

Practical Guidance

Module no.1

Ancient woodland restoration

**An introductory guide
to the principles of
restoration management**

December 2015



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Owning or managing an ancient wood means being steward of a unique and precious part of our natural and cultural heritage. It brings with it the privilege of caring for something rare and special, alongside the responsibility of ensuring that it is secured for the future.

This is especially true where ancient woods have been affected by introduced and invasive species and where positive restoration management is needed.

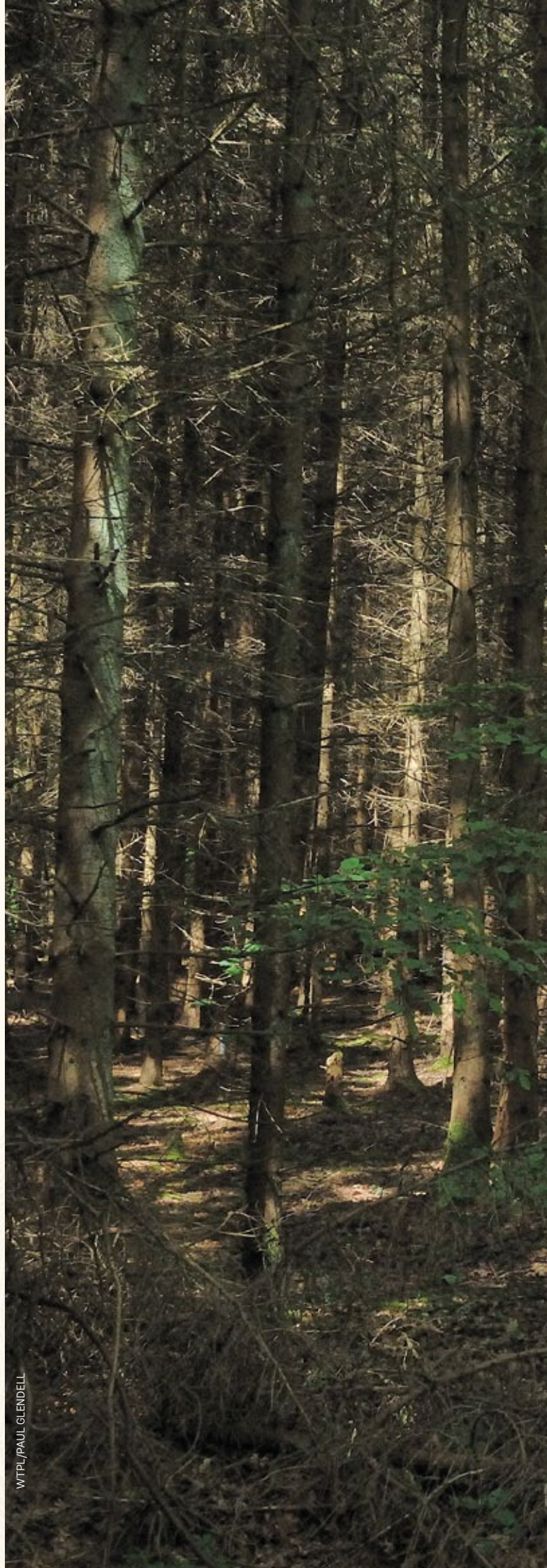
Ancient woods are irreplaceable and deserve care and protection.

This introduction overarches a series of practice guides on restoration management. It sets out the thought processes underlying ancient woodland restoration, recognising that all ancient woods are unique and will require different management. It also recognises the multiple challenges that ancient woods face, from climate change to intensive land use, to increasing numbers of new pests and diseases and the need for restoration management to be adaptable to this constantly changing backdrop. Finally, it recognises that landowners all have different objectives, and that a pragmatic approach can ensure irreplaceable ancient woods are secured for the future alongside the delivery of other outcomes.

The thought process outlined in this guidance can also be applied more broadly to managing any wood of high biodiversity value.

The new guide series will cover varied topics: how to identify, assess and plan for restoration, through to issues around forestry practice in differing situations, upland, lowland, wood pastures and other related topics.

Restoration management is all about the old principles of the right tree in the right place and leaving a healthy woodland legacy for future generations. It is a long-term process of continual improvement and change towards a sustainable future.



WITPL/PAUL GLENDELL



Ancient woodland: Why I should protect and restore

Ancient woods are scarce in our landscape and yet embedded in our cultural and natural heritage. A part of our legacy to future generations, they should be managed in the context of their place in the landscape and centuries of human influence, not forgetting their unique contribution to biodiversity and to wider ecosystems.

Ancient woodland and restoration management

Ancient woodland is a descriptive term used to group woods that share centuries of continuity on largely undisturbed natural soils. They encompass many different native woodland types from Scots pine, birch and Atlantic oakwoods in the north and west, to beechwoods and mixed broadleaved woods in the lowlands of the south and east. This concept and classification of ancient woodland is critical to identifying woods of high biodiversity value and helps guide practical efforts towards halting further loss or degradation.

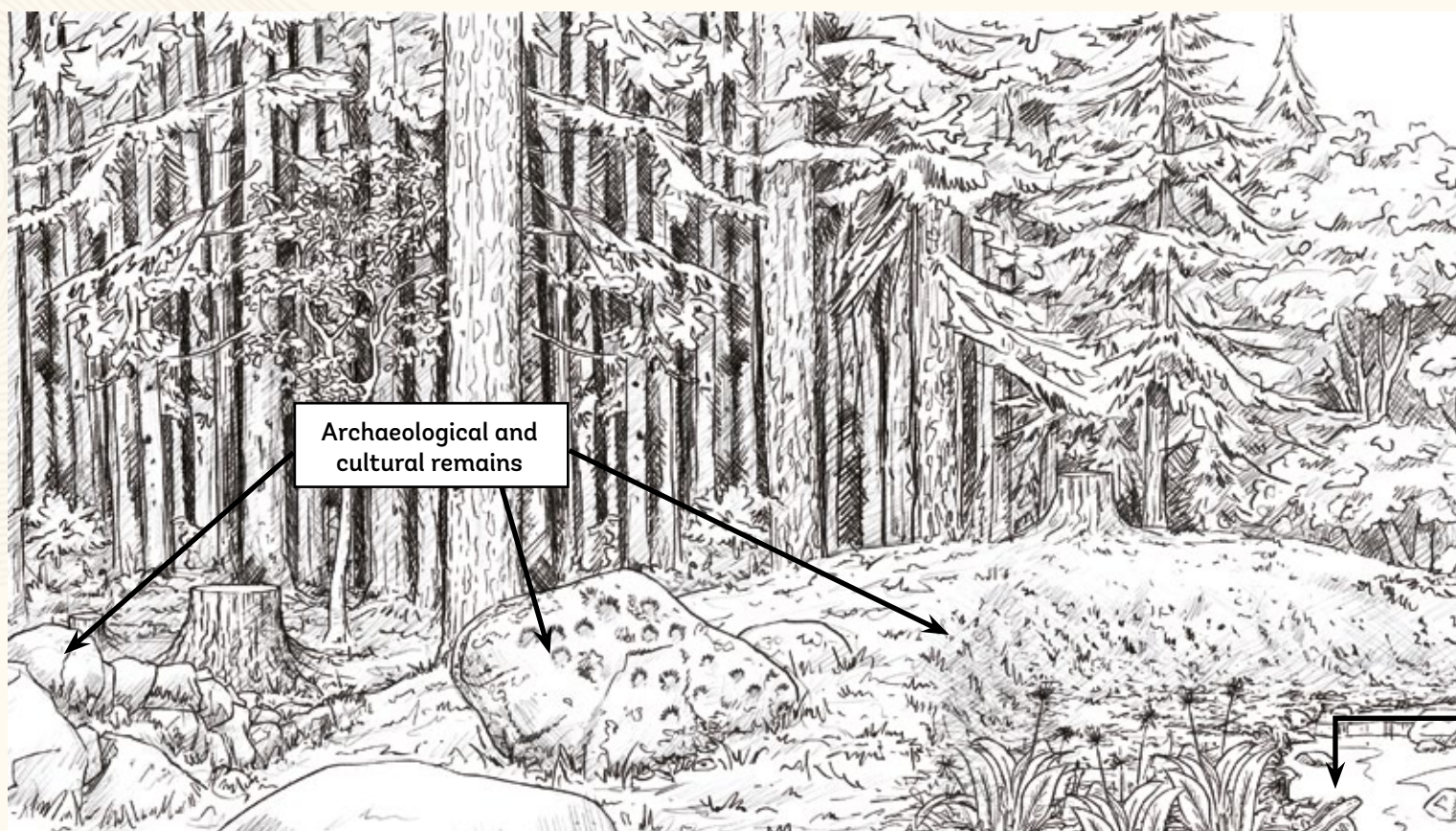
Around half of all ancient woodland is still semi-natural, known as Ancient Semi – Natural Woodland (ASNW), the remainder has been cleared and planted, with introduced tree species and/or invasive woody shrubs: we call these

plantation on ancient woodland sites (PAWS). This introduction of exotics and invasive species has had a detrimental and disrupting effect on native woodland biodiversity.

Although affected by the introduction of other species, evidence shows these woods still retain valuable biodiversity and cultural features from their past. Four categories of these **ancient woodland remnants** are commonly found and can be assessed for distribution, abundance and threats.

- Woodland specialist plants
- Deadwood and stumps
- Pre-plantation and relic native trees
- Archaeological and cultural remains

Although these ancient woodland remnants are the focus of our approach and help to guide restoration management, they are only visual expressions of a much more complex woodland ecosystem. For example, forest soils which have been relatively undisturbed by past land use or more recent plantation establishment, are a vital resource, providing an essential foundation for the restoration of diverse and healthy ancient woodland ecosystems.



Where introduced species are present, surviving ancient woodland remnants are **under threat**, mostly from excessive shading or conversely too much light. Other important threats may also need managing, such as over-grazing and acidification of soils or pests and disease. Careful and gradual **restoration management** of these **threats** can secure and enhance the remnants of the original ancient woodland, moving a wood towards a revitalised, more natural state.

Biodiversity value

Ancient woodland has evolved into a complex array of ecological communities of interdependent plants, animals and fungi, including invertebrates and soil micro-organisms, rarely found in younger woods. Each wood is unique, having developed according to its local environment, soils, and management, over many centuries.

Ancient woodland and PAWS represent fragments of a dynamically changing landscape, which is now more intensively managed than in the past, especially in the lowlands. In the uplands, grazing pressure and browsing by deer threatens the existence of the diminishing ancient woodland, preventing natural mobility in the landscape. These woods often hold the last vestiges of species that can no longer move easily through the landscape.

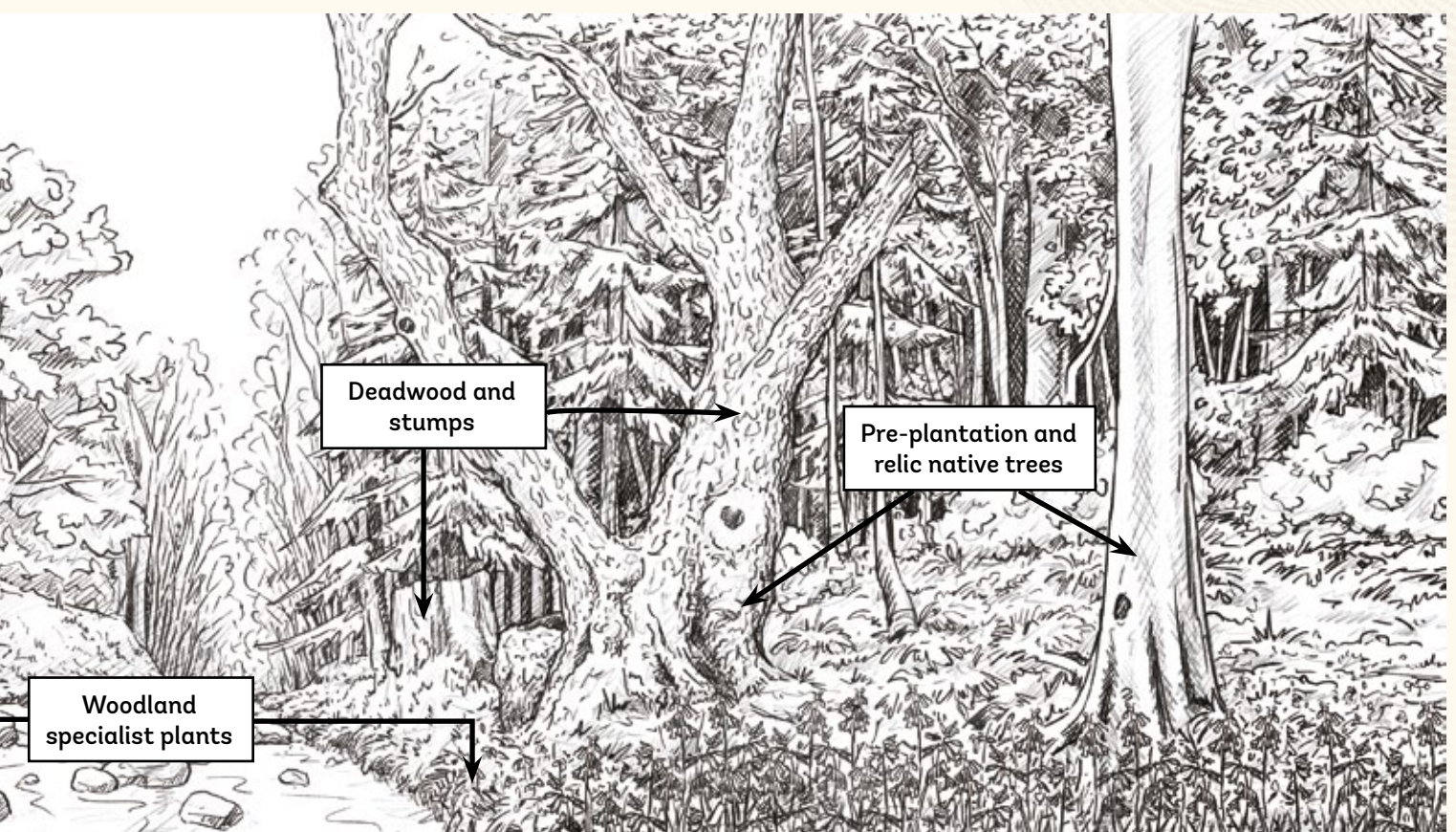
The natural environment, and particularly woods and the species that rely on them, are subject to rapidly increasing pressure from climate change and a new suite of pests and diseases affecting a range of tree species.


We need to protect natural habitats, make them more robust, and increase connectivity and permeability across whole landscapes to allow natural processes to adapt in the face of rapid change: allowing vulnerable species more of a chance to survive and thrive.

Cultural value

Ancient woods can also be treasure troves of archaeological and cultural features that give insight into historical land use.

They frequently hold clues to our past: anything from Bronze Age hillforts to the rough shelters of charcoal makers. Old boundary features like medieval woodbanks, or simple dry stone walls and stock shelters show the ebb and flow of land use over the ages. Clues to previous woodland use can be found; old coppice stools, charcoal hearths and other remnants of early industry, showing the extent to which our ancient woodlands were utilised in the past.





Phase one work should be completed for all PAWS as a priority to prevent further decline and loss of biodiversity.

Economic value

The restoration management of PAWS usually involves the production of timber and woodfuel in addition to a wide range of other benefits.

These may include creating durable long term shelter for farm buildings and grazing land, the improvement of game habitats and shoots and landscape enhancement work. These can all have a positive economic benefit and deliver important management objectives.

Restoration can bring otherwise neglected woodland back into management. Many areas of PAWS were created in conditions unsuitable for the new plantation species and may have had little intervention since planting. Where there is overlap between PAWS and

productive conifer plantation, restoration management can be adapted in pragmatic ways to fit with commercial reality. Solutions need to be found, taking biodiversity and timber production into account as both can usually exist side by side.

Foresters, landowners and conservationists can and do share many common aims and interests: these need not be mutually exclusive.

Restoration management of PAWS is enshrined in the UK Forest Standard (UKFS) which underpins government grant schemes. Adhering to these standards, or those of the independent UK Woodland Assurance Standard (UKWAS) for certified properties, ensures eligibility to grant support.

The concept of restoration management

Five key principles to guide restoration practice:

1. Ancient woods are complex and irreplaceable ecosystems. Where damaged they require positive management for biodiversity.
2. Without restoration management, ancient woods planted with non-native species may become irreversibly degraded over time.
3. Restoration starts from the basic premise that all PAWS are likely to retain remnants of the ecological and archaeological value that previously existed in ancient woodland.
4. Surviving biological remnants are adapted to woodland conditions and the seasonal shade patterns of broadleaved woodland. These remnants respond positively to management of light levels.
5. Restoration management is a long term process, but there is an urgency to start in many situations where remnant features are under threat to ensure no further degradation.

In the past, restoration management has focused on conifer-dominated PAWS, but other species can

have a detrimental effect on woodland biodiversity. Where invasive species like rhododendron or laurel are present within ASNW woodland then these should be removed for the benefit of the woodland ecosystem.

Some heavy shade-casting broadleaves, e.g. introduced beech, can also have an effect if not actively managed but are not necessarily as high priority.

The emphasis is not simply on replacing the plantation crop with native trees. The rapid or complete removal of introduced conifers is seldom required and a pragmatic approach can be acceptable to marry positive biodiversity management with other objectives.

The process of restoration should not be seen as turning the clock back to some idealised point in time, even if this was known. Each ancient wood has developed from a particular point, under a specific set of site conditions which cannot now be replicated.

Restoration takes ancient woodland on a new trajectory: we cannot go back to the past, but we can develop ancient woods in ways that will capitalise on and expand their surviving biodiversity.



Practice

Summary of our approach

Research shows that restoration management is best achieved by gradual change, soil protection and maintenance of woodland conditions. In particular the management of light levels, coupled with control of other risk factors, such as overgrazing and browsing.

The approach is based on reducing threats to remnant ancient woodland features to secure and enhance what is known to be of value. This leads to a strategy of conversion to native woodland, or to marry biodiversity management with more explicit timber production and other objectives. When considering native woodland, it may be acceptable for there to be a loose interpretation of native to include species that are not strictly site native but will serve long term biodiversity and resilience aims.

Assessment of remnants and threats

The four categories of ancient woodland remnants: woodland specialist plants, deadwood and stumps, pre-plantation and relic native trees, archaeological and cultural remains, are assessed for distribution, abundance and their associated threat factors.

These remnant features are all fairly easily identifiable and make the task of assessing woodland possible without too much specialist knowledge. It should be remembered that while no remnants may be visible on the forest floor, there is often latent plant survival, especially from bulbs, rhizomes and seeds, associated fungi invisible for most of the year. A **precautionary approach** should always be taken.

Soils in ancient woodland are often overlooked, but are an integral and vulnerable part of their ecology: the foundation of a diverse and complex system. The protection of soil on these sites is a critical element of management decision-making. Damage to soil profiles through any new disturbance, unplanned or excessive timber extraction routes should be considered a threat.

The imbalance of light levels is the main threat to remnant features: either excessive shading from introduced species, or too much light as a result of removing too many trees. Understanding how remnant plant communities can or can't cope with this imbalance is crucial. Other threats need to be managed including pressure from deer, rabbits or domestic stock, acidification of soils, pests, disease and coarse vegetation such as bramble and bracken.

Restoration strategy and planning

The presence of a threat to a particular suite of remnants should trigger an appropriate management response. Gradual change avoids high impact operations and sudden changes when remnants are at their most vulnerable.

Given this assessment of remnants and threats, we can assign a threat level – critical, threatened, or secure – to create a prioritised **restoration strategy** to feed into a long term management plan. The threat assessment should be reviewed as a matter of course at the time of management plan renewal, with the ongoing assessment of threat guiding management interventions in response.

The precautionary approach

Not all ancient woodland features and remnants are instantly visible. A precautionary approach recognises that even a site with few or no visible remnants may respond positively to restoration management. As a minimum it recognises the value of protecting soils. It can mean two things, both starting gradually to see if you get a response and secondly, taking care that operations don't damage the site unnecessarily because it is thought that there is nothing of value.



**Urgent and careful attention
needs to be directed to those
remnants most at risk.**



Three phases of restoration

Dependent on the levels of threat identified within a wood, we classify restoration management into three different work phases. The three phases do not need to run sequentially but can overlap in practice as a wood is gradually improved and monitored.

Phase One

Halting further decline

This initial “first aid” is informed by the threat assessment. Phase one encompasses urgent targeted action to prevent further decline, loss or damage. Often these actions are local and concentrated around threatened remnant features in order to strengthen or protect them. Critical sites should be dealt with as a priority to ensure irreplaceable remnant features are not lost.

The UKFS states “The minimum required by the UKFS is to ensure these remnant features are retained. The highest priority for restoration is sites where irreplaceable features and vulnerable species survive.”

Work should continue until the remnant features are judged to be secure and robust enough to benefit from, and cope with the next phase: this can be anything from a one-off operation to many years of gradual interventions.

Phase Two

Progressing to a semi-natural canopy

Based upon the specific management objectives for the wood and physical constraints, phase two is about making long term improvements to the woodland canopy species to secure the site and a sustainable future.

Ideally this is done by gradually shifting towards a species composition that is predominantly site native in character.

It will quite often be necessary to maintain a component of the introduced species to provide essential woodland habitat structure and canopy cover for an extended period: particularly where there are few native trees or understorey to act as seed sources for regeneration. The scale and intensity of operations in this phase are likely to be more in line with standard woodland

management practice.

However care is needed in the specification of works and contract management to ensure that secured ancient woodland features are effectively protected. By careful management it is possible to marry long term timber and woodfuel production with an improvement in biodiversity.

Phase two is by definition complete when a threat assessment is no longer required. However monitoring should continue in order to inform the management process and capture such factors as the effects of disease, species composition and browsing pressure.

For those sites where other objectives require retaining an element of conifer timber production, it remains important that the biodiversity of the site is improving and all remnants are secure and being positively managed. For this to be truly achieved and safeguarded, full restoration and long term sustainable management should be the target.

Questions to consider are:

- **Have phase one actions worked; are the features robust?**
- **Does the canopy species fit your objectives? Even if a stand is being manipulated towards native character broadleaves, the current species range may not be appropriate.**
- **Are there adequate seed sources for natural regeneration or is planting required?**
- **Is the current stand likely to survive long enough to effect a gradual change?**
- **If pursuing a timber objective is this realistic in terms of access etc.?**
- **Are there any constraints in terms of tree disease or wind stability that will impact on plans?**
- **What silvicultural systems are appropriate to maintain woodland biodiversity?**

Phase Three

Long term sustainable management

The final phase is the sustainable management of the wood once the ancient woodland remnants have been secured. This last phase of works will result in a native character canopy composition to achieve long term objectives and reinforce progress made in phase two.

From then on, the sustainable management of the ancient woodland has no end point.

Questions that should be asked and accounted for in the long term management plan are:

- Do the canopy species fit your biodiversity or commercial objectives? E.g. does it have the appropriate range of native species? Is something important missing?
- What silvicultural systems are appropriate to maintain woodland biodiversity?
- Can resilience to pests, disease and climate change be improved through silviculture?

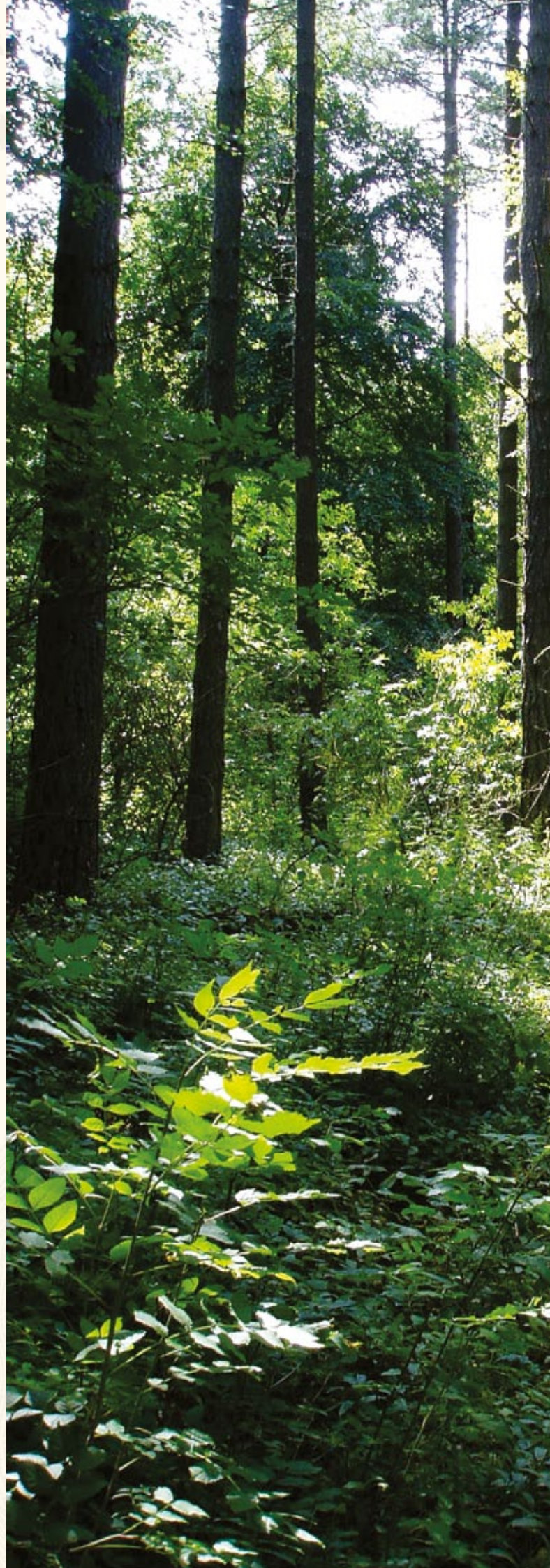


Future

Restoration, and the long term management of the resulting woodland, needs to be part of everyday sustainable forestry practice. This is important because restoration improves forest biodiversity, can enhance resilience of ecosystems at a landscape scale and produces other environmental benefits in the face of climate change and pests and disease. Restoration also brings timber to market, often from otherwise unmanaged plantations.

It shouldn't be forgotten that all woods are dynamic ecosystems in a changing environment. Nature is adaptive, it ebbs and flows with disturbance and its intensity of change. Given that the levels of fluctuation and change are presently increasing it is inevitable that our ancient woodlands will have to evolve and adapt over time. Restoration management must aid this process and adapt to new and increasing challenges now facing ancient woodland along with the woodland sector as a whole.

Positively managed ancient woodland, with its associated biodiversity, is the desired outcome. This does not preclude the production of wood products and can in fact be a driver to bring these woods into positive management. Economic viability can support sustainable management, and commercial practice should accommodate the often small changes to management regimes that could reap large gains in biodiversity and habitat conservation.





Ancient Woodland Restoration

This guide has been produced as part of a series of practical guidance publications. Further guides in this series and other publications are available on our website.

The Woodland Trust is offering landowners and managers independent support and training to sustainably manage and restore their woodlands.

For more information:

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