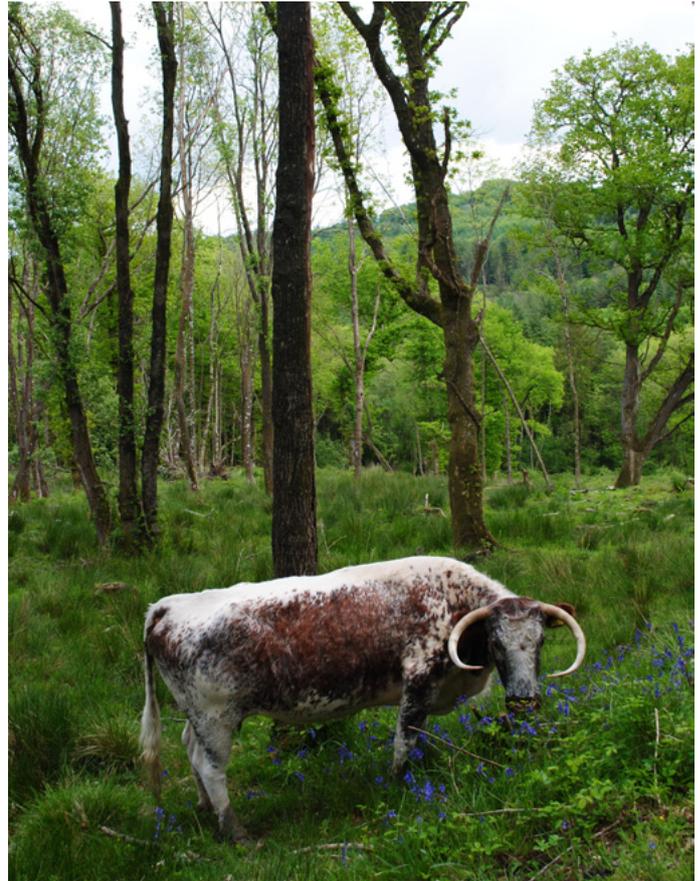
Neroche Longhorns

The edge of the Blackdown Hills south of Taunton has enjoyed the formal status of 'forest' for more than a thousand years. Neroche was once a Royal Forest associated with the Wessex Kings, at a time when the word 'forest' meant an area of common land reserved for hunting by the royalty and local nobility. Trees were a usual, but not a defining, part of a forest – the presence of hunted game was the key feature.

In 1944 the Neroche estate fell out of private ownership and was taken over by the Crown Lands Commission. The Forestry Commission (FC) leased the wooded and former common land areas of the estate in 1947. Forestry plantings of conifers and broadleaves took place progressively from 1949 to the early 1970s, reflecting the post-war drive to establish a national reserve of timber. Through this much of the variety of open space was inevitably obscured.

Around the turn of the 21st century, forestry policy in the UK began to place more emphasis on biodiversity and access alongside timber production, and the plantations at Neroche became both a problem and an opportunity for the FC. Plantings had been established on steep, wet land, making harvesting difficult and costly. However, the forest contained areas of high environmental importance, with three Sites of Special Scientific Interest and one Special Area of Conservation, all requiring substantial management to achieve favourable condition. The forest also provided a popular recreational resource for local people, with scope for enhancement.

The decision was taken to shift the balance of Neroche away from major commercial timber production towards maximising environmental value and accessibility. The FC used the Heritage Lottery Fund's (HLF) Landscape Partnership Scheme (LPS) to begin a transformation of the landscape.



Neroche Forest longhorn

Gavin Saunders

The HLF encouraged applicants to take a holistic approach to landscape and heritage, and the project quickly evolved past being just a mechanism for habitat restoration. Plans included developing outdoor education, offering training to local apprentices, encouraging the study of local history and the creation of a long distance off-road trail. The forest transformation and introduction of grazing was central to the strategy, and represented the largest physical change in the Blackdown Hills landscape in recent times.

The initial stages of habitat restoration can occur much more rapidly on conifer plantations than in open agricultural landscapes. As the Neroche Forest was controlled by one landowner, the project provided an opportunity to test approaches to large landscape-scale habitat restoration, while laying the foundation for a future 'climate-proofed' habitat mosaic.

In 2005 a Forest Design Plan was drawn up to outline major harvesting and site preparation. It was subject to major consultation through statutory partners and informally through extensive dialogue with the local community. Major felling began in late 2006.

In order to create a series of habitat units large enough to sustain grazing livestock, within the limited timescale of a Lottery-funded programme, conifer harvesting was carried out rapidly and on a large scale. Over the course of three winters 250 hectares (ha) of conifer were felled. Stumps were lowered, brash raked and burned. Although the local community had been consulted, the speed and extent of the change was upsetting for some.

For six months after felling, the newly opened areas looked raw and quite bleak, but within a year the land had begun to rejuvenate. First it developed a pink flush of foxglove, then a rash of weeds; by the fourth year there were the beginnings of a grassy, heathy sward.

By 2009 a series of seven grazing units had been created from the conifer felling, ranging from 15 to 90 ha, and totalling 220 ha. Each was fenced around the perimeter, enclosing a range of habitats from open (recovering) pasture and wet heath, through scrub and wood pasture to closed woodland. Sharp boundaries between woodland and open habitats were avoided; wood pasture was the gradual transition between the two.

The FC aimed to create a long-term commercially sustainable basis for grazing the Neroche Forest, using Lottery investment for the initial capital costs of fencing and livestock purchase. Livestock grazing in woodland, on a large scale and with a positive environmental purpose, is not a common feature in south-west England. For Neroche, a breed of cattle was needed which would suit a public forest, thrive in the unconventional conditions of former conifer plantation, and bring individuality to the Forest – in keeping with its character.

A core breeding herd of English Longhorn cattle was acquired, with the FC retaining ownership of the herd (and its equivalent replacements). This core investment created a suckler herd which has been gradually expanded through breeding, and currently numbers around 110 – amounting to a low stocking density of around 0.5 livestock units per hectare.

The English Longhorn is an ancient and beautiful breed. Once a Rare Breed, they came close to extinction in the middle years of the twentieth century, but have proved themselves to have a valuable role in conservation grazing. Longhorns thrive on poor, variable forage, are docile and good with the public, and produce high quality beef – making them perfect for Neroche. Regular welfare checks are carried out to ensure the health of the cattle.



Cattle moving day Neroche Forest

Gavin Saunders

Once the Lottery-funded period had ended, FC entered into a new arrangement with the Blackdown Hills Trust. The Trust took on a farm business tenancy over the grazing units and entered them into Higher Level Stewardship (HLS). It also took on two graziers responsible for grazing and overwintering; in return for HLS payments and the right to sell surplus animals for their own return. One has established a small beef box scheme and the other is selling pedigree young stock.

While the full impact of grazing will not be seen for several years, early indications are encouraging. The Longhorns range widely, maintain their condition well and take a good proportion of rough forage. Woody regeneration including ash, *Fraxinus excelsior*, hazel, *Corylus avellana*, and willow, *Salix* sp., is browsed quite heavily. But bramble, *Rubus fruticosus*, and birch, *Betula* sp., are not really touched, with some areas rapidly scrubbing up – especially in wet seasons like the summer of 2012. Because of this, some mechanical intervention is now being planned to tackle scrub on the difficult terrain.

Vegetation monitoring is currently based on permanent quadrats and fixed-point photography. Results show that previously coniferised ground has gained a good diversity of flowering plants in a remarkably short space of time. Three years after felling, areas of initially completely bare ground had amassed over 20 species per 2x2 metre quadrat, compared to 25-35 species per quadrat in the original herb-rich calcareous grassland glades.

There have been relatively few problems with public-cattle interactions. Many people express their interest and affection for the Longhorns, which have become local celebrities. However, some misgivings remain, based in part on the discomfort felt by some at the idea of large livestock in a woodland setting.

The landscape re-emerging at Neroche is a mixture of oak, ash, and conifer woodland, hazel, copse and blackthorn, *Prunus spinosa*, thicket, tussocky

heath and marsh, springline mire and flowery glades. It probably broadly reflects the landscape here a thousand years ago, though brought into a modern context. When habitats are developing on a landscape scale, with close enough association between patches to allow genetic exchange, it is neither practical nor desirable to attempt to micro-manage. But equally a hands-off approach is ill-advised given the rapidity of scrub growth – finding a balance between those two extremes is not easy.

This is a long-term project, and the Neroche partnership is experimenting and learning over time. The basic ingredients appear right; but we are learning, taking risks, and working to enhance the landscape into the future.

Coed Cymerau Isaf – cattle grazing

Coed Cadw's Coed Cymerau Isaf is a 32 hectare (ha) upland oak, *Quercus petraea*, wood in the treed vale of Ffestiniog, within the Snowdonia National Park. Some of the site forms part of the Meirionydd Oakwoods and Bat Sites Special Area of Conservation. It is made up of semi-natural ancient woodland, unimproved grassland and three areas of mire.



Sundew

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Coed Cymerau field boundary walls and stock fencing

Rory Francis

The mesotrophic grassland areas support field woodrush, *Luzula campestris*, black knapweed, *Centaurea nigra*, ribwort plantain, *Plantago lanceolata*, and the moss *Rhytidiadelphus squarrosus*. There are also pockets of calcifugous grassland containing sweet vernal grass, *Anthoxanthum odoratum*, and heath bedstraw, *Galium saxatile*. Several orchid species are found throughout the site, including common spotted orchid, *Dactylorhiza fuchsii*. The lowland meadows are Wales Biodiversity Action Plan habitats.

Of particular note in the areas of mire is the presence of raised or blanket mire, priority habitats with a Wales Biodiversity Action Plan, and bog pools. These are important for their true sphagnum communities, white-beaked sedge, *Rhynchospora alba*, bog asphodel, *Narthecium ossifragum*, and sundew, *Drosera* sp.

In 1990 work was undertaken to restore and stockproof the old field boundary walls. On completion of the work, grazing was introduced to a six ha area of Coed Cymerau Isaf, but not

to the woodland. The objective is to maintain the open ground areas using low-impact methods. The conservation grazing is increasing species diversity. It will also prevent the wet mire and bog habitats from scrubbing over or molinia from dominating. Maintaining the important open ground and woodland edge resources provide good foraging opportunities for the resident population of lesser horseshoe, *Rhinolophus hipposideros*, and other bat species.

Hardy native breeds of cattle, such as Highlands and Belted Galloways, now graze the site. These are generally maintained at a relatively low stocking density, however their numbers can be increased for short periods if necessary and there is also the opportunity to use sheep. The cattle are highly effective at preventing natural regeneration occurring in the areas of mire. Their poaching of the ground as they move over the boggy areas increases structural complexity and maintains species interest. The cattle are on site from around April (weather dependent) until October.

Cymerau's on-site resident ecologist also acts as the grazing agent; identifying suitable graziers, drawing up year-on-year plans, managing the numbers and movement of livestock and timing the cutting of hay to ensure the meadow flowers have set seed. The grazing and hay cutting schemes are tailored to respond to climatic variables and plant responses. A monitoring list of the species expected in each field is being developed. This simple method is easily replicated and will build a body of data to demonstrate the aims of the management plan are being achieved.

The internal and external fences are maintained regularly to keep livestock from escaping. The site is also a popular dog walking spot, therefore the needs of the public must be considered. To reduce any possible conflict new gates have been installed and warning signs will be produced.

The long-term aims are to maintain and extend the open areas and improve habitat quality. This will continue to benefit species that depend on open habitats and the woodland edge.

Little Doward Woods – grazing for archaeology

Little Doward is part of the nationally important Wye Valley Woods. Situated in Herefordshire it is a prominent feature of the Wye Valley Area of Outstanding Natural Beauty. The 82 hectare (ha) site is a diverse mix of ancient semi-natural woodland and wood pasture, with native trees such as the rare whitebeam, *Sorbus eminens*, areas of planted conifer and non-native broadleaves including sweet chestnut, *Castanea sativa*, and limestone outcrops supporting specialist flora like the scarce *Hutchinsia*, *Hornungia petraea*.



Little Doward Welsh White cattle

Jeremy Evans

A large section of the wood is designated as a Special Area of Conservation and a Site of Special Scientific Interest, containing several Regionally Important Geological Sites.

The biological interest of the site is a legacy to the continuity of both tree cover and grazing through time, particularly on the south facing limestone slopes, rocks and cliffs. The site was subject to common grazing with a variety of livestock, and cutting rights that resulted in a large number of ancient pollards, particularly beech, *Fagus sylvatica*. In the mid 19th Century the common was enclosed as a deer park. This sustained the wood pasture habitat until significant areas were planted with conifers, non-native broadleaves such as sweet chestnut or allowed to scrub over during the 20th Century.

An Iron Age hill fort is a prized feature and efforts have been taken to conserve this important Scheduled Ancient Monument. When the Woodland Trust first acquired the site in June 1991 conifers had been planted on top of the fort around 50 years before.

To prevent any further damage by tree roots, the 10 ha area of conifers on top of the fort was clear felled. A standard harvester was mainly used, but a sky line was required in the northern area to protect the delicate surface archaeology. Elsewhere, scrub was cleared and dense stands of both native and introduced trees were thinned, with timber removed as far as possible.

Parallel to this it was essential to put in place a strategy to ensure that restored remnant limestone grassland flora and developing vegetation was managed in line with the Trust's vision of a matrix of restored, functional habitats. Conservation grazing was considered the most environmentally sensitive method of achieving these plans.



Little Doward hill fort archaeological dig

Jeremy Evans

The deer park boundary walls were restored and stock-proofed. A grazier was sought, but none were found willing to graze their livestock on the site. Little Doward is quite an inaccessible, steep site with a limited and fairly poor food supply, making it unattractive for commercial cattle. Therefore in 2009 the Trust bought its own small herd of seven Welsh White cattle, a rare ancient breed. They have access to 53 ha of the site: 43 ha of woodland and the cleared area.

The cattle graze from April to the end of November. They are then overwintered with a local farmer; poor access would make supplementary feeding overly difficult. The cattle are very hardy and able to utilise the available food source well. While the cattle roam the whole 53 ha, their grazing is concentrated on the open grassy hill fort area. They are also quiet, calm and not easily spooked, making them popular with visitors and the many dog walkers using the woods.

The low stocking density ensures the cattle do not damage the site and archaeology, which also includes Bronze Age barrows. They are also being used to expand the small areas of limestone grassland, to the benefit of several species including primrose and violets. The site boasts limestone caves in which lesser horseshoe bats, *Rhinolophus hipposideros*, roost. Greater horseshoe bats, *Rhinolophus ferrumequinum*, are known to roost in caves on adjacent land.

These particular bats use broadleaf woodland, woodland edges and pasture with and without cattle. Therefore the woodland and grazed areas of Little Doward are especially appealing. Increasing the native broadleaf element and grassland areas will ultimately benefit and help support these rare and threatened UK mammals.

The Little Doward management plan requires the restoration of the wood pasture system, especially on the priority southern and south western slopes. Funding has been secured to further thin regenerating ash, *Fraxinus excelsior*, from around the ancient trees, and create a 20 ha grazing sub unit within the larger 53 ha compartment. Sheep and deer are being considered as grazers for the sub unit, therefore deer fencing may be a necessity.

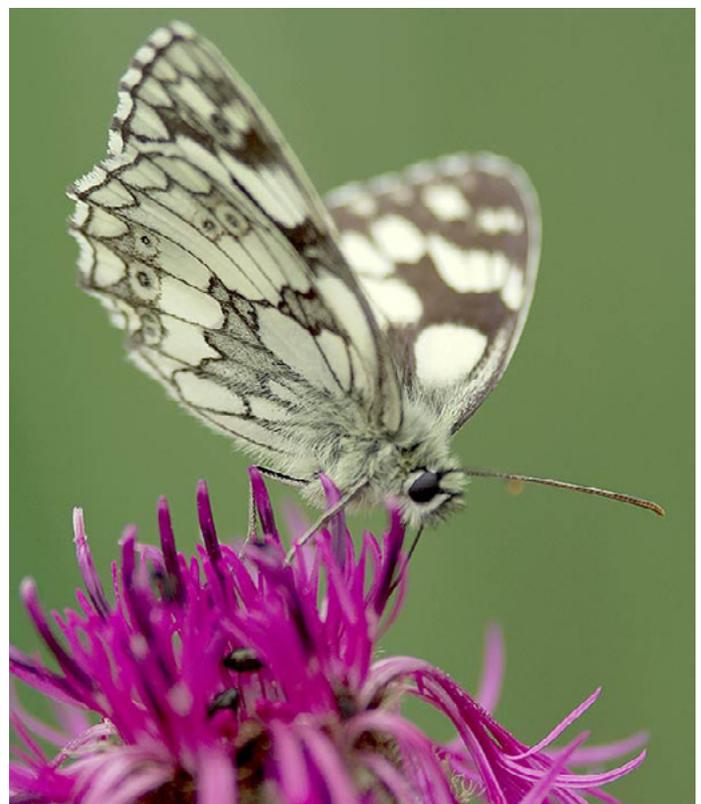
There is a large population of fallow deer, *Dama dama*, in the wider landscape. The Deer Initiative's Deer Management Group for the area has aspirations to reduce numbers by working in partnership with a number of organisations. The Woodland Trust contributes to this by controlling deer numbers in parts of Little Doward and a number of other sites in the area.

In the long term the former deer park will be subject to a low-intervention silviculture regime. This will be coupled with appropriate grazing to maintain a mosaic of open woodland and grassland habitats, with numerous open-grown veteran/

ancient trees. Sufficient natural regeneration will be encouraged to provide future generations of ancient trees and maintain habitat continuity for a range of species.

Marden Park – sheep/goat grazing

The Woodland Trust's Marden Park (made up of Marden Park and Great Church Wood) is a 67.3 hectare (ha) site high on the North Downs, within the Surrey Hills Area of Outstanding Natural Beauty (AONB). It is also incorporated into the Woldingham and Oxted Downs Site of Special Scientific Interest for chalk downland. Unfortunately only three per cent or 325 ha of the chalk grassland resource in the south east of England remains in Surrey. This is often highly fragmented and open to destruction through neglect, because of this calcareous grassland (lowland and upland) is a priority habitat.



Marbled white butterfly

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Fallow deer

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The woods are predominantly broadleaf, including a number of veteran beech, *Fagus sylvatica*, trees, whitebeam, *Sorbus aria*, field maple, *Acer campestre*, yew, *Taxus baccata*, and wayfaring tree, *Viburnum lantana*. The habitats vary from 16.2 ha of ancient semi-natural woodland to large areas of secondary ash, *Fraxinus excelsior*, woodland and three areas of recently restored chalk grassland amounting to three hectares.

The site has considerable conservation interest. It supports a number of ground flora species characteristically associated with the calcareous, rendzina soils derived from the underlying chalk bedrock, such as dogs mercury, *Mercurialis perennis*, and greater butterfly orchid, *Platanthera clorantha*. The chalk grassland supports 25 species of butterfly, including the marbled white, *Melanargia galathea*.

The vision for the restored open areas is to achieve a mix of 80 per cent grassland and 20 per cent scrub. As the soil quality is high, scrub can

quickly and easily grow up and take over the site. Therefore a grazing plan was established to maintain openness and good structural and species diversity. The grazing work is carried out by the Downlands Countryside Project.

Originally Jacob sheep, *Ovis aries*, were introduced. These are a rare piebald breed of more traditional horned sheep known to be present in England in the 1750s. They are long-lived and very hardy, content to over-winter outside without many disease or foot health problems. Usually only around a dozen are used on the site.

However, the sheep were found to be too finicky and mostly ate the important grasses and wildflowers. They were not keen on eating the scrub and were therefore not keeping it at a manageable level. Therefore in 2010 the grazing plan was amended to include goats, *Capra aegagrus hircus*, for a small part of the year.



Bee orchid

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Originally a dozen goats were introduced, but this was found to be too much and the number was halved. They are less fussy than the sheep and happily graze the scrub down, reducing it significantly. They are kept on site for a limited time, otherwise they would completely strip the scrub and have negative impacts on the more mature trees.

At present the goats are kept on site from autumn until just before Christmas, while small numbers of sheep are kept on site from March until May – generally not more than a dozen unless scrub levels are high. No grazing is carried out over the later winter months or during summer. Fallow deer, *Dama dama*, occasionally move through the site. However, they cause minimal damage to the woodland flora and coppice regeneration and are not subject to control.

Once a balanced grazing regime was developed there was a marked rise in floral diversity and displays. Species such as bee orchid, *Ophrys apifera*, pyramidal orchid, *Anacamptis pyramidalis*, and man orchid, *Aceras anthropophorum*, have increased in number. The scrub is now maintained at a suitable level, providing some habitat for wildlife but without it dominating the site.

Future plans are to extend the area of chalk grassland by linking several smaller areas of grassland to the currently managed section. This will triple the current resource, and will require the use of larger numbers of livestock for longer periods. It will also increase the connectivity of grassland habitats within the Surrey Hills AONB and contribute to better supporting a wide array of species.

Dunwich Forest – pony grazing

In 2008 Suffolk Wildlife Trust embarked on an innovative partnership project with the Forestry Commission. This large-scale project sought to transform 404 hectares of conifer plantation into grazed wood pasture habitat and wet woodland with a native tree community and acid grassland/lowland heath.

Dunwich Forest is a County Wildlife Site that supports a good diversity of invertebrates, such as white admiral, *Limenitis camilla*, and white letter hairstreak, *Satyrrium w-album*. Birds found here include the declining turtle dove, *Streptopelia turtur* and mammals including a number of bat species. There are also reptiles, most notably the adder, *Vipera berus*. It sits within a wider landscape of internationally designated land, such as Westwood Marshes, one of the UK's largest reedbeds, and Westleton Heath National Nature Reserve. This project will therefore link several important sites and is increasing connectivity in what is recognised as a core biodiversity area of Suffolk. It will also contribute to Biodiversity Action Plan targets for wood pasture creation.

In the review Making Space for Nature Professor Sir John Lawton argues that we need a more coherent and resilient ecological network to support biodiversity. This can help species respond to climate change pressures by allowing them to move through the landscape more easily. Restoring Dunwich Forest to more native habitat will create a vital link between the adjoining semi-natural habitats.

Returning the site from conifer plantation to native broadleaf habitat will also support a greater range of wildlife. Large herbivores deliver important conservation grazing outcomes, such as maintenance of open space habitats and increasing habitat diversity. The use of grazers is also less dramatic and disturbing to wildlife than using mechanical interventions. The Dunwich project chose to use Dartmoor ponies, *Equus ferus caballus*, to complement the grazing already being done by a herd of red deer, *Cervus elaphus*.

Ponies have very distinctive patterns of grazing showing preferences for favoured areas. They keep the sward of open rides and glades tightly cropped, and browse scrub and trees in the more open broadleaved woodland areas. The ponies exhibit herding behaviour so are easy to monitor. They are also tolerant of people and dogs, and are considered by visitors to be less threatening than cattle.



Dunwich Forest grazing

Steve Aylward

Hardy pony breeds are well suited to conservation projects that require the animals to live outside all year with little supplementary feeding. As they come from moorland habitat, they are adapted to poor grazing and extreme weather conditions. They are also content to supplement their diet with scrubby vegetation. The Exmoor ponies used at Sutton Common dig up and eat nettle roots, *Urtica dioica*, along with birch twigs, *Betula* sp., leaves and gorse, *Ulex* sp.

The Dunwich herd was originally made up of 30 non-breeding mares and geldings. Their activities were checked by volunteers to make certain they were healthy and were delivering the desired conservation outcomes. Fixed point photography was also used to ensure they were not over-grazing and preventing natural regeneration of native trees. The evidence showed the ponies efficiently got on top of the vegetation, breaking up the bracken, *Pteridium aquilinum*, stands and maintaining the open habitats.

Numbers were then reduced to 20 to reduce grazing pressures, but this is again being monitored to ensure it is not too low and the bracken areas are left to flourish again. The ponies have delivered a more varied vegetation structure and the hard-grazed acid grassland area is now more botanically rich, as less competitive species benefit from the reduced dominance of the grasses. Plants that have increased in number since the grazing began include harebell, *Campanula rotundifolia*, trailing St John's wort, *Hypericum humifusum*, and parsley piert, *Alchemilla arvensis*.

The herd produces the equivalent of several thousand wheelbarrow loads of dung each year. This provides habitat for a host of invertebrates, including dung beetles and flies, and these in turn feed an array of birds and bats.

Broadleaved tree species are continuing to naturally establish outside of the main pony grazing areas.



Red deer

Following a recent large-scale thinning of the conifer crop by the Forestry Commission there are many new opportunities for broadleaf species as the forest continues its transition from conifer dominated to native woodland. The Forestry Commission will continue to periodically thin and ultimately clearfell the conifer crop. In 25 years it is envisaged the forest will be almost entirely broadleaf with a mosaic of open 'healthy' rides and glades maintained by ponies.

The most exciting part of the project will be the development of the habitat mosaic. As the conifers are removed and open ground is created, the ponies and deer will no doubt suppress natural regeneration in some areas while leaving other areas ungrazed. However, predicting where future glades might occur and which areas will become more wooded is almost impossible. Similarly, predicting how wildlife will respond is equally difficult. What does develop will almost certainly be far more diverse and interesting than the current, and a new permeable landscape of semi-natural habitats will significantly enhance this area of Suffolk.

Wyre Forest – pig grazing

Wild and domestic pigs were once common in the British wooded landscape. Unfortunately, many see pigs as destructive – a view not helped by the intensive farms of mud-ridden fields caused by overstocking. Through hunting and persecution, the wild boar became extinct in the UK by the 17th Century. But the evidence shows that woods and woodland ecology survived and thrived for many centuries with pigs as part of the system.

Boar were kept in private collections and zoos and were farmed for meat. Individuals began to escape into the wild and establish breeding populations. The largest population in the UK now resides in the Forest of Dean, but there are currently no detailed observations that show their impacts.

Most work on the effects of boar on ecosystems in Europe has been conducted outside woodland.

In Australia there is evidence that large populations of wild boar have caused significant damage to habitats. This can be the case with overstocking of any species. But in the UK there are much lower populations that are actively controlled if required, reducing any potential negative impacts.

At Burnham Beeches National Nature Reserve (NNR), Buckinghamshire, pigs were used for management for 15 years, until 2009, and there are plans to reuse them again in the near future. Each autumn a small number of pigs were used in the wood pasture system to create bare patches of ground through their rooting behaviours. This produced seed beds suitable for ruderal species, exposed dormant heather and enabled other seeds to germinate.

The pigs were used under the tree canopy as a method of bracken control – an environmentally more sensitive alternative to the use of chemicals and mechanical control. Experiments at Burnham Beeches, Langley and Fairbirch Woods showed the use of pigs to be extremely effective. They also reduced the problem of bracken, *Pteridium aquilinum*, litter by gathering it for bedding.



Bracken control by pigs

Burnham Beeches/City of London

By breaking up the dense bracken litter/soil layer the pigs enable germination of more desirable vegetation, and increase patchiness and the development of micro-climates.

The Wyre Community Land Trust (WCLT) has been working with Natural England within the Wyre Forest NNR, Kidderminster. Dense oak, *Quercus* sp., stands are being opened up to restore old coppice plots, with natural regeneration being relied on to provide young oaks for future coppicing. However, substantial growth of bracken and bramble has prevented the growth of new oaks in some areas.

The WCLT used pigs turned out in mid-summer to break up this growth, create bare patches and allow light to reach acorns from the remaining oak standards. Removing pigs from the site before acorns fall in the autumn ensures they are not eaten. New oak trees are now growing within the cleared areas.

In other parts of the forest, pigs are being used in the areas clear felled of western hemlock by the Forestry Commission. The pigs intensively clear hemlock seedlings and saplings, breaking up the ground in preparation for planting or natural regeneration of native broadleaves.

Pigs' natural instincts are to only disturb young trees, saplings and seedlings once all other food sources have been exhausted. Therefore, with the correct stocking densities they are very effective at reducing competition between trees and other vegetation in a regenerating stand. Conversely, they can reduce tree regeneration by eating tree seeds if left on site in autumn.

Contrary to some belief, pigs do not uproot everything. They also graze, browse and eat berries, grass and leaves, helping to create and maintain a mosaic of bare ground, herb rich field and shrub layer. These behavioural characteristics and the resulting impact are almost impossible to replicate using any other form of management.



Pigs in woodland

Beeches/City of London

Depending on the required outcome, the appropriate stocking density and timing will vary. Whether it requires a few pigs over a larger area or high numbers used intensively, with the animals having access to the woodland for more or less of the year, pigs may provide a suitable management option. They also have the added benefit of being another woodland product that can contribute towards management costs.

The ability to ‘condition score’ pigs to assess their condition is essential. Pigs need access to water daily and they need to be fed twice a day if food is short. The feeding of young pigs is generally advocated because it ensures the pigs are approachable and builds relations between them and the livestock manager. This is useful for allowing people to get close, for the purposes of inspection, treatment, movement, etc. Some occasional feeding maintains the relationship. It should be noted that pigs require strong fencing for permanent enclosure, but electric fencing can be an appropriate temporary alternative. A call or whistle can be used when feeding; this helps if the pigs escape as they will return to the ‘food call’.

Pigs can have many positive impacts on woodland and can be effective for a number of management objectives; they also offer possible returns. The WCLT run courses on Pigs for Woodland Management. Perhaps in future more sites will incorporate these charismatic animals into their schemes.



Natural regeneration of oak

WTPL Katherine Jaiteh

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