

THE SUNART OAKWOODS: A GUIDE TO THEIR SUSTAINABLE MANAGEMENT



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by

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**The Sunart oakwoods:
a guide to their sustainable management**



A view of some of Loch Sunart's oakwoods at Beasdale

A straightforward guide to understanding and managing the oakwoods
in the Loch Sunart area.

Aimed at local woodland owners, their advisers, and others interested in
a sustainable future for the Sunart woodlands.

This guide was launched at a public meeting at Strontian High School on 4.10.2002

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Why this guide?

A detailed study was carried out by woodland consultants George Peterken and Rick Worrell in 2001, and their report contains maps of the study area. There are about 3000 ha of broadleaved woodlands on the margins of Loch Sunart, occupying some 12% of the land area. The study area also contains approximately 5000 ha of conifer forest. At 33% total woodland cover, this is a heavily wooded region for Scotland, being double the national average.

Sunart contains one of the most important concentrations of Atlantic oakwoods in Europe, and much of the woodland area has been designated a Special Area of Conservation in recognition of this. The mild wet climate is beneficial in allowing a rich assemblage of ferns, flowering plants, and particularly the lower plants of mosses, liverworts, lichens and fungi to flourish. The SAC designation places a responsibility on us all to look after this historic resource for future generations.

The broadleaved woodlands of western Scotland, many of which have natural origins, originating when woodland colonised the land after the glaciers retreated some 12,000 years ago. The same woodlands have also had a very long history of use by man, and our role in protecting and working the Sunart oakwoods into the 21st century is crucial. The duty of the statutory agencies is to ensure that this woodland resource is passed on in favourable condition.

Although some important woods eg Glencripesdale ashwood, Ariundle oakwood

or Salen oakwood are publicly owned and managed by SNH or the FC, many of the high quality woodlands (including other SSSIs) are in private ownership. The actions of the private owners, and the land-use decisions they make, will perhaps be the most significant influences on the future character of those woodlands.

This guide has been produced to help local woodland owners and their advisers to make better informed decisions about future stewardship of the Sunart oakwoods. Other people interested in the future of these woods will also find the booklet helpful in understanding the character of the woodlands. The staff of the Sunart Oakwoods Initiative are available to give advice and to help you make the right decisions for the woodlands. Later in the guide are some brief details of grant schemes which may be available to help finance any work necessary.

Expansion of the Sunart woodlands, eastwards into Glen Tarbert and northwards along Loch Shiel, is a long term ambition, with new planting already underway contributing to an enhanced overall network of forests and open-ground habitats. Expansion of native woodlands in both directions would create linkages to the existing native pinewoods in Ardgour and at Glenfinnan. However, in the short term, the main aim of the project is to encourage good management, or stewardship, of the existing native woodlands around Loch Sunart, and the conversion of mixed and underplanted woods to predominantly native woods. This guide is designed to help in that work.



Proposed Stewardship Models

The advice in this guide is centred on a set of five distinct models of stewardship - five different options for the future management of the woodlands. The proposed names for these Stewardship Models, (together with the fuller name used as management models in the Peterken and Worrell report) are:

- **Ancient Oak Forest**
(*Long-rotation high forest model*)
- **Native Timber Stands**
(*Standard-rotation high forest model*)
- **Coppice**
(*Coppice model*)
- **Wood Pasture**
(*Wood pasture model*)
- **Natural Reserves**
(*Minimum intervention model*)

Each model has its own characteristics, advantages and disadvantages – and all models except Natural Reserves involve some timber production. Not all the existing woods are suitable for entry to all of those options, so you need to know which features indicate which model is likely to be suitable. The aim of this guide is to help you understand the models, and lead you to the right choices for your woods.

(For further details of silviculture, and for the theory behind these models – see the Peterken and Worrell report).

It will become obvious that some models are more applicable than others, and in no way will there be an equal split between them in future. Neither will the model most used in the past, ie coppicing, be most appropriate for the future management of the majority of the woods.

Woods can change model over a long period, eg from Wood Pasture to Ancient Oak Forest by removing livestock grazing at some time in the future. However other models need continuity to be effective and there should not be frequent changes of direction. This particularly applies to the Natural Reserves - once selected and ‘set up’ (eg by removing sources of Rhododendron seed), nature should be allowed to develop relatively undisturbed in these woodlands.

There can of course be several models running within one ownership.

The minimum basis for selecting which model to use is the ‘stand’ - a relatively uniform area of woodland with the same history and characteristics (see figure 1.) A stand could be any area, of from say, a quarter hectare, up to a unit of tens of hectares.



Figure 1: a stand of single stemmed mature oak

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It is not intended to predict the future split of model types across the project area, as each owner should make their own decisions, helped by advisers and guided by the agencies.

Broad principles which are likely to apply in selecting a model are as follows:

- **Coppicing** may have been historically important, but is no longer appropriate as the main management method, for reasons discussed later. So, the area devoted to the Coppice model is not expected to be large, especially in oak.
- **The nature conservation interest** of the Sunart broadleaved woodlands is very high, as has been briefly explained above, hence the European designations. Therefore it is expected that nature be given a lot of scope in developing these woodlands naturally, despite the intensive past management which many of the woodlands went through.
- **Natural features** are most likely to be well developed in Ancient Oak Forest, and even more so in the Natural Reserves - the distinction between them is discussed below. It is expected that substantial areas be put into the Ancient Oak Forest model, and a lesser but significant area into more or less permanent Natural Reserves.
- **Woodland types:** the Sunart 'oakwoods' in fact consist of a variety of woodland types, and not just oakwoods. These include especially the ash/elm woods, coastal hazel woods, upland birchwoods, and wet woodlands with alder and willows. Also it is true that many stands of oak were actually planted in the 18th and 19thC during a period of high monetary value for oak products. Some pine, larch, spruce and other European species were also planted into some of the oakwoods since the 1800s. Some of the planted oakwoods may develop into more mixed types in due course, for example with a higher proportion of ash, alder or birch (see figure 2.) Natural woodlands will gradually develop a species mix, both of trees and other plants, that suit the soils and climate of that site.



Figure 2: an old alder tree

- **Stewardship models** will be the focus of this guide, rather than dealing with individual ecological woodland types. It will also be found that the models, although designed primarily with oak woodland types in mind, also apply to the other woodland ecotypes, with some modifications. The applicability of any model for other non-oak woodland types will be dealt with under that model.
- **Economics:** Finally, it is suggested that there is in practice little financial gain to be made from managing any of these woodlands, for reasons of poor access, difficult terrain, slow growth and other physical factors. Grants are available for all model types to help owners offset costs. The choice between models should therefore be made on the intrinsic merits of a woodland and its natural features, and not on financial criteria as used in other forms of land-use.

Past stewardship of the Sunart oakwoods

To help decide about the future of any woodland, you need to know a little of its past. You need to be able to answer this type of question:

- Why does your woodland have giant old oak trees at wide spacing, while your neighbour's is made up of only fairly thin oak poles in clusters on a stool?
- What is the reason for this stone wall going clean through the wood, or that earth dyke which surrounds the back of the wood?
- What were these flat round platforms (figure 3), or this old trackway used for?

- How is it that there are apparently old arable fields or lazy beds in the middle of this wood, even though they are now covered by oak trees?... and so on.

It would take a long guidebook indeed to answer all those questions, and maybe in time a more comprehensive oakwood manual will be developed. The study of woodland history is a subject in itself, as demonstrated by the very active history and archaeology study group in the Sunart area who have already published some of their findings (see Appendix 3).



Figure 3: round platform at Ardery used in the early 19th century for charcoal burning

The Peterken and Worrell study also reviewed historical evidence. Box 1 gives a useful summary of the early history of the Sunart woods, while Box 2 completes the picture to the current time. These potted histories are printed below in full as they are vital to understanding how the woodlands developed over time.

Of course the history of any one woodland is a matter for individual research and investigation, for no two woods are the same! Every wood has a unique history of its own, and has its own natural and cultural features.

Box 1

General history of oakwoods in the Western Highlands

- Most of the original woodland was destroyed in prehistory. By the time written records and maps became available, native woodland was reduced to discrete and named woods in a largely unwooded landscape.
- Remains of the original woods were used to supply timber, fuel-wood and pasturage. Early exploitation was probably equivalent to treatment as wood pasture and wooded meadow.
- From at least the 17th century onwards, the long-term loss of forest cover was increasingly reversed by planting new woodlands on treeless ground. Some of these new woods were coppices of native trees, which now look little different from the remnants of the original cover. In addition, remnants of some original woods were allowed to expand.
- Many existing native woods are the relicts of a period of industrial coppicing, from approximately the mid-18th century to the late 19th century. Woods were cut on rotations of 19-30 years, retaining standards of oak or ash, and were enclosed against cattle for 4-7 years after cutting. For the last century or so, many have been allowed to grow without silvicultural intervention.
- Originally, little woodland was pure oak, but the oak content was increased by destroying stools of less valuable species, restocking gaps with oak, and planting pure oak stands.
- Pasturage was an integral part of woodland use and management, principally for cattle, horses and goats. Pasturage was restricted during the period of intensive coppicing, but grazing by sheep and deer has increased latterly.
- Wood-pasture relicts remain in the landscape. However, some facets of wood-pasturage have been largely lost, eg ancient hollies.

The Peterken and Worrell report's summary of the more recent local history of the Sunart woods is given in Box 2, and this is really a history of their past management. The current stands are almost a direct result of those histories, combined with the response of nature to these circumstances. This also helps explain the variety of stand types that we find today (see, for example, figure 4), from obviously

coppiced oak stands, to the not so obvious wood pasture with veteran oaks that have survived for many centuries, and which are now almost hidden amongst younger stands of birch.

The consultants came to key conclusions about the history of the Sunart woodlands, and these are summarised in Box 3.

Box 2

Periods in the development of the Sunart woodlands

- *Until mid-18th century or possibly later.* • Traditional management as wood-pasture and coppice with an irregular scatter of woodland. • Pasturage by cattle, goats, etc. Estate records also suggest some felling in high forest.
- *Late 18th century to mid-19th century.* • Progressive planting of (i) oak woods, (ii) policy woods. • Coppicing of some oakwoods for charcoal and tanbark. • Continued wood-pasturage and alder coppicing elsewhere, but steady breakdown of system leads to failure to regenerate. • Non-native trees introduced mainly into policy woods.
- *Mid-19th century to c.1940.* • Cessation of coppicing in oakwoods and alder wood-pastures. • All-pervasive pasturage by sheep. • Localised reduction in grazing pressure allows birch regeneration. • Policy woods maturing, but not intensively managed.
- *c.1940 to 1980s.* • Steady expansion of conifer plantations onto both open ground and as replacements for oak woods and other native woodland. • Disruption of sheep pasturage patterns allows substantial natural regeneration of native woodland. • Limited and patchy spread of non-native trees and shrubs.
- *Late 1980s onwards.* • Expansion of conifer plantations now limited. • Mature plantations harvested, enabling native broadleaves to be planted and freed from competition. Continued but decreasing pasturage in most native woods.



Figure 4: oak seeded onto previous arable field after abandonment

Box 3

Conclusions on history

Key points to emerge from this are:

- The broad pattern of woodland has remained largely unchanged since at least the mid-18th century.
- The majority of woodlands have been heavily managed in the past.
- In the case of the ancient wood pasture, traditional management has created an extremely important habitat.
- The planting and management of coppice led to an expansion of native woodland cover, but has resulted in woodland with a highly artificial composition and structure.
- **The general assumption that the Sunart woods are predominantly sessile oakwoods is not correct. Both oak species are native to the district.**
- The genetic composition of oak in the late 18th and early 19th C oakwoods has probably been altered by importation of acorns.

These conclusions will have strong influences on the way we now see current stands and on how we decide their future. The next section

will explore some of the typical current stand types found today.

Description of the main woodland types

The colourful history of the western oakwoods, combined with the effects of nature, and a good deal of chance events, have created a complex mosaic of stand types and a range of natural and cultural features within the woods. That's what makes them so interesting compared to ordinary plantations!

Rather than try to give here a detailed classification of those woodland types, we will just look at some typical examples to illustrate this variety (see figures 5, 6 and 7.)



Fig 5a



Fig 5b



Fig 5c



Fig 5d

Figure 5: four examples of multi-stemmed oaks which are old coppice stools. Figure 5c is self-thinning to a single main live stem



Fig 6a: stand of singled oak, or maybe just planted



Fig 6b: dead oak - planted into too poor a site



Fig 6c: old coppiced oak, some stools singled and thinned – note dead stumps still visible

Figure 6: three examples of oak growth strategies

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Fig 7a



Fig 7b



Fig 7c

Figure 7: three massive old hollow oaks well over 200 years age, previously growing in the open in a wood pasture situation. Now within a woodland with younger oaks and birch (and they are over 100 years)

The five Stewardship Models

Ancient Oak Forest [Long-rotation high forest model]



Figure 8: Ancient Oak Forest

Character

This woodland type (figure 8) is characterised by *mature old oak trees*, stately and tall giants, some of which are left to go right on to biological maturity and become *rotting hulks* (figure 9). In time, woodlands in this model will also develop large amounts of old, dead, and decaying trees both standing and fallen. Large volumes of *deadwood* are a typical feature of near-natural forests on the continent, and a rare sight in British woods.

A second natural feature of this model is that the *well-thinned conditions* are excellent for the growth of epiphytic bryophytes and lichens. Ideally the site will be an *ancient woodland site* with continuity of old trees – this is how rare lichens are kept going over the centuries in any one woodland.

However, the distinction between this model and Natural Reserves is that some *timber* is harvested from this model, in the form of *thinnings* at all stages, and some small *group-fells* for regeneration purposes.

Once *regeneration* has taken place, this model will have patches of *young oak* and other species coming up in gaps in the canopy.

As well as old oaks, *other tree species* eg birch, ash, alder, hazel, holly or aspen are actively encouraged, to the point where an actual *understorey* of hazel and rowan is visible in whole sections of the wood (currently unusual due to excessive grazing in the past, see figure 10). So there will only be *low levels of grazing* in this model.

Archaeological features will be a bonus, but since this type will be little disturbed, features such as charcoal hearths will be well protected in this model (wood pasture is also good for archaeology as sites can be kept grazed). Cultural history sites will enhance the historic atmosphere in these ancient oak forests.



Figure 9: rotting hulk



Figure 10: old Rowan in Ancient Oak Forest

How to develop Ancient Oak Forest

Since this model has mature old trees especially oak of over 200 years age, we need some *maturing oak* (ie over 100 yrs) to fill that role. These are likely to be recruited from:

- *old standards* in previous areas of coppice with standards
- *big dominant oak trees* favoured during past thinnings (see figure 8)
- *gnarled survivors* from previous wood pasture (see figure 9)

Also it helps if there are a range of other native species present to help develop into the *understorey*, especially hazel, rowan or holly, even if it is now in poor condition (see figure 10).

Thinning of dense stands of ex-coppice oak, or previously planted oak, may be necessary to help develop the mature oaks (and other species). Stems taken out are likely to be the sub-dominants or co-dominants ie freeing up the crowns of the selected future veterans. Occasional double-stems and whole stools will be left standing intact as features. Since selective thinning and limited felling are features of this model, there does need to be reasonable *access for timber extraction* for this work to be feasible.

Grazing will be restricted probably to light use in late summer by farm livestock (optional) plus a few deer. This type is not likely to develop all its natural values in the presence of heavy grazing, while with no grazing at all it is likely to become rank and less suitable for epiphytes and ground flora.

Potential

There will be a great many stands, and indeed whole woodlands, in all types of ownership, which will suit the Ancient Oak Forest model. Even the previously coppiced stands now have stems over 100 years old and many will have self-thinned, with good sized crowns, to have a good chance of survival to old age. There is no point however in choosing this model over Natural Reserves if you have no access for timber.

The only other likely option for a candidate woodland for this type would be Wood Pasture.

Ancient Oak Forest is likely to be the ***dominant model*** at Sunart as a whole – provided there is a continuing social or financial need to extract some timber from the oakwoods, otherwise stands will tend towards either Natural Reserves Or Wood Pasture.

Demonstration Sites for Ancient Oak Forest

1. Ardery – ‘the charcoal platform stand’

This stand (figure 11) incorporates a number of veteran oaks which come from a previous history of wood pasture, but which are now enveloped in a wider range of ages, both of oak and other trees. There is good archaeology here, an understorey of hazel about to develop, and good advance regeneration of oak and other species.

Oak is being harvested to give some veterans enough light to survive, and there has been singling and thinning in the past for fencing stobs (still visible in old fences in the wood above). The site is not now required for wood pasture, but the aim is to regenerate some new oaks and develop the other species. (*Compare with Wood Pasture demonstration plot on this site.*)



Figure 11: Ardery Ancient Oak Forest demonstration

2. Resipol – (*thinning site across road from Sailean nan Cuillag car park.*)

This demonstration site (figure 12) shows how to thin ex-coppice oak stands to allow gradual development into a more mature and diverse Ancient Oak Forest. There are some veteran oaks

and alders here, but less than at Ardery. This is in many ways a more typical stand type and opportunity.



Figure 12: Resipol thinning demonstration site

Native Timber Stands [Standard-rotation high forest model]



Figure 13: a thinned out and possibly planted Native Timber Stand of mature oak

Character

Native Timber Stands (figure 13) differ from the first model in that timber production has a higher priority. Stands of native species are grown with the intention of periodic *thinning* through their lives, and *group felling for regeneration* in the gaps when mature at about 100 years for oak. Other species can be felled when they are physically mature eg birch at about 50 years, ash at say 80, and so on (the exact age at felling is not important). In general, conservation values will be at a lower level than those in Ancient Oak Forest, mainly because of their much lower levels of deadwood and other old-growth features.

Native Timber Stands will therefore appear younger overall than the Ancient Oak Forest, and will be noticeably more managed. However it is not the intention in this model to grow simple

plantations of oak, but high-forest of mixed ages, species and structures, and where only small-sized group or patch fellings take place. Grazing of deer needs to be at very low levels, and farm livestock generally are absent to protect tree regeneration from browsing.

Native Timber Stands will resemble woodlands managed on a *continuous cover* system, but natural features will be protected, and some trees will be allowed to go to biological maturity (min 5 per ha). Natural regeneration is preferred, but planting will be used to augment it, especially in building up stocking density of the timber species. Maturing stands of more than 50 years age will still make up about half the area under this model. Volumes of standing and fallen deadwood will be noticeably lower than in the first model.

How to grow Native Timber Stands

It is not anticipated that many existing seminatural oakwood stands enter this model, though perhaps some of planted origin could do so. Since regular timber extraction is anticipated, the sites for this model **must be accessible** to a road and have internal tracks. These stands would lack special natural features or archaeology which would be at risk from any timber extraction.

There is scope with this model to create new stands well suited to timber production in future. This could mean planting of agricultural land with good well-drained soils, or **replanting felled forest** on good soils or enriching perhaps younger birch stands with planted oak and ash. It is likely that these more intensively managed native timber stands will be in a mosaic of stands run under the other 4 models, or indeed of commercial conifer stands.

Overall it seems that conversion of felled conifer forest, whether on ancient woodland sites or not, offers a lot of scope for developing Native Timber Stands in future.

Potential

In some parts of the country on better soils and on more sheltered sites Native Timber Stands could be a valuable option for the future of native woodlands. However at Sunart opportunities will be less frequent, especially as active farmers may not want to give up areas of improved grazing or ex-arable land for this option. Creating new timber stands from scratch does involve a lot of patient work in tending and pruning over tens of years before such stands will give utilisable products. Native Timber Stands are an investment for the benefit of future generations.

Demonstration sites for Native Timber Stands

[No site has yet been identified at Sunart]

Figure 14: oak planting on mounds at Loch Lomond



Coppice [coppice model]



Figure 15: old oak coppice at Ardtornish



Figure 16: huge old stool at Moidart

Character

Many of the current oak stands at Sunart have *in the past* been managed as coppice (figure 15). Coppiced oak trees have multiple stems on a *stool* (figure 16 and see figures 5a – 5d). But under the traditional system the oak stems were cut at less than 30 years old when they were just small poles. This was to allow them to be peeled in spring for tanbark, a valuable product. The peeled stems were left to dry and were then charcoaled for the iron smelters. The regrowth had to be protected from browsing stock (including the wood-colliers own ponies!) by walls and palisades. So the character of an in-cycle coppice wood is one of young growth, frequent cutting in small blocks, many paths and tracks, and few old trees (figure 17).

One of the main subtypes of the Coppice model is Coppice with Standards, where maiden (ie seedling grown) timber trees of oak, ash or birch were allowed to grow on at wide spacing

with the coppicing being carried out underneath them. If too many standards are left the coppice regrowth suffers from shading.

Wildlife values under coppice are not better than under high forest, just different. Thus the spring flowers are favoured, also light and warmth loving insects like butterflies. However coppicing prevents the growth of epiphytes, except on the old standards.

Standards could of course also be left to maturity and become veteran trees, as long as they do not cast too much shade on the coppice. Pollarding would reduce the shading effect of standards; it is traditional to pollard old trees on the coppice boundaries, but not within the coppice. However, could coppice with pollarded veterans be an example of imaginative new thinking on the future silviculture of native woods?

How to develop Coppice

Any existing broadleaved wood could in theory be cut down, protected from grazing, and regrown into a coppice. In practice this is only likely to be sensible when:

- Woodland between road and sea blocks out views, and low coppice would help keep views open
- There are other reasons to keep trees small, eg beside powerlines, on slopes liable to slip or erosion, on riverbanks, roadsides etc
- There is a demand for hurdle rods and small wood for coppice crafts, particularly in hazel and ash
- When coppice is the best habitat for certain wildlife species eg chequered skippers

It is more likely that coppicing would be carried out in wet alder/ash woods, or on steep slopes with ash and hazel. However ancient ash and hazel woods in the west very often have good lichen epiphytes and there is no doubt that coppicing reduces these drastically. The best sites for lichens should always be left uncut, though selective cutting of straight hazel rods is not harmful.

Note that it is entirely feasible to grow new Coppice woodlands by planting ash and hazel on good soils. This may be useful if there is indeed a demand for hazel or basket willow rods.



Figure 17: young (about 7 year) oak coppice

Potential

Due to the costs of more or less permanent *protection from grazing*, Coppice is not an easy option to follow, and it is *not* expected to be a very popular model in the Sunart context.

However it remains as an option, and coppice with standards in particular can result in attractive and wildlife rich woodlands.

Demonstration sites for Coppice and coppice with standards

1. Bunalteachain Bridge alder-wood

Here is a riverside stand (figure 18) close to the road where coppicing is an advantage rather than high forest. Birch standards can be retained, and alder and willow coppiced periodically. Products gained are likely to be firewood only.

3. Hazel coppice with ash standards – [not yet identified]

It would be useful to have a demo of productive and yet attractive coppice with standards where epiphyte values are kept high at least on the standards and on adjacent old-growth hazel retentions.

2. Oak coppice demo – [not yet identified].

It will be useful to have at least one stand where people can see what the historic oak coppicing would have been like.



Figure 18: Bunalteachain Bridge alder-wood

Wood Pasture [Wood pasture model]

Character

Wood Pasture is a very different model from all the others as it involves more or less constant use by *grazing animals* (figure 19). Of course many of the Sunart oakwoods are already grazed and many more were once grazed. However by wood pasture we mean a characteristic open form of woodland where both the open land and the woodland patches and scattered trees both have biodiversity value. Heavy all year round grazing prevents tree and shrub regeneration and can reduce the condition of the woodland. However *sustainable wood pasture* is a form of land stewardship whereby the trees can regenerate at least periodically

and in a patchy way, and where the habitat in general supports a wide variety of species.

Wood pastures are very accessible, pleasant to walk through, preserve archaeology well, and give good livestock shelter. Many of the trees are good for epiphytes and fungi, but being open grown do not have long straight trunks (figure 20). So, timber production is possible through occasional thinnings of clumps of trees, but is not a big feature of the system. Rot holes and other niches in veteran open grown trees are excellent habitats for many rare insects, for bird nesting holes, and for bats.



Figure 19: oak and ash wood pasture in Conaglen



Figure 20: a typical open grown oak in Conaglen

Figure 22: old pollard ash, Moidart



Figure 21: old wood pasture at Ardery



How to develop Wood Pasture

Biological values will be higher when there has been a long tradition of grazing on that site, and especially where **veteran open grown trees** already exist. Veteran trees can grow for 500 years and more in these situations, and should be protected within a sustainable wood pasture grazing when they survive (figure 21). The alternative is to protect the veterans within the Ancient Oak Forest model, as in the Ardery demonstration site for model 1.

However, it is also possible to start **new wood pastures** on suitable land, by thinning out existing oak forest, and installing appropriate

Potential

Since a number of Sunart oakwoods are owned by farmers and, as Peterken and Worrell have pointed out, woodland grazing is a very traditional local activity, the future for oak Wood Pasture seems bright. However sustainable wood pasture is a long way from heavy or exploitative grazing, and requires a change in

grazing. A key aim of wood pastures is to **control grazing levels** so that tree regeneration occurs in patches and browsing is light enough that at least some trees develop to maturity. A wood pasture then is not just scattered veteran oaks in a sort of parkland or savannah, but a mosaic of old trees with patches of younger growth stages, in a grazed setting.

On some ancient wood pastures in the cultural landscapes close to old settlements or on low lying land, some re-pollarding of trees will help retain the traditional character, as well as prolong the lives of those trees (figure 22).

the stockman's attitude to look at vegetation and tree condition as well as the husbandry of his or her animals. There are signs that wood pasture is being recognised in agri-environment grants and that farmers will soon be encouraged to undertake conservation grazing, mainly with cattle in selected areas.

Demonstration sites for Wood Pasture

1. Resipol wood pasture

This site (figure 23) has been stockfenced for over 10 years already and is showing signs of recovery. It contains clumps of birch regenerated about 20 years ago.

Carefully monitored cattle grazing will be reinstated to improve site biodiversity, while allowing some tree and shrub regrowth.



Figure 23: Resipol



Figure 24: Ardery

2. Ardery ancient wood pasture

Ardery wood (figure 24) has also been fenced off from all stock for 5 years now, but that woodland includes an area of historic wood pasture with veteran trees. The demonstration shows the restoration and separate stockfencing of the main part of that wood pasture. Birch regrowth is being thinned to favour veteran oak, hazel is being allowed to recover, bracken will be suppressed by cattle

trampling, and some trees are being encouraged to become the veterans of the future. The site has a number of historic features including an old boundary wall, ruined buildings, stone field clearance cairns, and the remains of old arable plots in the woods. Products include birch firewood, and seasonal grazing.

Natural Reserves [Minimum intervention model]



Figure 25: Upper side of Arderly SAC

Character

The final type is of natural woodland. In the Natural Reserves model, suitable woodlands and stands which already have a number of natural features are left for nature to develop (figure 25). These stands will be similar to the Ancient Oak Forest model in that they will be mainly of high forest structure, with a lot of standing and fallen deadwood, and rich in epiphytes. Trees will regenerate naturally in gaps, and ***grazing will be at low levels*** so that an understory and complex structure develop.

Planting would be unusual, there would be ***no timber operations*** or any other intervention

except removal of threatening exotics like Rhododendron, Sitka spruce or Western hemlock, and some deer control.

Conservation values would be high, and visitors would know that the site was near to natural, and that any changes on the site would be slow and at a natural pace.

It is likely that the sites will have riparian features such as deep gorges, and possibly crags and other inaccessible land. However that does not mean that Natural Reserves should only be confined to those places.



Fig 25a

Figure 25: features of Nature Reserves



Fig 25b

How to develop Natural Reserves

Select the best sites, carry out any remedial work such as removal of exotic seed sources or other threats, reduce grazing pressures, install footpath access if suitable, and then leave the site alone. Ongoing work would involve deer control and removal of non-native species.

The key to the type is therefore careful selection, especially as it would not be wise to change course once the decision is made to create a reserve. Owners will probably want to take advice on selection of reserves, but some situations will stand out as an obvious choice.

Woodlands already designated as SSSIs, SACs and NNRs will be obvious candidates, but that does not imply that all designated areas should go into this option as the other models described above are also designed to be suitable for the management of SSSI woodlands.

Monitoring of change through carefully recorded surveys will be more important in Natural Reserves, and some assistance from the agencies may be available to help with this task.

Potential

It is expected that significant areas of the Sunart woodlands enter into the Natural Reserves management model, on account of their generally high natural values, lack of recent silvicultural management, and often inaccessible terrain. Of course the decision to go for this model will also depend on the

owners objectives. There is no barrier to private ownership of Natural Reserves, but there will probably also be large areas in NGO and public ownership within this model. There is no set overall strategy for selecting this or any model, and neither are there targets of areas in each. It is mainly the owners choice.

Demonstration sites for Natural Reserves

1. Resipol gorge

This site is a true woodland refugium site (figure 26) containing a near natural woodland ecosystem in parts, with many rare species including an endemic lichen species. It is relatively inaccessible except as viewed from the Ben Resipol access path alongside. Resipol is privately owned.

2. Glencripesdale NNR

This NNR contains another deep woodland gorge situation, with adjacent conifers being removed, but with poor access. The adjacent ashwoods have better access and interpretation.



Figure 26: Resipol gorge

How to choose the right model for your woodland

As explained in each model type, there are no hard and fast rules to choosing which model is appropriate for your woodland. Nor are there any set targets for areas or even proportions of each model, deliberately so. It would be

tempting to include here a decision tree type diagram to help you decide, but every site is unique, and it is not the intention to stereotype the decision-making. It is the owner's choice in every case.

The following points might act as a checklist to help your decisions:

- Have you identified (and preferably mapped) the *current stand types*, and the natural and historical *features* they contain?
- Do you know the stand's *history*, and current *condition*?
- Is vehicle or tractor *access* possible now, or with moderate work? (Stands which are not accessible are unsuitable for those models where wood products are important).
- Are you a farmer, or do you have access to *livestock*, or those of a neighbour? (essential for the Wood Pasture model).
- Are you interested in hardwood timber production, either on a modest scale, or as a main objective (the Native Timber Stands model)
- Are your woodlands outstanding in terms of natural features or rare species – if so they may be potential Natural Reserves.
- Natural Reserves imply a long-term approach, with responsibilities for stewardship of the natural resources, but there is no barrier to private ownership of such reserves.
- Indeed, do not any of the five options for sustainable management of the Sunart oakwoods imply an equally responsible stewardship approach?



Appendix 1:

Main contacts for advice and for access to demonstration sites

Many of the demonstration woodlands are on private land and may require *permission* to visit. Please phone the contact given below for the private sites, or visit in an organised group when the opportunity arises. The site contacts may also be able to give you detailed site handouts when you visit.

General Contacts

Sunart Oakwoods Initiative

Project Manager & contact for demonstration site visits - Jamie McIntyre tel: 01967 402165

Highland Birchwoods –

Littleburn Road, Munloch, Ross-shire, IV8 8NN tel: 01463 811606

Scottish Natural Heritage -

The Governor's House, The Parade, Fort William, PH33 6BA tel: 01397 704716

Forestry Commission Scotland -

Ian Collier, FC Dingwall office, tel: 01349 862144

Scottish Wildlife Trust -

Donald Kennedy - 01967 421327

Royal Society for the Protection of Birds -

North Scotland Regional Office, Inverness tel: 01463 715000

Sunart History Group -

John Dye tel: 01967 431222

Scottish Executive Environment and Rural Affairs Department -

Cameron House, Oban PA34 4AE tel: 01631 563071

Appendix 2:

Financial incentives for management

There are a range of grants and incentives available to woodland owners and tenants. They are from three main sources, FCS (Scottish Forestry Grant Scheme), SNH, and SEERAD farm grants (including the Rural Stewardship Scheme).

Further details from the project officer, and from each of the relevant agency or department contacts (see Appendix 1)

Appendix 3:

Further Reading

The following books and booklets are recommended for further study of native woodland management:-

The Sunart Oakwoods (a report on their history and archaeology) –
(available from John Dye, Acharacle)

Conservation Management of the Sunart Oak Woodland SAC and the Potential for Supporting Rural Development, George Peterken and Rick Worrell, 2001, (copies from SNH, Fort William).

Native Woodlands of Scotland, FC booklet (free)

The Management of Seminatural Woodlands, FC Forest Practice Guides 1-8

Ancient Wood Pasture in Scotland, P Quelch, (download from www.treetrader.co.uk)

Thinning in Atlantic oakwoods: assessing options at the stand scale,
Richard Thompson, 2005, (copies from Highland Birchwoods)



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