Argyll and Bute Local Biodiversity Partnership

2nd Woodland Grazing Workshop Proceedings

How trees & livestock can grow together

Luing cattle grazing open grassland within oak woodlands in Argyll

Dunstaffnage Marine Laboratory, Connel, Argyll
10 March 2005

Organised by the
West Highland Woodland Grazing Project

The West Highland Woodland Grazing Project gratefully acknowledges financial support from:

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Executive summary

Over the last ten years there has been increasing recognition of the value of livestock grazing in enhancing the biodiversity of native woodlands and encouraging natural regeneration. It is against this background that the West Highland Woodland Grazing Project (WHWGP) was initiated in 2004. The aims of the project are to inform the development of a future grant for conservation grazing, and to disseminate best practice amongst practitioners and advisers locally and throughout Scotland. The project operates under the umbrella of the Argyll and Bute Biodiversity Partnership. Current partners are Forestry Commission Scotland, Scottish Natural Heritage, SEERAD, Farming and Wildlife Advisory Group, Scottish Agricultural College and Scottish Native Woods.

In February 2004 the WHWGP held a Woodland Grazing Workshop in Stonefield Castle Hotel, Tarbert. One of the main outcomes from that workshop was recognition of the biodiversity benefits of woodland grazing and a rallying call for a more integrated and holistic approach to farm and woodland management. One year on, in March 2005, a second workshop was held at the Dunstaffnage Marine Laboratory, Connel, Argyll. Over 100 people attended the workshop; farmers, crofters, landmanagers, foresters, advisers, researchers, conservationists and agency staff from SNH, SEERAD and FCS. This year saw delegates coming from all over Scotland with some also traveling from south of the border. Such was the demand for places that over 20 people, who had expressed an interest, were unable to attend.

The aim of the 2nd Woodland Grazing Workshop was to give participants the opportunity to find out more about both the science and practice of managing woodlands with livestock. This event gave more practical information and advice and promoted the sharing of experiences and information relevant to the role of livestock in woodland management.

The morning session started with Lucy Sumsion, Project Coordinator for the WHWGP, giving a Project Update on events over the previous year. This was followed by Helen Armstrong, Forest Research, who spoke about the results of the survey of cattle grazed woodlands in Great Britain and posed some questions regarding future research needs. Neil Duncan, an Argyll farmer, gave an insight in to the challenges facing farmers in the practical necessity of earning a living from the land, balanced by an attempt at true sustainability, whist at the same time conforming to all the rules, regulations, directives, best practice codes etc. Tony Boyd, Camusnagul & Achaphubail Crofting Trust, gave an illuminating presentation on one crofting communities efforts to restore their native woodlands whilst also integrating it with their crofting practices. Tony particularly highlighted the loss of skills available to present-day crofters compared to the instinctive knowledge and skills that their forbearers held. David Whitaker and Donald Hendry, Forest Enterprise, gave a fascinating insight in to the restoration of the native pinewoods using Highland cattle in Glen Garry. The morning session finished with James Ogilvie, Head of Grants and Licences Forestry Commission Scotland, giving details of the new S9 Stewardship Grant for controlled livestock grazing in woodlands.

The afternoon session involved each delegate choosing two 1-hour workshops from a possible five: **Using pigs as a scarification tool** – Chloe Randall, Dunlossit Estate; **Sheep and their role in woodland grazing** – Meg Pollock, SAC; **Animal husbandry & welfare** – Margaret Lister, Dalriada Veterinary Surgery & Niall Campbell, SAC; **Management planning & monitoring** – Tony Waterhouse, SAC; and **Management of birch regeneration** – Peter Quelch, Forestry Commission Scotland

The West Highland Woodland Grazing Project would like to thank everyone who helped to make the event such a success: all the attendees for their valued input, all the speakers, Gordon Gray Stephens of Scottish Native Woods for chairing the event, the various workshop leaders and recorders and everyone else who helped on the day.

Lucy Sumsion, Project Coordinator
Argyll FWAG
April 2005

Introduction

G Gray Stephens, Scottish Native Woods - Chairperson

The West Highland Grazing Project's second workshop filled the conference facility at Dunstaffnage to capacity. Delegates from Argyll, Lochaber and beyond gathered to hear of the progress made by the Project over the year, and also to look at some of the outstanding issues to be dealt with as woodland grazing looks set to become a more accepted part of land use in Scotland.

Land management is undergoing a period of change, and Tony Waterhouse points out that we may well look back to the years of 2004-6 as a "dramatic time". We need to get away from the unpredictability that concerns Neil Duncan, and emulate the Treslaig & Achaphubuil crofters' attempts to capture old traditions of husbandry and woodland management. The possibility of an integrated approach to land management is also having an impact on government agencies, with the Forestry Commission playing a major part, as illustrated by the new "Controlled Livestock Grazing in Woodlands" Grant which James Ogilvie describes. We are offered the prospect of "joined up" government for rural land uses, and conservation advisors are also increasingly working together to develop a common message. The Grazing Project will seek to ensure that producer's concerns, and the practicalities of woodland grazing are addressed through the development of the tool kit.

Another theme of common concern is the product of woodland grazing. For many the main product is "the tastiest red meat that money can buy", for others it is the biodiversity protected or enhanced by appropriate levels of grazing. As Neil Duncan reminds us, it is important to keep an eye on the bigger picture and remember that woodland grazing can produce a range of public benefits. The Grazing Project must ensure that the costs of delivering these benefits are adequately reflected in the Forestry Commission's Stewardship Grant.

Finally, the workshop showed how we are gaining experience, and helped to share that experience, as well as highlighting some knowledge gaps. The historical role of Argyll as a centre for cattle grazed woodland was highlighted by Helen Armstrong, as was the shortage of research into some aspects of woodland grazing. However Helen also acknowledges that the time has probably come to deliver woodland grazing even without the research base. We heard from several speakers who have practical experience of the subject, and it is clear that, as with all land use, much depends on the individual's approach.

The next year will see the delivery of the woodland grazing tool kit and of trial woodland grazing sites. The Steering Group will take forward lessons learnt from this workshop, paying particular attention to the need for a "practitioner-centric" approach, and also the requirement to develop a truly long term approach to the delivery of public benefits from woodland grazing.

West Highland Woodland Grazing Project Update March 2005

Lucy Sumsion, Argyll FWAG – Project Co-ordinator

The West Highland Woodland Grazing Project was established in January 2004, so one year on what have we achieved?

In February last year we held a Woodland Grazing Workshop at Stonefield Castle near Tarbert. Many of you were at Stonefield last year and will remember the rallying call for a more integrated and holistic approach to farm and woodland management. The need to identify appropriate management regimes for woodlands that recognises the role of livestock and the conservation benefit that they deliver has been established for some time now. However, what has not been in place is the policy and grant mechanism to support it. Delegates at the workshop called for the introduction of a grant scheme that would deliver managed woodland grazing.

One year on I believe that we now have that opportunity. In November 2004 the Forestry Minister, Lewis MacDonald, announced the establishment of three new pilot stewardship grants, to promote the sustainable management of farm woodlands. One of these new stewardship grants will be for the sustainable grazing of woodlands and today we are pleased to welcome James Ogilvie from the Forestry Commission Scotland who will tell you more about the pilot of this grant later this morning.

In June 2004 in partnership with The Argyll & Bute Biodiversity Forum and the Argyll Butterfly & Moth Group we hosted a day looking at habitat management for the Marsh Fritillary butterfly. Although not usually associated with woodlands, this species requires open habitats, which have abundant patches of devil's bit scabious. However the particular farm that we visited, south of Oban, had a WGS in place where livestock had been excluded for a number of years and it was felt that the Marsh Fritillary habitat was being lost due to lack of grazing. It is this complex inter-relationship between the woodlands and the associated open ground either within or out with them which is often critical in terms of successfully managing the mosaic of habitats for the greatest conservation benefit whilst also sustaining the farming enterprise. And this is where many of the grant support mechanisms up until now have failed. The Forestry Commission have been unable to pay grant on that open ground in excess of 20% and SEERAD are generally not able to fund the management of the woodlands. However, with the woodland planning and management option soon to be available within Land Management Contracts and the development of the new woodland grazing grant hopefully we will see a different approach in the future.

In October 2004, as part of the West Highland Woodland Grazing Project, I was fortunate to have the opportunity of visiting sites throughout Argyll and Lochaber to have a "look see" at what was going on where woodland grazing was either taking place or had been. I visited nearly 20 sites, which ranged in size from the 22 ha SWT Reserve near Benderloch to the extensive Oak woods that form part of the Loch Etive Woods SSSI just up the road here between Connel and Taynuilt. I went to the islands to visit windswept coastal hazel woods, south to Kintyre to visit the Tarbert Woods and north to the crofting communities of Camusnagul & Achaphubuil, which you will hear more about from Tony Boyd later this morning.

Whilst visiting these woodlands I also had the opportunity to talk to the farmers and crofters involved in managing them. Many identified tangible benefits to them, the obvious ones being access to shelter and grazing. But other not so obvious benefits were also identified such as - keeping bulling heifers away from stock bull and managing young stock

Many managers, however, also identified a number of disadvantages, such as difficulty in finding and seeing stock, high labour input particularly when associated with too few animals in large areas; complicated management regimes compared to previous simpler systems; and the poor quality of grazing (often found in wooded sites), which can reduce livestock productivity as compared to being reared on improved grassland.

Much of the information gathered during this field-based review will be used to help develop a “Woodland Grazing Toolkit”. It is anticipated that this toolkit will help land mangers to identify the issues that they need to address when planning the management of woodlands using livestock.

We now have a database of nearly 500 contact details of people who have registered an interest in the project and who receive the woodland grazing newsletter. Hot of the press you will find the second edition of the newsletter in your packs today. Initially it was to be called the grazing woods newsletter, but one of the interesting developments over this year, for me anyway, has been the increased interest in using pigs and wild boar in woodland management. So the change in name of the newsletter to “Livestock in Woods” is in recognition of the fact that we are not just using grazing animals but also “scarifying” animals, and of course cattle can also fulfill that role.

So here we are today one year on and holding another event, some might ask why? Last years event was very much a get together of like-minded people who were keen to see the role that livestock can play in woodland management recognized. And as a group the West Highland Grazing Project wanted some guidance on how people thought the whole debate should move forward. I think we got that steer and for anyone who has not seen it we do still have some hard copies of the Proceedings from last year available. At last years event many people requested more information on the practical applications of managing woodlands with livestock and I hope the programme that we have drawn up today will begin to deliver that.

And now to the future – we hope to be able to pilot the new SFGS Stewardship grant in Argyll & Lochaber over the coming year. We have drawn up a selection criteria for sites, based on trying to cover a range of different scenarios. The intention is to identify woods that need to be managed with livestock that will include the following:

- West Highland Estate
- Owned farm grazed by owner
- Owned farm grazed by grazier
- Tenanted farm
- Croft or crofting township
- Current WGS Nat Regen Scheme
- Site using pigs/wild boar
- Woodland site with no previous IACS registration and/or SFP entitlement
- Community/Trust owned woodland

Each site should fulfil at least one of the following criteria regarding conservation management objectives:

1. To benefit biodiversity generally by;
    - Reducing excessive tree/scrub regeneration
    - Reducing the existing scrub layer
    - Maintaining open habitats
    - Reducing dominant plant species

2. Or it may benefit individual species or groups
3. Or encourage tree regeneration

In consultation with the FCS we are just in the process of setting a budget and drawing up the Project Plan for piloting the Stewardship Grant and developing the Woodland Grazing Toolkit. Then we would then hope to be able to approach owners and land mangers who would like to be included in the Pilot.

Also this coming year we have the opportunity for a Leader+ Trans-national Project with partners in Sweden in the Kustlandet region. This is a rural coastal area in Sweden that is facing many similar problems to ones we face here on the west. The focus for this joint project will be to look at the role of grazing animals and the important contribution they make in securing farming incomes and livelihoods and all the associated socio-economic benefits that brings. As well as the important role they play in maintaining habitats and enhancing biodiversity. The project is in the planning stage at the moment but if anyone would like to hear more about it please do contact myself or Lorna Elliott, the Leader+ Project Manager.

So the next few months are going to be pretty hectic for the West Highland Woodland Grazing Project, but I think at last with the pilot of the new Stewardship Grant we are getting somewhere.

I would like to thank the various organizations who have supported the project over the year and I would particularly like to thank the other steering group members for all the support they have given me.

Finally I would like to thank all of you for coming and I hope that you will find the day both informative and enjoyable.

Cattle in British Woodlands: Who is doing what and why?

Helen Armstrong, Ecology Division, Forest Research

Introduction

The study reported on here is a survey of cattle-grazed sites across the country (see Armstrong et al. 2003 for the full report). Firstly we wanted to see who was doing what with cattle in British woodlands. Secondly we wanted to see if we could use anecdotal and qualitative information to draw general lessons about successful cattle management regimes. We contacted around 250 site managers and collected a range of information from them about the sites they managed. This included:

- Location, ownership, land area, objectives
- Woodland type, presence of regeneration, woodland management
- Cattle type and management, other herbivores

Field workers from Forest Research also visited a number of sites to collect more systematic, but still observational, information on tree regeneration. Young trees were divided into seedlings (< 25 cm tall) and saplings (25 cm - 1 m tall). Table 1 gives an example of the sort of information that was collected. All the information, from both site managers and from field visits, was entered into a database.

Table 1. *An example of the type of information on tree regeneration collected on site visits.*

Tree species	Canopy cover	Density of saplings	Browsing on saplings
Ash	2	Occasional	All
Birch	30	Common	Common
Goat willow	2	None	
Hawthorn	6	Common	None
Hazel	30	Common	All
Holly	1	Common	Occasional
Oak	30	None	
Rowan	1	Occasional	All

Results

Information on 105 sites was entered into the database. Figure 1 shows the location of the sites across Britain.

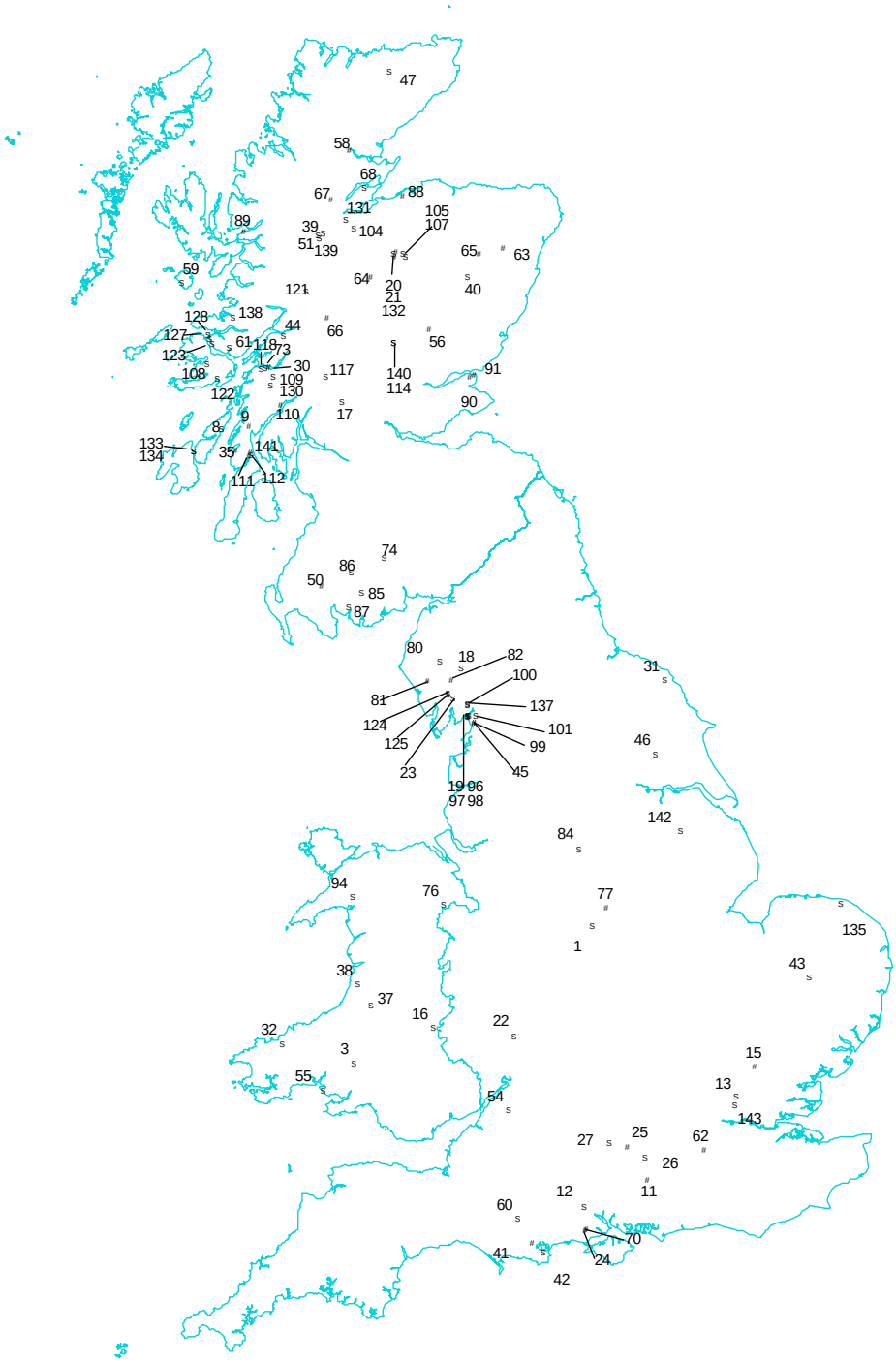

Figure 1*. The location of sites for which information is held in the database.*

The survey was not meant to be an exhaustive inventory but should be a representative sample of sites across Britain. Unfortunately we could not visit any sites in Wales because the two potentially suitable sites were flooded at the time. The sites were fairly evenly distributed across the country though there were perhaps concentrations in Cumbria and Argyll where there is a long tradition of grazing cattle in woodlands.

In most cases cattle had access to open habitats as well as woodland. Sites were generally small at between five and fifty hectares. Other herbivores were ubiquitous (Table 2).

Table 2. *The number of sites in England and Scotland at which herbivores of different species were present. More than one species could be, and usually were, present at one site.*

	England	Scotland
Sheep	30	54
Roe deer	73	75
Red deer	35	58
Fallow deer	23	5
Sika deer	10	12
Muntjac deer	20	0
Rabbits	50	40
Hares	15	18
Horses or ponies	10	4
Goats	0	2
Pigs	3	0

Roe deer were the commonest other herbivore and red deer and sheep were also very common in Scotland. Only three sites had no large herbivore present other than cattle. We had no idea of the levels of each species from the general surveys, only from the site visits and even then it was only a 'guess' based on signs and anecdote and scored as none, low, medium or high.

All these factors meant that it was inevitably going to be unlikely that we would be able to come up with clear relationships between cattle grazing pressures or management regimes and impacts.

There were several site characteristics which showed clear differences between England and Scotland. There were not enough data for Wales to make it worth presenting separate results but, in general, the results for Wales were similar to those for England. In England most sites were owned by public bodies or nature conservation charities, were dominated by oak, birch and ash and cattle were used primarily for nature conservation. In Scotland most sites were privately owned, were dominated by birch, oak ad Scots pine and the cattle were primarily in the woodlands for forage and shelter. In Scotland mostly hardy breeds were used whereas in England 22 different breeds were used with no breed predominating. This may reflect the more mesic conditions in England plus also the differences in ownership and objectives. Nature conservation bodies may be more likely to use rare breeds.

There were no differences between sites being managed for different objectives in terms of stocking rate, stocking season or overall grazing pressure although the highest three grazing pressures were on sites being managed for cattle production only. We probably did not have very many sites where the cattle were being used merely for winter shelter.

Monitoring of one sort or another was in place at many sites but most had been in operation for too short a time for this information to have been analysed. However we

were given information about whether nature conservation objectives had been met or not for 30 sites. At 25 sites, the objectives were considered to have been met and at five they were not. However, at those five the site managers usually thought they knew why not and it was not considered to be the fault of the cattle!

The objectives of using cattle in woodland can be divided into three main types:

1. To encourage biodiversity by using cattle to open up vegetation and reduce the density of regenerating trees.

Cattle were being used to reduce the cover of scrub such as bramble and of regenerating trees. They were also being used to keep a range of habitat types open (grassland, dry heath, wet heath, dunes, and herb rich flushes) and to control dominant plant species including bracken and rough grasses.

2. To benefit individual species or groups

There was a wide range of species and species groups that it was hoped that grazing with cattle might help by creating a mosaic of open and more closed habitats and long and short vegetation in close proximity to each other. These included moths and butterflies (including the netted carpet moth, silver studded blue, high brown fritillary and Scotch argus), lichens, invertebrates and birds (including lapwings and black grouse). It is interesting to note that the netted carpet moth, which is a rare moth found in Cumbria, requires very heavy winter grazing to poach the ground. This then forms an ideal seedbed for the Touch-me-not balsam, the food plant of the netted carpet moth. When seen in winter, woodlands grazed to this extent might be seen as being too heavily grazed, however this example serves to illustrate that appropriate grazing pressures vary enormously depending on the particular nature conservation objective. Many of the other species listed require a mosaic of open areas and more closed areas within a woodland. Black grouse need open areas for lekking as well as more closed areas for feeding and nesting.

3. To Encourage tree regeneration

Achieving tree regeneration was a more common objective in Scotland than in England and Wales. Conversely preventing tree regeneration was a more common objective in England and Wales.

We had information on cattle grazing pressures as well as on tree regeneration for 73 sites so we used this to look for relationships between the probability of achieving ‘good’, ‘poor’ or ‘no’ regeneration and cattle grazing pressure (Figure 2).

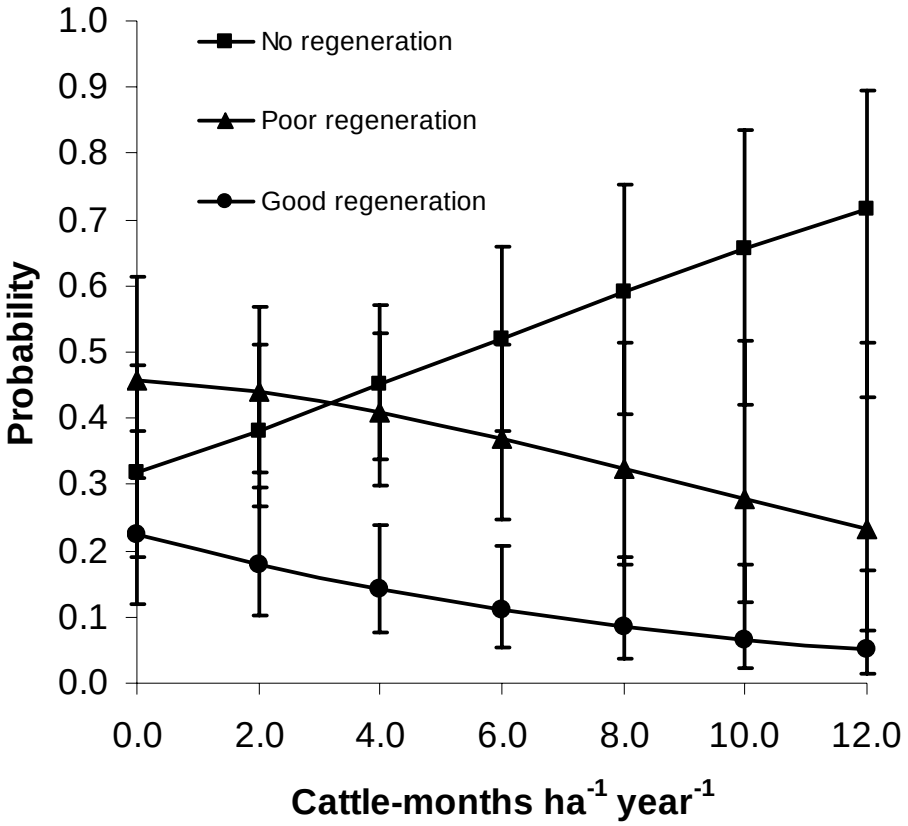

Figure 2. *The effect of cattle grazing pressure on the probability of achieving 'good', 'poor' or 'no' regeneration.*

Cattle grazing pressure is given in cattle-months ha^{-1} $year^{-1}$. This is the product of the average stocking rate and the time, in months, that the cattle had access to the woodland. Thus one cow on for two months is equivalent to two cows on for one month. The stocking rate was calculated using the total area that the cattle had access to, not just the area of woodland.

Good regeneration is where a large number of a variety of species present in the canopy were 'getting away'. Poor is where only a few species were 'getting away' (usually birch, holly and /or hawthorn) or where few trees of several species were getting away. None is where no trees were getting away or they were only getting away in areas inaccessible to large herbivores.

Cattle do seem to have an impact on tree regeneration despite all the other factors that must have an impact, such as other herbivores. These contribute to the size of the confidence limits. The probability of achieving 'good' or 'poor' regeneration is highest at the lowest cattle grazing pressures. However, even with no cattle grazing there is only a 32% probability of achieving good regeneration and a 46% probability of achieving poor regeneration due to other factors (other grazing animals, light availability, site type etc.) so it is important to know what else is likely to affect tree regeneration if you want to predict the effects of cattle. However, this conclusion is extrapolated since we had no sites that were not grazed by cattle. There was no evidence of cattle having an overall positive effect on tree regeneration at low grazing pressures but the effect is likely to be

small so it is unlikely that we would have been able to pick it up. We will probably need to use controlled experiments to show if it exists or not.

The site visits gave us more quantitative information than we obtained from the site managers, even if it was all assessed visually on site. Even with the huge range in different site types, we were able to calculate the relative browsing preferences for saplings of different tree species (Figure 3). Since all of the sites visited hosted other herbivores as well as cattle, these preferences are not just for cattle but are probably predominantly for cattle and roe deer.

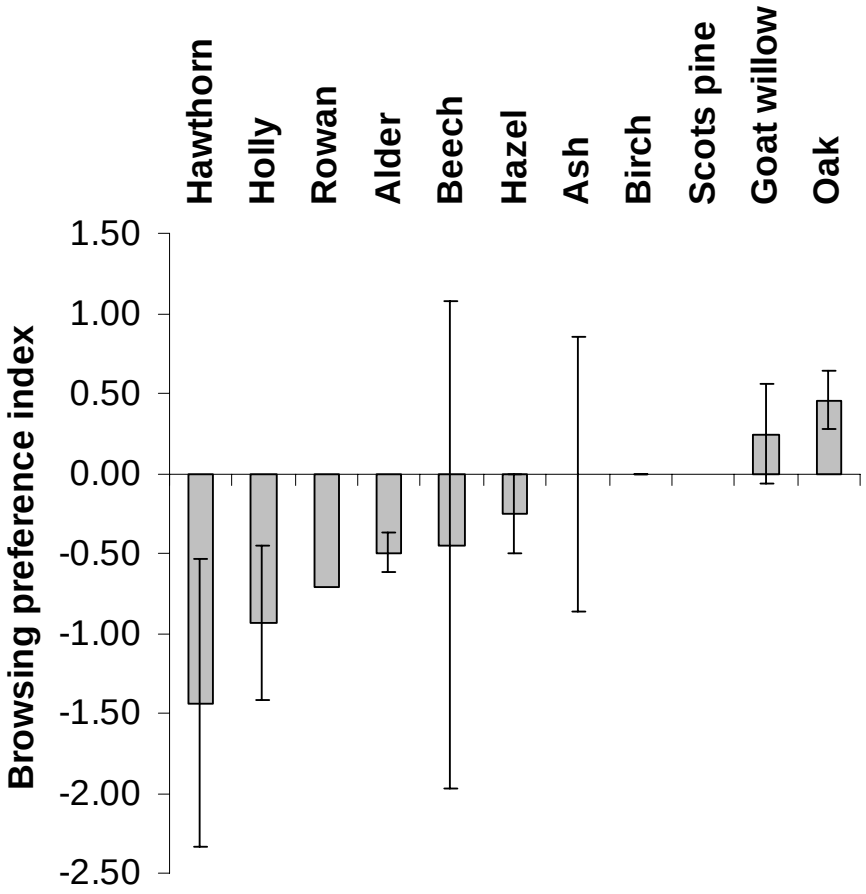

Figure 3. *Relative browsing preferences of large herbivores for young trees of different species. The most preferred species are those on the right and the least preferred are those on the left.*

The preferences are displayed in Figure 3 relative to birch, the commonest species at our sites. The confidence limits represent the number of other species for which there were more than three comparisons. Where there are no confidence limits this is because there was only a comparison with birch. The fact that this graph could be produced at all suggests that the relative density of different sapling species and herbivore species, not to mention lots of other site differences, have very little effect on these relative preferences.

Hawthorn and holly come at the bottom of the scale thus supporting the contention of Vera (2000) that thorny species are less browsed than less well protected species. This,

together with several observations reported to us and made during site visits, that scrub, thorny species and even bracken can protect young trees from browsing, suggests that some form of 'protection' is needed to regenerate trees under moderate grazing pressures. And oak, despite its high levels of tannins, comes out as the most palatable. Rowan is often thought to be a preferred species in contrast to our results but we only had a comparison between rowan and birch so we have less confidence in this result than that for some of the other species. This information can be used to provide indicators of current browsing pressure. If holly or hawthorn is heavily browsed then the chances are that everything else will be too. If oak is lightly browsed then everything else is likely to be lightly browsed, if at all.

Recommendations for tree regeneration

- First make sure that some regeneration is possible at the site (enough light, suitable soil conditions and seed source). Assuming this:
- Tree regeneration can take place in the presence of deer and /or sheep but the density is likely to decline as their numbers increase.
- Consider when the cattle are in the woodlands. If the cattle all pile into the woodland in the winter for shelter then there may be no regeneration even at 'low' grazing pressures.
- From this study we would tentatively suggest that cattle grazing pressures of < 2 cattle-months ha^{-1} (0.1-0.2 cattle ha^{-1} on all year) may be most appropriate to achieve good tree regeneration and that at >10 cattle-months ha^{-1} (about 1 cattle ha^{-1} on all year) chances are there will be no tree regeneration. This is for cattle being on for a reasonable length of time, not for mob stocking then removal.
- At in between cattle grazing pressures the chances of getting regeneration are increased if there is 'natural' protection i.e. dead wood, thorn scrub (hawthorn, holly, bramble or even bracken). Several site managers noted the effects of natural protection and this was also observed on site visits.

Next steps

We desperately need more sites with good controls that are not cattle grazed. We also need sites where there is a range of cattle stocking regimes. Systematic monitoring of standard components of the system would help enormously. Monitoring might be as simple as visual assessments or fixed-point photos but some monitoring would help enormously. It is also of benefit if very good records are kept of how many cattle there are and when are they in the woodland. Central collation of these results would allow us to make use of practical experience at a wide range of sites to start to build a picture of what works where and for what. Currently the most we can do is put people in touch with the managers of other, similar sites.

Major research questions

1. Do cattle help tree regeneration? Can they do this even if other herbivores are present? Are cattle less likely to eat saplings than other large herbivores? At what densities might the positive effects happen? We were not able to get detailed enough information to answer these questions. It would require targeted experiments to get an answer but it is one of the major reasons for using cattle so it would be nice to confirm that it occurs.

2. What are the effects of cattle on all the components of biodiversity in different woodland systems? Can we predict for a given site? Many people are using cattle to achieve general 'biodiversity' objectives but we have very little information with which to predict the effects.

3. What might we be able to predict using models? So many factors affect the impact of cattle on woodlands that it is unlikely we will ever come up with rules of thumb that will apply under all conditions. Jorritsma *et al.* (1999) built a computer model to predict the effects of large grazing animals on Scots pine woodland growing on poor, sandy soils in the Netherlands. The model predicted that with no ungulates Scots pine dies out but birch and oak come in. With a very low density of cattle, rowan comes in instead but only small amounts and a few oak survive. If the density of cattle is increased, tree regeneration stops and the woodland turns into grassland. These scenarios assume that the cattle are confined to this woodland all year. Soils are poor so they have to eat everything that is available. Nevertheless, this illustrates the sort of predictions that can be made using simulation models that take account of all the variables involved. We could be learning from them and adapting their approaches to our needs.

Conclusions

Although most stocking regimes are set by trial and error we can say in relation to tree regeneration:

Lots of factors influence the effect that a given cattle stocking regime will have so we cannot give fixed prescriptions. However, so far, most managers seem to be happy with the trial and error approach.

More monitoring, especially with cattle-free controls, would help managers to be sure that they were achieving the desired result and would help other managers to get the management right sooner. Research and modelling would also help but they are both very expensive and time consuming so is it worth the investment if managers are happy with trial and error?

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The Farmer's Perspective

Neil Duncan, Stonefield Farms

Those who choose to farm on the wet West Coast of Argyll are preternaturally disposed to either huge optimism or little common sense – at least if it's an easy living that's contemplated. What complicates life even further is the truly emblematical 21st Century unpredictability in all things to do with primary production. There was a time when the farmer sought to plan for the next generation: today, you are lucky if you can plan for next week.

And so it was that my late father-in-law once planned to fell all the native trees that grew on Stonefield, and replace them with moneymaking conifers. He was thinking of the next generation, and made a solid start. However, he got sidetracked in the late '70s and early '80s, and instead sold out his forestry interests to a foreign gentleman seeking long-term investments with tax breaks. That still left a fair bit of semi-natural woodland on Stonefield, and when in '89 the NCC came along and increased the area already designated SSSI by over 300% to about 241 ha my wife and I were already two years into a scheme to improve the woodlands that were becoming over-aged and senescent, and also replace the suckler herd that seemed to be placing extreme demands on the ground with something more environmentally friendly. Importantly, it was clear that we would be farming *with* nature, and not *against*. Environmental husbandry would be every bit as important an animal as crop husbandry.

But to go back to the beginning. I have been asked to speak on the farmer's perspective of livestock in woods, which is probably a huge mistake. I can only speak from personal experience, and because time is so short you are not going to get any pretty pictures of Highland coos disporting themselves in leafy sylvan glades. Instead, you will get one farmer's somewhat empirical approach to the practical necessity of earning a living from the land, balanced by an attempt at true sustainability, whist at the same time conforming and submitting to the unremitting torrent of rules, regulations, directives, best practice codes and diktats used by an unrelenting agricultural bureaucracy, who are driven in turn by a political class that lost touch with the realities of the land some generations ago. (Farmers have a tendency to be non-p.c.)

If I could just diverge slightly with a history lesson before saying something about the Stonefield woodlands.

On the west coast of Scotland the retreat out of the last glacial period was more prolonged than in some other parts of the British Isles. Gradually peaty swamps and bogs gave way in the increasingly temperate climate to rich, mixed woodlands that flourished along the shores of the fjordic sea lochs, and in the glens and gentler slopes of the West Highlands. By perhaps 7,000 BC early Mesolithic people were starting to colonise that most accessible and fertile ground, and the fractioning of the Great Forest had begun. The influence of a Bronze Age Culture that slowly gave way to the Iron Age accelerated the clearance of tree cover and exploitation of the timber. This state of affairs reached a climax between the seventeenth and nineteenth centuries when the need to feed colonial expansion and fight foreign wars brought the charcoal burners and forgemasters to the shores of Loch Fyne, West Loch Tarbert and Loch Awe. More recently still, and even into the 1980's scarce Atlantic Oak Woods suffered the depredations of private forestry companies and the FC in the interests of increasing Sitka spruce cover. (Ring barking and under-planting have been two favoured means of eradication). From prehistory to the present the native woods of Argyll have taken a

hammering, and not many have shown concern. The woods of Stonefield remain today as a relict, albeit a flourishing one. Oak, ash, hazel, birch, rowan, alder and holly grow dominant in clumps and swathes according to the ground conditions that change rapidly from bogs, mires and flushes to dry, rocky outcrops and base-rich deeper soils, whilst ivy, honey-suckle, and *Vaccinium* form the principal shrubs of the under-storey. It is a woodland landscape little changed over 8 or 9 millennia.

Meanwhile, back at the farm. We have become highly diversified in recent years, but continue to keep faith with agriculture. The main enterprises are 1600 black face and North Country Cheviots, 160 breeding red deer hinds and 15 highland cattle with two consecutive years of followers, supplemented by up to 30 AA X Shorthorn/Highland calves from Kilberry. There are also up to 25 native ponies at any time. All inhabit woods to some extent on a year-round basis, but seasonality is also important, and a form of transhumance practised in summer. In terms of productivity, Stonefield is not a very good farm, and by any definition difficult to run and maintain. It sprawls across 2,000 ha of Knapdale in the outline of a drunken octopus, from sea level to 1800 m of altitude, and boasts an unenviable combination of bog, thin, peaty soils, bracken, white grass, rushes and of course trees located where they compromise efficient running of the small apportionment of in-bye and improved grassland, although we still manage to take up to 300 tonnes of big bale silage each year off 20 ha. The challenges are great, and effort hugely disproportionate to the profit, which when it comes, is small enough. But we do see a way ahead, even in these uncertain times, and I shall now devote the rest of this paper to telling you why.

Firstly, in Argyll, we can produce the finest and tastiest red meat that money can buy. (Vegetarians cover their ears here). There are a variety of reasons for this – the quality of traditional husbandry, the grass diet associated with a comparatively long growing season – but particularly, and by popular acclaim, and in the views of connoisseurs of good food, the slow maturing nature of the traditional breeds that enjoy a diverse diet in natural surroundings. We have sheep and deer in woodland as well, but I want to restrict my remarks to cattle, at a density of one livestock unit per 10 ha of true woodland. There is nothing more natural to a cattle beast than a wood. It enjoys the shelter, the ability to roam at will, and there are usually a selection of vantage points in which to lie up according to wind and weather. The diet is varied, including a wide range of under-storey grasses, herbs and shrubs. I would like to think that the aurochs *(Bos primigenius)* of the Ancient Forest of Caledon, sadly now extinct, would have been at home in the woods of Stonefield.

Secondly, there are powerful ecological consequences. (Introduce sample). Let me make the point by showing you some bull shit. This is not any old bull shit. It is not the yellow, slimy stuff copiously produced in Brussels; nor is it the skittery effluent that comes from DEFRA, but good, solid, wholesome dung from a Highland bull who lives in woods. It's as fragrant as my granny's Christmas puddings used to be. It is a veritable self-contained Welfare State for a multi-national empire of coprophagous bacteria, fungi and invertebrates, that in turn support a higher echelon of invertebrates, amphibians, reptiles, birds and mammals. It brings ecological balance and biodiversity together in that essential working partnership whereby the land can prosper and flourish. It is wonderful stuff, and I am going to show you what is in it.

Overhead No. 1

(Description of the breakdown)

Finally, I have to draw to a close by asking the question, 'does it pay to graze woods'?

I wish I had more time to devote to this, because it seems to me that there are some surprising spin-offs for a diversified farm, and there are also some down sides. Dealing with the latter first, I would point out that the additional costs and labour involved in daily checks and winter feeding of stock in woods is considerably greater than would be the case in conventional fields and parks. Equally, if there is a problem with an animal – dying for instance, or requiring veterinary treatment – there could be some very frustrating and difficult decisions to be made. Husbandry, therefore, has to be at it's best.

The advantages for cattle wintering in a wood, as opposed to a shed, are very clear. Respiratory diseases are virtually unknown, their coats grow thick and glossy, feet are healthy, and their eyes bright and alert. Calves, particularly, perhaps may not show much weight gain, but their frames grow, and once the grass starts to grow in the spring, weight gain is very fast. My personal preference is always for native breeds – Continental cattle require Continental conditions, which we tend not to have – and certainly the native breeds thrive better, and possibly have greater tolerance to ticks and biting flies.

Biodiversity, that great buzz-word, recently adopted and now much misused by the Rural Development Minister, benefits greatly in the context of today's proceedings, from large herbivores utilising woods. Not only are they dunging, but forging paths through the under-storey, opening up areas to let the light in, poaching the ground and thus assisting seedling growth, and carrying out low pruning by browsing on branches up to 3m above ground level, all contributes to what a wood actually is in term of plants and animals that can find their niche therein. Some foresters have, at least in the past, become very prissy indeed at the thought that an animal might eat their trees, but I would urge them to look at the bigger picture. A wood without at least some large herbivores is not in itself a wood at all, and quite probably would cease to be sustainable over time.

To conclude, this farmer's perspective is that cattle in trees can mean happy cattle, happy farmers, happy conservationists, and, if they just let go a bit, happy foresters with happy trees.

The Crofter's Perspective

Tony Boyd, Treslaig and Achaphubuil Crofters Woodland Trust Ltd.

History
The Woodland was bought by a group of local crofters in 1995, the woodland has been divided into 3 separate compartments. It totals 65 HA

Each compartment is managed differently:

Compartment 1 is mainly used for our woodland walks and contains 6 – 8 Roe deer. We manage the grown by manual cutting and we have constructed paths through the woods, this area also contains some areas that are fenced off to prevent any browsing to various degrees, one of which is totally enclosed.

Compartment 2 is grazed throughout the year by cattle and sheep. It is used for batching sheep for sales and to avoid gimmers being tupped.
The bracken has been severely controlled in this compartment by chemical means.

Compartment 3 is used for summer grazing of cattle to disturb the ground. And from Dec – Jan it is used for Gimmers/Hoggs for limited periods (34 gimmers for 6 weeks in 2004) They are used to reduce the vegetation mat and are removed before 15% of seedling trees are browsed.

With these three compartments we hope to build a picture of what works in our woodland, and to gain knowledge of what works which we can share with other woodland bodies.

The main drawback of small-scale use of cattle and sheep in the woodland is the disproportionate expense of keeping them, caching pens, form filling, labour needed to remove them from the woodlands.

Our ancestors used these woodlands and "managed" them for centuries.

Without crofting the landscape will change and we will have to rely on human thinning (expensive) to maintain the woodlands. The knowledge of using animals to maintain the woods will need to be re-learned.

The Forester's Perspective: Garry Pinewood Cattle Project

David Whitaker & Donald Hendry, Forestry Commission, Lochaber FD

Broad Objectives.

The primary objective of the project is to use large grazing, (as opposed to browsing), herbivores to assist in the creation of ideal habitat for Caledonian Pinewood re-generation following removal of non-native softwoods.

In addition it was decided to introduce a grazing system that would hopefully produce some prime quality beef thereby demonstrating the viability of similar enterprises in purely commercial agriculture / forestry situations.

Preparations for project commencement.

The stock fence erection for two enclosures commenced late in 2002. (Enclosure 1 (Bolin) 220.5 hectares. Enclosure 2 (Laddie wood) 175.7 hectares). It took around 12,000 metres of fence to enclose them. In addition a further 33.6 hectares behind the Greenfield croft was identified and fenced as a holding area for the project. All areas are predominantly open ground with small remnants of non-native conifers awaiting removal.

The initial plan was for two strands of electrified wire with wide spaced stobs. In practise this proved unsuccessful, mainly due to the undulating terrain and harvesting debris. An additional two barbed wires were added after the cattle entered the enclosures and livestock security has been good since.

60 Highland stirks were bought privately from Argyll and southern Inverness-shire. A conscious effort was made to buy West Coast, acclimatised animals. Cattle ages ranged from 9 to 24 months at purchase. There are 27 bullocks and 33 heifers. The average purchase price was £195.

All stock were treated for external and internal parasites before release in the enclosures in an attempt to keep worm burdens and larvae build up on the ground low. An animal welfare programme** is being adhered to following consultation with local vets. Roundworms and Liver Fluke were initially the main concerns and anthelmintics have been used in November, February and late April to coincide with the key risk periods. The treatments have been changed to prevent worm resistance. Ivermectin has not been used due its effect on invertebrates. “Spot on” is being used at the same times to assist with tick and louse burdens. (Faecal sample analysis in January and April 2004 indicate extremely low Fluke egg burdens and low worm burdens). ** Attached at end.

Substantial handling pens have been built at a cost of £3750 per enclosure. These are designed to allow stress free handling of the stock as well as handler safety for all staff involved. A quality cattle handling crate was purchased and this is portable. All the cattle have now been through the system several times and it works very well.

Subsidies and Premiums

An Agricultural Code number was applied for and IACS (Integrated Administration Control System) registration was undertaken for 2003 and 2004 to ensure qualification for the Beef Special Premium Scheme and Extensification Scheme. Two payments were available for beef producers under the BSPS 2003/2004 schemes. These payments applied to steers only (castrated male bovines). The first could be claimed at 7 months of age and was usually applied for by the initial producer before first sale. The second claim was available at 20 months. The producer had to retain the animal for 2 months after claiming and before sale. We claimed BSPS on our 27 bullocks during 2003 and 2004.

The 2004 IACS registration was submitted in early May with requests for information on applying for the new Land Area payments. These payments will replace the old stock headage payments. Levels of payment are being based on the stock claims records for 2000,2001 and 2002. Lochaber will have to apply to the “reserve” available for new business starts. **Update** – National Reserve Claim submitted 7/3/2005 with an estimated entitlement of around £5K per annum .

Marketing

Highland cattle are a slow maturing breed developed to survive and grow on low quality diets. Growth rates tend to be slow in traditional management systems and as a result animals for the beef trade tended to take 36 to 48 months to reach a suitable weight and level of finish.

BSE control measures resulted in a situation where no animal over the age of 30 months was allowed to enter the human food chain. To get round this some producers experimented with intensive feed regimes for highland cattle to ensure they reach 220 kilos dead-weight before reaching 30 months of age (dressed carcass weight). These systems are expensive however and require 100 % fodder and concentrate provision over the winter period to achieve the high daily live-weight gains necessary.

Cattle over 30 months are still saleable although they go for incineration. A government subsidy scheme pays £0.50p / kilo compensation for them. Prime carcasses of 220 kilos or more from animals under 30 months of age attract a rate of about £1.90 per kilo. (2003/4 figures)
It was felt that this intensive method was not applicable to the Garry Pinewood situation as birch / scrub grazing over the winter period is crucial to the success of the pine regeneration aspect of the trial. As a result a management decision was taken to adopt a

low cost and somewhat unusual management regime for the cattle – more about this later!

In addition to this a small "buy and sell back" scheme with a West Coast Highland cattle producer has been entered into and this will undoubtedly attract support and further interest from the farming community. Basically we bought six stock heifers with an agreed sell them back to him one year later at an agreed price. It was felt that this form of co-operation with neighbouring farmers was worth considering as it has benefits for both parties.

Recent developments

A press release in autumn 2003 indicated that the government were working towards a lifting of the 30 month rule in 2004. Dialogue with Scottish Agricultural Colleges indicated this was well advanced and that even with slippage it now looked highly likely that the ban would be removed at some stage in 2004. Unfortunately it all went VERY quiet again!

Update :-
In a recent announcement it was intimated that the over 30 month ban on cattle born after 1/1/ 1997 would be lifted in mid 2005. This will be excellent timing for this project as a considerable number of our cattle will be in saleable condition and weight in Autumn of this year. Hopefully our animals should make prime quality beef and attract a premium next year when the ban is eventually lifted. They should have a sale value of £450 to £600.

FC Feeding regime

Our feeding regime has been developed to achieve the following objectives. (Inevitably it is a compromise as we have more than one overall objective in the project).

1) Animal Welfare.

2) Maximise plant species diversity in the enclosures. This should encourage the regeneration of Caledonian Pine and other phototropic species.

3) Allow exploration into the economics of an extensive woodland cattle grazing project.

No bulk fodder* will be supplied encouraging the cattle to forage for their dry matter intake needs.
* I am very keen to ensure minimal introduction of weed seed sources in fodder and concentrates purchased for the cattle. Therefore a winter diet based on no fodder and concentrates was developed. Only Propionic acid treated barley is purchased ensuring weed seed sterilisation.

Supplementary feeding in the form of carbohydrates and non protein nitrogen (urea) were supplied over the 2003/04 winter to assist with the breakdown of and utilisation of the roughage and to maintain body condition and modest growth rate over the winter period. (Supplementary feeding has also proved extremely useful in keeping the cattle domesticated and checked for health).

Cattle are generally fed away from the roads and a small quantity of high energy feed blocks were used to focus cattle on different areas of the enclosures. The feed block holders are relocated each time they are used and we are finding the cattle trampling, particularly on bracken areas very valuable. These areas tend to have good mineral soil and the trampling and fertility are improving pasture quality quickly.

Winter Feed Costs. 03/04

8 tonnes of Bruised Barley, 8 tonnes of Beet Pulp, 4 tonnes of cattle Cobs and 2 tonnes of Feed blocks were used for the first calendar year. (May-April). This has proved to be more than adequate and has achieved all of the above objectives. The cattle are in excellent condition this spring.

8 tonnes of Bruised barley	£1300
8 tonnes of Beet Pulp	£ 1000
4 tonnes of Cattle cobs 16% protein	£ 600
2 tonnes of HE/fortified Feed Blocks	£ 600

TOTAL	£ 3,500

An average cost per head of £58.33.

Winter feed costs look like being very similar for the 2004 / 2005 winter period.

Conclusions

We are almost 2 years into cattle ownership and have had very few problems to date. An exceptional effort from Ranger Sandy Ferguson has contributed significantly to the early success of the project. All cattle remain fit, healthy and thrifty and there has only been one casualty - an unfortunate injury during cattle handling. Our preventitive medecine policy and good daily stocksmanship are paying dividends. Early indications suggest that the cattle are having a very positive impact on the enclosures and local staff are keenly awaiting results of the first habitat assessment since the introduction of the cattle.

** **LIVESTOCK HEALTH PROGRAMME**

DAILY STOCK CHECKS ARE CONDUCTED

ALL new stock to the system to be treated for intestinal worms, fluke and external parasites BEFORE placement in the enclosures.

ANNUAL PREVENTATIVE MEDICINE PROGRAMME

Mid – late April.	Faecal samples taken to check for worm and fluke burdens. All animals then dosed for fluke, worm and external parasites. (ticks and lice).
Late June.	Treatment for ticks and lice.
Early August.	Treatment for ticks and lice.
Late Nov. – Early Dec.	Fluke, worm and external parasite treatments.
Late Jan. – Early Feb.	Faecal samples taken. Fluke, worm and external parasite treatments.

THE COST OF THIS TREATMENT £

3 times Fluke, worm and external parasites.		660
2 times External parasite treatments.		150
Lab faecal checks		100
	TOTAL	910
	Cost per head	£ 15.17.

Our routine faecal worm and fluke egg analysis has allowed us to reduce frequency of both worm and fluke treatments. Annual monitoring will continue.

SFGS Stewardship Grant S9: Controlled livestock grazing in woodlands

James Ogilvie, Forestry Commission Scotland

James Ogilvie, Head of Grants and Licences with the Forestry Commission Scotland, gave a presentation giving the background to the development of a new SFGS Stewardship Grant for controlled livestock grazing in woodlands. He also outlined proposals for a Pilot of this new grant to run during 2005/6. What follows is a draft of the proposed grant as produced for the 2nd Woodland Grazing Workshop.

Purpose

To enhance biodiversity and to maintain archaeological & historic sites as visible/accessible areas in woodlands and wood pasture by the use of planned and controlled grazing by domestic livestock.

Background

Controlled grazing by domestic livestock, particularly cattle, can play a positive role maintaining biodiversity in open wooded ecosystems. Livestock can maintain non-woodland components within woodlands, and they can also encourage tree regeneration through assisting site preparation and suppressing weeds. Some species of high conservation importance – such as the pearl bordered and marsh fritillaries – require controlled grazing in their habitat for survival. To date, forestry grants have compensated farmers for complete exclusion of livestock. This stewardship grant enables a much more refined and targeted approach to livestock grazing within woodland.

Eligibility Criteria

We will pay grants for work that meets the following criteria (including a management plan):

- A 10 year management plan based on an ecological survey of the woodland and associated habitats, with baseline survey, methods and frequency of monitoring of habitat and/or species condition, aims of management, proposed operations and their rationale, and the desired future ecological condition of the woodland.

- Grazing regimes will only be agreed where specific biodiversity management objectives are met which improve the ecological condition of the woodland, after taking advice from approved farm conservation advisers.

- For SSSIs the proposal must accord with the site management statement agreed with SNH.

- A report of how the actual grazing regime has affected both the biodiversity of the site and its tree growth will be produced in years 5 and 10.

- There is a presumption towards the use of cattle, although in certain circumstances, and where the farm and conservation adviser agrees, the use of sheep, pigs, or other livestock may also be eligible.

- Subject to appropriate archaeological survey & monitoring, grazing regimes may also be associated with the visual enhancement of archaeological & historic sites

Grant Rates

Grant rates will normally be based on 60% of agreed costs. However, grants based on 90% of agreed costs will be paid for work benefiting native woodland, SSSIs, Natura sites, woodland HAPs and SAPs and Scheduled Ancient Monuments in a woodland setting. For Farmland Premium supported woodland in which grazing has been permitted by SEERAD/FCS, applications will only be accepted where we agree that significant conservation benefits will result. Where IACS registered woodland is brought into SFGS for woodland regeneration, consolidation of Single Farm Payment may be undertaken.

In addition to eligible operations listed within the SFGS Standard Costs and Specifications, there will be an upper limit to the agreed costs of other operations which we agree are eligible, of £<> per year, per hectare of controlled grazing, for up to 10 years. Examples of such operations are listed below.

Eligible operations

Existing Standard Costs and Specifications:-

- Preparation of a management plan and associated ecological surveys and monitoring.
- Erection of fencing to allow control of livestock.
- Erection of deer fences in certain agreed situations to allow control of wild deer.
- Removal of non-native and invasive vegetation.
- Removal and disposal of redundant fencing and, where appropriate, marking of retained fences to prevent bird strikes.

Other operations

Other operations for which no Standard Costs and Specifications currently exist, for which there will be an upper limit of £<> per year, per hectare of controlled grazing, for up to 10 years:-

- Installation of water troughs, feeders, catching pens, gates, electric fences and other works necessary for the welfare and management of livestock in the woodland.
- Works to protect specific features of natural or culture heritage importance.
- Gathering and moving animals.

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Question and Answer Session

Helen Armstrong (Forest Research FCS) – Cattle in Woodlands: A GB survey of who is doing what & why

Q: Anna Nicolson – What was the season when her sites were visited?
A: Very varied – in general in England/Wales more summer grazing but in Scotland more winter grazing. This was probably because grazing objectives in England and Wales were mostly for conservation and in Scotland for shelter.

Q: Kenny Nelson – Did any of the survey sites use cattle for bracken control and were there any associated health problems?
A: Nothing noted on the health issue. Will get back to him on bracken after interrogating the database.
Donald Henry A: Using feedblocks on bracken areas encourages cattle to break bracken up particularly exposing it to frost damage.

Tony Boyd (Camusnagul & Achaphubuil Crofting Trust) – Livestock in woodlands the crofters perspective

Q: Donald Kennedy – I was involved in planning the Camusnagl and Achaphubuil croft scheme but not in the subsequent management. It was set up with multiple objectives but also Chequered Skipper in particular (as Lochaber is hotspot for Chequered Skipper). There was one record on the area at the time. Has the scheme been successful in encouraging more?
A: Yes! Last year there were 12 records monitored by local people. Also regeneration happening and livestock being used to reduce some of the excessive regen.

David Whitaker & Donald Hendry (Glen Garry Cattle Grazing Project) – Livestock in woodlands the foresters perspective

Q: Ruth Anderson - What age are the cattle?
A: Donald Hendry – Young animals used but hopefully if the 30 month ban is ended later this summer some of them will be taken to 30 months and beyond.

Q: Any deer fences involved?
A: Donald Hendry: No. Two barbed wired and one electric wire used to contain cattle. No deer seen in enclosure since cattle have been present.

James Ogilvie (Forestry Commission Scotland) – SFGS Stewardship Grant – Controlled livestock grazing in woodlands

Q: Una Urquhart - What is an approved farm conservation advisor?

A: James Ogilvie - Una is one! FWAG, SAC etc. No plans for a registration scheme but will be left at discretion of the conservators.

Q: Ruth Anderson – What is the 'X' in non-standard costs?
A: James Ogilvie - Needs to compete with current stock exclusion rates. Potentially £50 lower limit - £100+ upper limit but depends on pilot trials.

Fiona Milne to all speakers – Has any one experienced conflict between livestock and the public?

Donald Hendry - Reason for keeping non-breeding stock at Glengarry is because breeding stock are more aggressive particularly when approached by people and dogs.
Helen Armstrong – Generally most feedback from the survey was about dogs vs cattle but dogs probably would come off worst.
Lucy Sumsion – GAP project probably has a lot of info on this.

Questioner?: Particularly concerned about the new Scottish Outdoor Access Code and conflict between access and dogs.
A: Lucy Sumsion - Most farmers concerned about cattle impact on dogs rather than dogs worrying cattle.

Q: Kate Holl – How will the pilot grant be integrated with LMCs? E.g. to what extent will this be incorporated into measures within LMCs?
A: James Ogilvie – New S9 measure won't be integrated with LMCs but will cover woods not covered by LMCs. This could be something trialled in the pilot. Bottom line is the same management can't be double funded. Ceiling on LMCs is 30Ha whereas S9 likely to be targeted at bigger woods
Lucy Sumsion- Important for both agencies to sort out treatment of open space around woodlands which is often the most important part but might otherwise be excluded from SFGS or LMC woodland measures i.e. falls between two stools.

Q: Kate Holl – How will monitoring be done?
A: James Ogilvie: Existing management plans include monitoring requirement and therefore many of the standard monitoring requirements will apply. The pilot will determine what to monitor. It will likely be aimed at future condition after 5yrs and 10 yrs. Key is to ensure movement of woodland in right direction i.e. outcomes rather than outputs.
Lucy Sumsion – WHWGP hope to use experience of SAC forest of Spey monitoring.

Q: Ian Nugent, – Environmental stewardship schemes in England face difficulty as woodland is not being included in SFP. How is it going to apply in Scotland?
A: SEERAD rep– Uncertain as yet.
Ian Glen - Need to know how we stand on SFP particularly when dealing with short term lets in woodland

Q: Syd House - How does Tony Waterhouse think different departments work together since 10 years ago?
A: Tony Waterhouse – big changes. With respect to government support for woodland grazing, 5 years ago it was like the Berlin wall. There is now a hole in the wall but we are still not sure how to get through it. SFP is simple but made much more complex by incorporating woodlands.
We shall probably look back on 2004-2006 period as a dramatic time - a move to much more flexibility for land managers to manage land according to it's limitations.

Q: Tony Boyd – Wild boar are game? Does that mean they don't go through slaughter houses etc. and treated as venison?
A: Margaret Lister - If farmed not treated as game. Has to be slaughtered as livestock. Need a pre-slaughter inspection by a vet. However, consumer often perceives the meat as game rather than pork so this affects the marketing of the meat.

AFTERNOON WORKSHOP SESSIONS

During the afternoon session delegates were able to attend two different workshops out of a choice of five. Numbers were generally limited to approximately 20 per workshop, however, due to the total numbers attending on the day and the popularity of certain workshops some of the sessions were more heavily subscribed than others. Each workshop was run twice. The choice of workshops were as follows with the workshop leaders names following the title:

WORKSHOP 1: Using pigs as a scarification tool – Chloe Randall, Dunlossit Estate

WORKSHOP 2: Sheep and their role in woodland grazing – Meg Pollock, SAC

WORKSHOP 3: Animal husbandry & welfare – Margaret Lister, Dalriada Veterinary Surgery & Niall Campbell, SAC

WORKSHOP 4: Management planning & monitoring – Tony Waterhouse, SAC

WORKSHOP 5: Management of birch regeneration –Peter Quelch, FCS

WORKSHOP 1 – Using pigs as a scarification tool

Chloe Randall - Dunlossit Estate, Islay

Summary Report

The following summary covers a number of points raised at the 'Using Pigs as a Scarification Tool' workshop.

1. Pig Breeds:
Traditional Breeds are used as they are best suited to the outdoors and the Argyll climate. Berkshire, Tamworth, Large Black and Middle White breeds are used at Dunlossit. Your choice of breed should be taken on what pig breed you best empathise with – all pigs root; all traditional breeds are probably suited to the outdoor life – so choose a pig with a personality that you like! Shelters need to be provided in each grazing area for the pigs to sleep in and avoid getting sunburn – although many pigs prefer to sleep rough. This is also a requirement of the Animal Welfare Code. Shelters can be almost anything, ranging from a Nissan Hut Style to simply large straw bales with a Plywood or box-profile roof.

2. Stocking rate:
Recommendations: never less than two pigs (family or same age and same sex). For a small unit 4-6 pigs is a useful number; for larger units anything from 12-20. Generally influenced by site conditions, purpose, soil type, age and number of pigs available, and length of time of the project. Each case is individual and most pig owners will know what number best suits their site needs- a case of trial.

3. Feeding:
Food supplements are necessary for management and to ensure that the pigs get a balanced diet. Distribute on the ground to encourage rooting, choose a different area each time and focus on areas of vegetation where the pigs have not been active. Great piles of brash can be destroyed by hungry pigs, and they have a gratifying habit of chewing up tree stumps. There is to be no feeding of domestic food waste - it is carefully controlled by law and the pig owner's greatest worry is that someone will carelessly throw proscribed material into a pig area.

4. Scarification Time:
Leave the pigs in until about two thirds of the site is scarified – 6 to 8 weeks approximately, if you have a realistic number of pigs and size of plot! - then move on to avoid boredom (on the part of the pigs). Signs of boredom include escaping pigs (in some cases, so bad that their keepers stick movement licences on their backs!). Escapees usually return to sleep or eat (but some never do . . .). Some discussion took place on soil enrichment; it appears to depend on the soil type, drainage, time the pigs have spent in the unit and the climate. People who had used pigs to clear garden plots seemed to find this a greater problem than where pigs roam in larger areas.

5. Fencing:
Wire and Rylock best, electric fencing is very labour intensive and if the pigs are not trained to avoid them in their early stages of development, they will walk through them – or short them with ingenious use of troughs, etc. A strand of barbed wire is effective at snout height – but not if other livestock are to be in the same area.

6. Grazing:
Bracken control and woodland scarification as a primary site preparation tool. Although pig bracken control can be slower than the use of sprays, it complements evolution – a

gradual change is effected, rather than simple extermination of one species. In planted woodland (tubed trees) pigs are effective for weed control and do not interfere with the trees – unless left for too long in the compartment. Where browsing of tree saplings has occurred, it has not been clear whether pigs show any preference for a particular species.

Some farmers and woodland managers expressed concern that they did not wish to own pigs but wished to acquire their services. Dunlossit is trying to find funding to assist the development of a 'Flying Pig Scarification Squad' Service to meet the needs of those wishing to do herbage/ woodland control. Acquiring pigs can be difficult; disposing of them can be impossible.

7. Economics:
At Dunlossit, pig food and vet costs are just about covered by meat sales, but essentially the pigs are used as foresters. A discretionary grant has been acquired from a Forestry grant scheme at £80/ha of scarified woodland and classified as a one off payment. Other income streams are possible - people like pigs, and rare breeds attract protection in their own right. One of the distilleries on Islay sponsors the Middle White breed through a bottling of "Bruichladdich Babe;" the estate's Middle White boar is owned by a pig fancier and kept "at livery" on the estate.
Access to slaughterhouses and abattoirs were discussed, not every slaughterhouse will take pigs and if they do they might have size limitations or colour prejudice. There was also concern about the transport of pigs, there are very susceptible to stress and this affects the quality of the meat. You can slaughter your own pig provided it is done humanely and only consumed by you or your immediate family. If anyone else eats the meat you have broken the law.

Farming of wild boar and pigs were discussed in terms of meat, pig meat being marketed as pork and wild boar marketed as game.

8. Wildlife Benefits:
Birds appear to benefit from pigs as well as invertebrates along with plants such as Blue bells, Snowdrops and Primroses.

9. Other discussion points:
Pigs can swim, some pigs can suffer from acorn poisoning if not brought up in oak woods and some can suffer the ill effects of a bracken diet. Welfare of the pigs is important and they should be inspected daily.

WORKSHOP 2 - Sheep and their role in woodland grazing

Meg Pollock, Scottish Agricultural College

The following is a copy of the PowerPoint presentation that Meg gave prior to setting a number of questions for the groups to discuss.

Introduction

Traditionally, conservationists and foresters thought that grazing livestock and woodlands should not mix at all. However, there has been a change in opinion recently, with people starting to accept that, at appropriate levels, grazing can be beneficial for woodlands. However, sheep still seem to be getting a bad press, and many conservationists favour the use of cattle over sheep. Is this justified?

The overall aim for this session was to discuss the role of sheep grazing in woodland; first a brief outline of a study done by SAC on grazing in birch woodlands was given, and then we discussed two questions:

1) How good are sheep at doing different jobs in woodland, compared to cattle?
2) What are the problems of keeping sheep in woodland compared to cattle?

SAC's work on the impact of livestock in regenerating birch woodlands

A number of sites were surveyed where regenerating birch woodlands were grazed by sheep or by sheep and cattle. The aim was to determine the circumstances where livestock and woodlands can be combined sustainably, i.e. successful tree regeneration in the presence of livestock. In particular, I wanted to know how stocking density and the quality and quantity of sward forage influence the amount of browsing on saplings.

Fig. 1 shows the sites studied: four had sheep and cattle present, three had sheep only. Deer (red and roe) were also present, but not in particularly high numbers. At each site I interviewed the farmer to find out the numbers of animals, the area of the site, and the length of time the animals were allowed to graze there. The majority of sites were large, with the woodland making up only a small proportion of the total area. Regeneration of birch usually occurred in heathland adjacent to mature birch woodlands.

I sampled the amount of 'good quality' biomass (i.e. green material from bent-fescue type swards) in September, and assessed the amount of browsing on birch saplings.

Livestock Units and Available Forage

The traditional method of describing grazing at a site is to use stocking rate (e.g. 1 ewe per ha). However, stocking rate does not provide any information on the requirements of the animals or the productivity of the site. Instead of stocking rate, I used an index of how productive the site was relative to the requirements of the animals grazing it. The methods I used to estimate the forage available per animal follow:

A livestock Unit (LU) allows you to compare different animals according to their feed requirements; the standard (1 LU) is a milking dairy cow; she needs roughly 13 kg of dry matter per day. A ewe only needs 8 % of the dairy cow's ration, so a ewe is 0.08 LU, while a beef bullock or heifer needs 65 % of the dairy cow's ratio, making it 0.65 LU. This means that eight ewes will eat approximately the same amount as one heifer. These are values from SAC's farm management handbook (Chadwick, 2000); they're different to the European subsidy livestock units.

Imagine a hill park of 100 ha, grazed by 50 ewes all year round and 20 heifers for 92 days during the summer. Imagine that if you sampled the good quality biomass (by this I mean green material from bent-fescue type swards) in September, you'd find that there is ½ a tonne per ha. When calculating the amount of good quality biomass, the area of the site where good quality forage is present should be taken into account.

First I calculate the Livestock Unit days (Table 1), by multiplying the number of animals by the appropriate livestock unit by the number of days they're grazing: giving 1440 LU days (sheep) and 1196 LU days (cattle). I divide the total LU days by the number of ha to get a total of 26.4 LU days per ha.

We know there's ½ a tonne of live biomass (500 kg) per ha (Table 2), and I divide this by the 26.4 LU days per ha to get 19 kg live biomass per LU unit day, i.e. an index of how much forage is available relative to the animals' requirements.

This is just a rough index because of course the amount of forage changes throughout the year. However by sampling in September you find out the biomass left after summer production and offtake and get an idea of how much forage will be available for the winter, when no growth takes place.

Results

If we look at sheep only, there is no obvious relationship between biomass per LU day and amount of browsing (Fig 2). For cattle alone, again there is no strong relationship between biomass per LU and browsing. When we look at sheep and cattle combined, a logical relationship appears: when forage is plentiful relative to the animals' requirements, browsing on saplings is limited, but when forage is restricted, considerably more browsing occurs (Pollock et al, 2005).

What is important is that we only see this relationship when total livestock units are used, suggesting that cattle and sheep browse on saplings to a similar extent.

These methods can be used to generate a starting point of stocking density. After the livestock have been put on site, some form of monitoring is essential to check that the objectives are being met. It is likely that the stocking density will need to be adjusted through time.

Discussion

While SAC's work suggests that cattle and sheep browse on saplings similarly, there are major differences between cattle and sheep: for instance in the way they eat, their trampling impact, and their dunging impact. The group were asked to bear these aspects in mind during the discussion of how good are sheep, compared to cattle, at doing different jobs in woodland; and the problems of keeping sheep, compared to cattle in woodlands.

Further research required

The work by SAC suggests, but does not prove, that when animal food requirements and site productivity are taken into account, cattle and sheep browse on saplings to a similar extent. It would be good to run replicated experiments to test this.

An aspect that came up frequently in the group discussions was the season that livestock should be grazed in woodlands. Sward forage is plentiful in summer and limited in winter.

Logically, grazing woodlands in summer would be expected to result in less browsing on trees. However, a study of rowan regeneration on blaeberry moorlands in the North of England (Welch, 2003) suggested that regeneration was much more prolific in winter-grazed than summer-grazed plots, perhaps because saplings can cope better with browsing in winter than in summer. More research is needed to investigate this.

Tables

Table 1: *Calculation of Livestock Unit days per ha*

		No. animals	No. days	LU days	LU days/ha
sheep	0.08	50	360	1440	14.4
cattle	0.65	20	92	1196	12.0
				2636	26.4

Table 2: *Calculation of Biomass per Livestock Unit day*

Biomass (kg / ha)	500
LU days per ha	26.4
Biomass per LU day (kg / LU day)	19.0

Figures

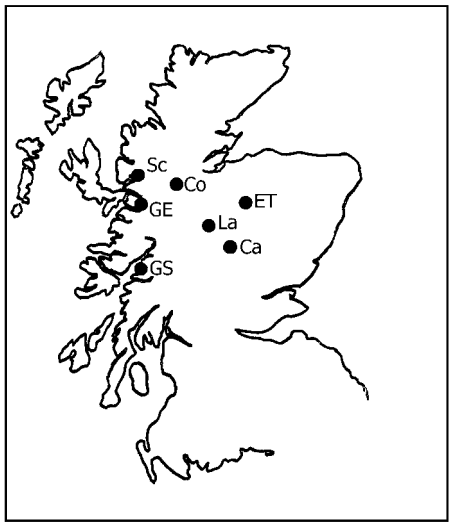
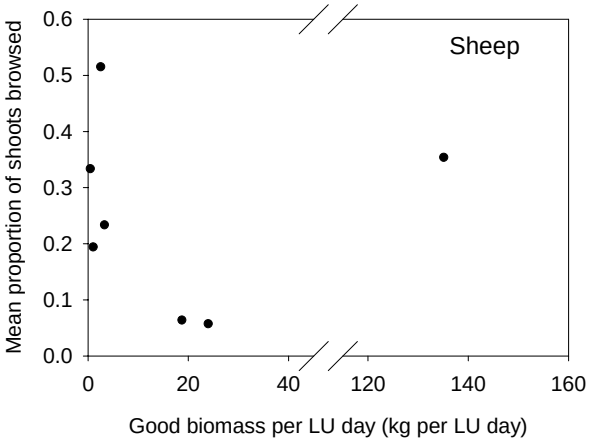
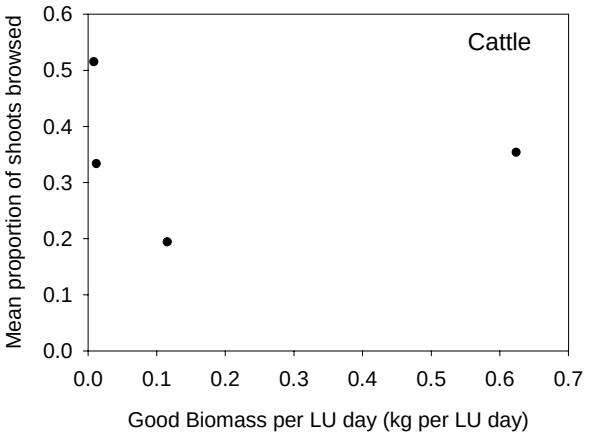


Fig. 1: *Location of sites used in this study where birch regeneration is occurring in the presence of sheep, or sheep and cattle.*





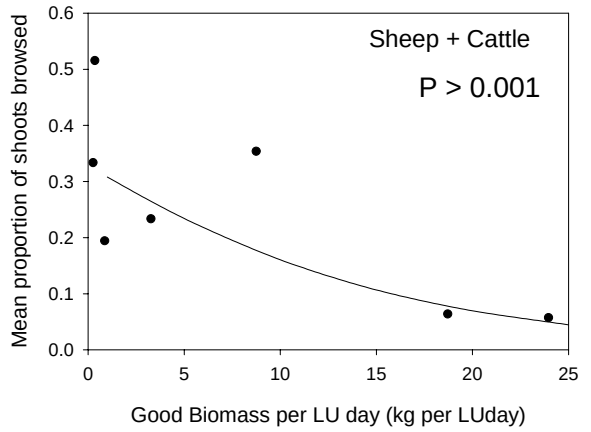


Fig. 2: *Top: Good Biomass per LU day (sheep only) and proportion of birch shoots browsed. Middle: Good Biomass per LU day (cattle only) and proportion of birch shoots browsed. Bottom: Good Biomass per LU day (sheep and cattle) and proportion of shoots browsed.*

References

Chadwick, L. (ed) (2000) The farm management handbook 2000/2001, 21st edn. Scottish Agricultural College, Edinburgh

Pollock, M.L., Milner, J.M., Waterhouse, A., Holland, J.P., Legg, C.J. (2005) Impacts of livestock in regenerating upland birch woodlands in Scotland. Biological Conservation, 123(4), 443-452

Welch, D. (2003) An example of the seasonal impact of sheep on colonisation by deciduous trees. Botanical Journal of Scotland 55, 259-267.

QUESTIONS POSED BY MEG POLLOCK TO WORKSHOP MEMBERS TO DISCUSS:

1. How good are sheep at doing the following different jobs in woodland compared to cattle?

Creating regeneration niches by trampling?

Group 1

- If you want to you can do it with more sheep. i.e. mob flock!
- Also depends on time of year. Sheep are very particular/ selective
- Can control and predict their grazing behaviour so can use them at particular times of year. Potentially more controllable than cattle.
- So either herbivore can be used depending on your objective
- Easier to create niches with cattle
- Many occasions e.g. wet ground where mix favours sheep over cattle
- Cattle OK for general conditions without too much knowledge on ground and objectives. But if you know your ground and know your objectives sheep can be used to good effect.

Group 2

- Use cattle instead of sheep.
- Depends on how many sheep involved.
- Depends on ground type but generally cattle are better.
- Depends on what livestock is available.
- Can send sheep in first to take the better grass off then send in cattle which would be forced on to the rougher ground – this is good farming practice.
- Sheep are more selective grazers.

Reducing competition between seedlings and ground vegetation?

Group 1

- Over grazing can not only graze out current seedlings but also create a tight grassy sward, preventing future seeds reaching suitable conditions for germination.
- Seedlings also more favoured by grazing animals than saplings/trees.
- Potentially better chance of reducing grasses by sheep than cattle as easier to handle and easier to insert at particular times of year.
- Autumn sheep grazing probably better for regeneration and ground flora.

Group 2

- No difference between livestock types.
- Depends on vegetation.
- If rough vegetation cattle could be better.
- All to do with stocking density and balance.
- Needs to be finely tuned to the site and does not matter whether sheep or cattle.

Maintaining mosaic of vegetation types and not having negative effect on saplings?

Group 1

- Both cattle and sheep
- Moderate grazing likely to create more diversity
- But can create desired effect by seasonal focused grazing.
- Sheep can still pick on trees even though good sward – mixed views expressed. Often depends on site factors and stock type involved.
- Traditionally mixed grazing was the norm and woodlands were part of the pasture.

Group 2

- Depends on site. Low density would result in relatively little diversity but high density would result in variety of grass swards as seedlings/samplings would be removed. Moderate grazing can create a more diverse mix.
- Adhoc management on an annual basis can be better than a more planned/rigid management plan. Flexibility is the key.
- In some cases high density might not remove any trees e.g. Hebridean sheep on Culloden Moor. Regeneration on clear felled site can be so dense it is impossible to remove the regeneration by livestock grazing.
- Shropshire sheep in Christmas tree (Douglas fir) plantation did not touch the trees (trees 6-8 inches high).
- Both livestock types equally important.

Controlling scrub encroachment?

Group 1

- Both but cattle probably the better option because they are bigger and involves more physical trampling.
- Mechanical means if no livestock available.
- Ponies and goats are also options.
- Sheep unlikely to do it unless there is nothing else to eat.
- When trees are young sheep will find it easier
- Fire can be effective!

Group 2

- Cattle are better because bigger and physical damage
- One site observed with deer, goats, sheep but scrub still expanding because of thorny scrub protecting the woodland.
- Pigs do the job!
- Goats and ponies also.

2. Problems and Issues about keeping domestic livestock in woodlands?

Gathering

Group 1

- Cattle can be called and moved by quad bike. Sheep - you need a dog.
- Thorny shrubs possibly removed from upland sites because sheep get entangled and they've been cut out over the years. Yet, we have heard previously in the day how thorny shrubs are often good at protecting regenerating trees in presence of grazing livestock (Vera hypothesis).

Group 2

- Sheep are more difficult to see in woodlands and more difficult to get out than cattle.
- Cattle tend to group together whereas sheep will spread out.
- Feeding helps to control distribution in woodland.
- Cattle have more defined tracks.
- Deer control in woodlands really difficult if sheep spread out as well.
- Cattle move through a woodland differently than they would in the open.
- Cattle have a good sense of smell and can track each other in the wood if become separated
- Sheep don't like each other! Cattle are more sociable

Insect Pests

Group 1

- A problem for sheep

Group 2

- Because cattle are more valuable folk are more cautious of putting cattle in bracken infested woodland than sheep – due to tick infestation etc.
- Fly strike affect sheep in woods and much harder to detect and clip out.
- Having open space associated with the woodland means stock can move out when insects get bad. Sheep with access to woodland and hill will shelter in the woodland during winter and move onto the hill during summer.

Feeding

Group 1

- Use feeding sites to manage sheep and cattle distribution in the woodland.
- Because woodlands are remnants on unproductive steep ground then problems for cattle getting access and getting sufficient food on this type of ground.

Group 2

- A lot harder to feed sheep as they are more spread out. Easier for cattle as more grouped
- Depends on the ground conditions.
- Problems with poaching with cattle particularly in wetter west
- Water is an issue for cattle compared to sheep. Sheep can survive where there is not any running water.

Checking Stock

Group 1

- Can be difficult in woodland. Sheep more difficult to find but perhaps don't need to check them as often as cattle? Therefore, equal problems and issues between livestock type.
- Cattle have other more intensive labour requirements though cattle are generally healthier animals (than sheep) and therefore not likely to be checked as often for veterinary purposes.
- In summary – benefits of each varies.

Group 2

- Same as answers to above stock handling issues.
- Cattle – check once a day where as sheep not checked so often.
- Cattle more expensive loss if they die!
- Checking frequency depends on conditions they are in.

Poisonous Plants

Group 1

- Depends on time of year.
- Rhododendrons can be a problem
- Acorns a problem for cattle particularly young stock exposed to heavy crop for first time. Otherwise, if used to it, not such a problem. Excess is the problem.
- Ivy a problem for sheep.
- Bracken? Sheep can often have access to grass under bracken when it has died down.

Group 2

- No difference between livestock types. Equally affected
- Oak mast/acorns can be poisonous.
- Sheep can be poisoned by yews. Cattle also; depends on how tightly they are grazed.
- If they have something better to eat stock will tend to avoid poisonous plants. Young stock not used to poisonous plants and exposed for first time are at risk.
- Hunger will drive stock to eating poisonous plants – because of the green bite.

Fencing

Group 2

- Cheaper for cattle.

Costs

Group 2

- Assume already got stock, gathering sheep labour intensive but cattle handling facilities more expensive.
- Should question be profitability? Both are bolt on jobs to an existing business so sharing fixed costs with rest of the business.
- A lot of variable pros and cons for each type.
- Consensus is that it is an increasingly less profitable business.

Public and Dogs

Group 1

- A problem! Sheep worrying, lost sheep, sheep rustling, difficult to detect culprits.
- People tend to steer clear of cattle so less problems. Camping debris can damage cattle e.g. discarded tins cut hooves.
- People cut trees for campfires or bring pallets which leaves nails that can damage hooves.
- Cattle can fend off dogs and cause damage to public in process.

Group 2

- Sheep are easier than cattle with public e.g. E-coli, cattle fending off dogs
- Dogs and sheep don't get on.
- Cattle damage dogs. Dogs damage sheep.
- Cattle damage paths. Sheep can re-instate them!

Other issues

Woodland on steep slope with bryophyte interest. Cattle find it difficult on the ground so sheep are better in this case.

Tick-sheet summaries

Which herbivore (or combination of herbivores) is best at performing the following tasks in woodland?

Group 1

Task	Sheep	Cattle	Both	Neither
Creating regeneration niches by trampling				
Reducing competition btw. seedlings and ground vegetation				
Maintaining a mosaic of veg. types and tree saplings				
Controlling scrub encroachment				

Group 2

Task	Sheep	Cattle	Both	Neither
Creating regeneration niches by trampling				
Reducing competition btw. seedlings and ground vegetation				
Maintaining a mosaic of veg. types and tree saplings				
Controlling scrub encroachment				

The following issues are problematic for which herbivore?

Group 1

Issue	Sheep	Cattle
Gathering		
Insect pests		
Feeding		
Checking stock		
Poisonous plants		
Erosion		
Costs		
Fencing		
Public access (+dogs)		

Group 2

Issue	Sheep	Cattle
Gathering		
Insect pests		
Feeding		
Checking stock		
Poisonous plants		
Deer control		
Water		
Fencing		
Public access		

WORKSHOP 3 - Animal husbandry and welfare

Niall Campbell, Scottish Agricultural College &

Margaret Lister, Dalriada Veterinary Surgery

Summary
Two sessions were held and 14 attended the first session and 12 for the second. A straw poll revealed that approximately 75% had some experience of cattle and sheep while the remainder had little or no experience.

NIALL CAMPBELL:

Cattle benefit from being kept in woodland as they fare better than being kept inside a shed. In terms of woodland regeneration it is preferred to have cattle in the woodland as it benefits the woodland also. Ranges from conifers with little understorey vegetation to native trees with good grazing.

Three systems for bringing stock into woodland:

- **Breeding herd** but not a good idea to calve in the woods. A higher management requirement involving daily checks. Tagging and safety requirements. Are you able to graze all year round? Calf to sell. Potentially easier to handle. Better prospect financially.
- **Young stock** eg bought in bullocks. Easier to manage flat rate feeding. Could be harder to handle unless visited daily. Potentially poorer returns. 30 month restriction but changing later this year. Easier system. Keep close contact. Poorer returns.
- **Using others stock**. Renting out to a third party. Easiest option management passed to others. Can be difficult to identify suitable partner could be little or no return financially for you.

Facilities required for any livestock.

- **Water** can be a problem as some woods have none.
- **Handling facilities**. £3700 per handling system for the Glengarry facility shown earlier. Mobile facilities are available and have their place with certain systems. Health and safety considerations must be addressed as there is potential for dangerous situations arising.
- **Stock fencing**
- **Access** for feeding, loading and travelling through the woodland. Need to consider public access issues also.

MARGARET LISTER: Has worked in Lochgilphead for 20 years and has witnessed the proportions of agricultural work decline from around 60% of workload to now around nearer 20%. Has no specific experience of grazing animals in woodland but general principles of animal husbandry will apply.

Health Plans/Programmes There is a modern trend to draw up Health Programmes and whilst these can be useful avoid the tendency to consider them as merely paper exercises. They will concentrate your mind and may point you towards obvious problems otherwise overlooked. Consider the 3 elements of Food, Water and Shelter and you will have addressed 90% of your problems.

Templates for Health Programmes are available from eg Sheep Veterinary Society, or……http://www.vet.ed.ac.uk/animalwelfare/husbandry8.htm

Parasitic diseases to consider ;

External

Lice: Scratching and hair loss. For confirmation send a wool sample from sheep for veterinary analysis. Correct identification requires close examination. It has a small brown head with legs and a body. Preventive measures are preferred. Lice like thick coats. It is host specific and spreads from one animal to another directly or can be harboured in old buildings. Relatively easy to treat with spot ons, pour ons and injections.

Ticks: There are 3 stages in the life cycle of the tick. Diseases are spread by the tick such as redwater, Lymes disease, tick pyaemia, louping ill and tick borne fever.

- **Tick borne fever** causes a high temperature and flu' like symptoms but imuno
- suppresses animal and makes it more vulnerable to other tick borne diseases.
- **Louping ill.** Occurs in sheep and cattle and is a virus causing inflammation in the brain. Cattle will probably die but even if they recover are never the "full shilling" after. Vaccine is available but is expensive at around £3 a shot. Previously the vaccine was subsidised by the manufacturers.
- **Redwater** affects cattle only and breaks down the red blood cells giving the characteristic red wine appearance to the urine. Animal becomes constipated, dehydrated and weak and can die from it. Drugs are available if caught early enough.
- **Tick pyaemia** in lambs causes abscesses which are difficult to heal. Antibotics can be successful if caught early enough.
- **Lymes disease** is a nasty disease affecting humans and is reportedly bad in parts of Argyll particularly Mull.
- Immunity to tick borne infections can be achieved in animals which have been acclimatised to the area. This occurs as the animals receive many bites over a period of time and are able to cope with the little and often approach to the bites. Problems will occur in bought in animals which are not acclimatised to the area. Problems can flare up even in animals which are thought to have immunity when after several years of light infestation a build up of ticks occurs and attacks the animals.

Blow fly strike affects sheep primarily but can affect cattle. Occurs normally from June on with eggs being laid in dirty, soiled fleeces as well as around wounds eg from clipping. Dips will control primary cause.

Scab. This was almost controlled with compulsory dipping but this ended in 1992. Scab has now reappeared and is a significant problem in many areas. It is caused by a mite which is severely irritating. Veterinary samples are needed to confirm definitively. Illegal not to treat. Movement restrictions apply unless the affected animals are being moved to slaughter, or treatment. Outbreaks are more prevalent in winter as the mites appear not to like heat. Infectious material can live off the sheep for up to a month.

Internal

Fluke an internal parasite that can affect cattle, sheep, deer, rabbits and hares. It has no direct life cycle but is dependent on an intermediate host – the snail. Animals pick up the immature fluke in the autumn and this stage can cause a lot of damage as the fluke travels in large numbers through the liver. Manifested as a loss of weight and anaemia, drink more water, go off their food and die. Chronic fluke is seen when

mature fluke are found in the liver. They cause fibrosis of the liver which leads to weight loss, anaemia and fluid gathering in body, which often shows as a pocket of fluid under the chin. Treatment is becoming more difficult since fluke have started to show resistance to one of the most commonly used drugs, triclabendazole.

Summer mastitis in cattle can be a problem caused by a puss producing bacteria which forms an abscess in the udder. This infection is readily spread by flies.

GENERAL DISCUSSION.

- Sheep were quoted as being used in a plantation of trees destined for the Christmas tree market. Over a period of 6 years there were very little health problems recorded, fly problems seemed to be reduced by sheep brushing against the trees. Shropshire sheep were discovered to be beneficial in Christmas tree plantations, as they do not eat pine trees.
- Little evidence of a prevalence of disease in woods rather the opposite, as animals kept in woodlands tend to be healthier. One problem is eye infections particularly New Forest Disease but this can be successfully treated and cleared up overnight. NFD manifests itself with runny and sore eyes with ulcers in the eye surrounded by a red area. Flies spread the infection. One system of prevention is to use eartags impregnated with insecticide to help control fly infestation.
- A good management system is needed to monitor stock and be alert to signs of diseases. Feeding sheep on a regular basis is a good way of ensuring that they are being monitored and will provide an early warning system of things going awry. This presupposes that the sheep have been trained to feed and will come to the feed when offered. Not always a good idea to use a dog in woods better to get sheep trained to come to feed.
- Cattle are beneficial to woods and woods for cattle, but management comes with responsibility. Don't be afraid of putting stock into woods but be aware of the potential problems. If a good health policy is adopted most, if not all, of these conditions will not cause a problem in practice.

WORKSHOP 4 - Management planning and monitoring

Tony Waterhouse, Scottish Agricultural College

The following is a copy of a PowerPoint presentation that was given at the start of the workshop, although time constraints meant that not all the presentation was shown.

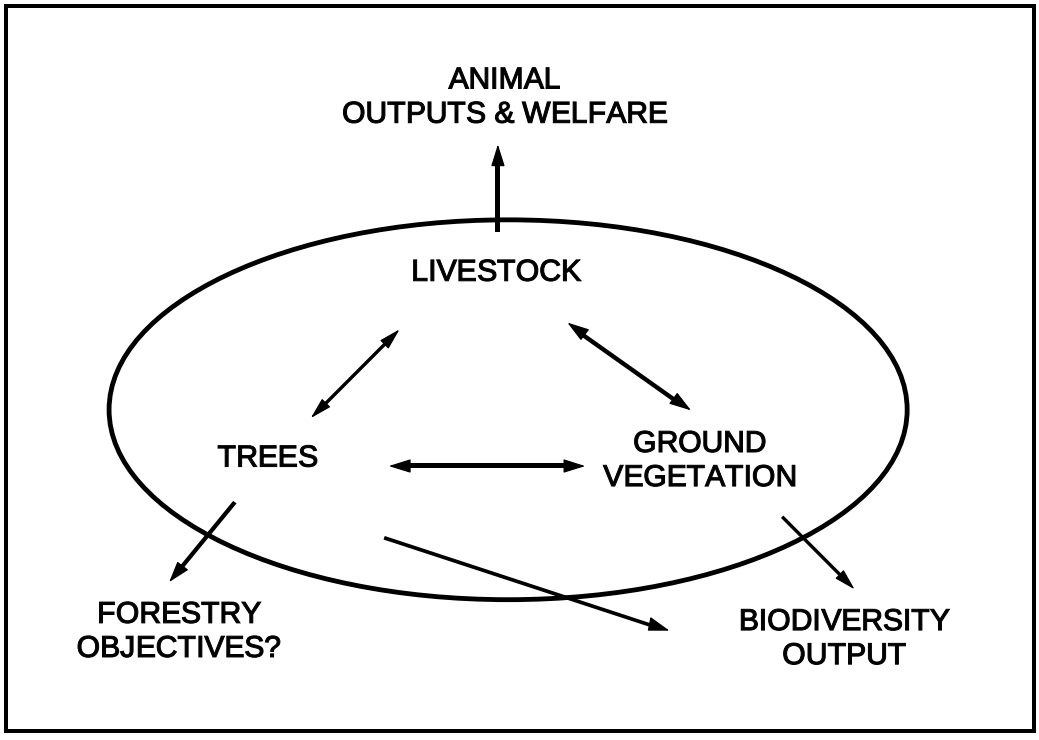
PLANNING & MONITORING

- Planning
- Monitoring

Are they separate or part of a combined process?

- Need to plan to manage
- Need to monitor to manage
- Need to manage to achieve objectives

PLAN – MANAGE – MONITOR – MANAGE – MONITOR



WHAT IS GETTING MANAGED?

- The livestock
- The vegetation they like to eat
- The vegetation they like to eat less
- The short, medium and long term nature of these resources
- The trees

The grant controlling process and the all the people involved

THE PLANNING PROCESS

- Objective setting
- Planning management
- Planning of monitoring

THE IMPLEMENTATION PROCESS

- Implementation
- Monitoring
- Reporting
- Modifying management and/or monitoring

MONITORING

- Has the management met objectives?
    - Yes – brownie points, grant, real benefit
    - No – why not, lessons learnt, modify management
- Monitoring as a management tool

What are the things we can monitor?

- Animals – weights, thriftiness
- Grazed vegetation – measurements, condition
- Seedlings to young trees – heights, browsing, condition, thriftiness
- Older trees
- Wildlife – numbers, present/absence, thriftiness
- Livestock impacts – ground disturbance, patterns of grazing/browsing/trampling
- Fences, water-points
- Indicators of impact

Sustainably grazing a woodland is not the same as:

Managing a field with a few trees in it
Managing a woodland with a few deer in it

KEY PLANNING NEEDS

- What are the objectives?
- What indicators or factors can be used to devise a management plan? e.g. ground vegetation biomass utilisation as a target
- How much livestock impact, season?
- Pragmatic ways to match objectives with reality
- How do we solve 'how many livestock and for how long and when' question?
- Why do we need to monitor anything to make this work?

- If monitoring for management and monitoring for compliance are the same then it makes life easier and cheaper

- Involving the manager in monitoring improves the usefulness and application of the information

- Farmers hate numerical monitoring but are good at condition assessments

- Farmers are good at managing a field for agricultural use but for many managing a woodland for combined use may be new

- Planning for (and monitoring of) long term, or difficult to measure objectives is difficult – e.g. trees reaching canopy stage or butterfly numbers

- Need intermediate objectives (e.g. habitat) and indicators of management impact (too little, just right, too much) – these need to relate to objectives for the site management system

Monitoring has three main purposes:

1. To understand and communicate what is going on (good for ecologists and scientists)

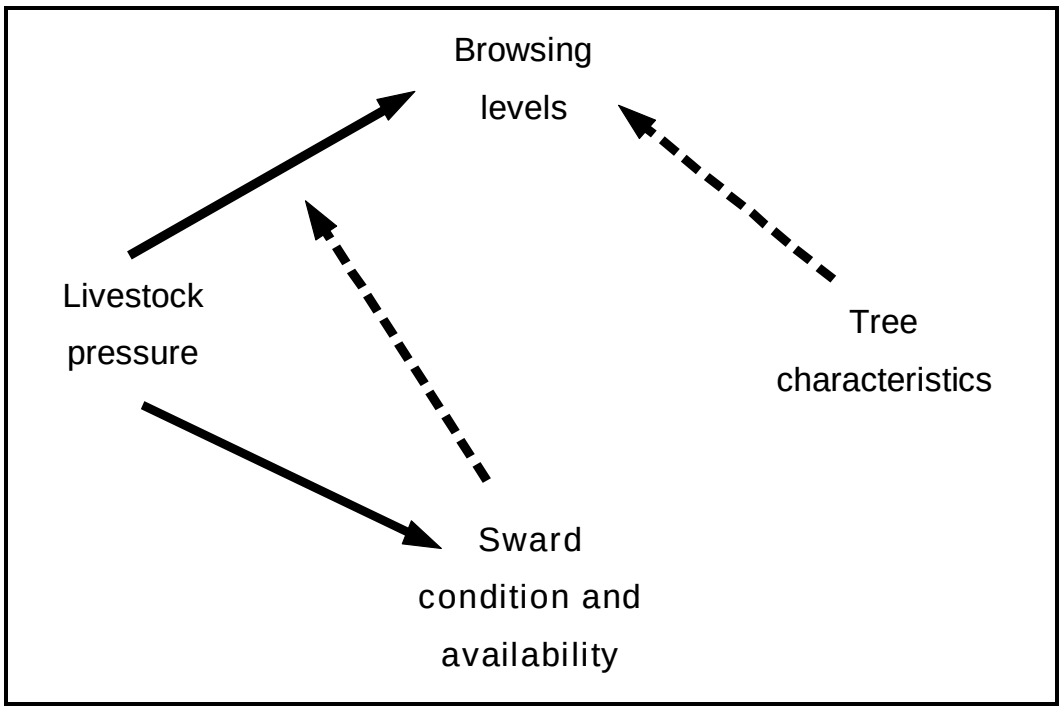
2. To manage the system

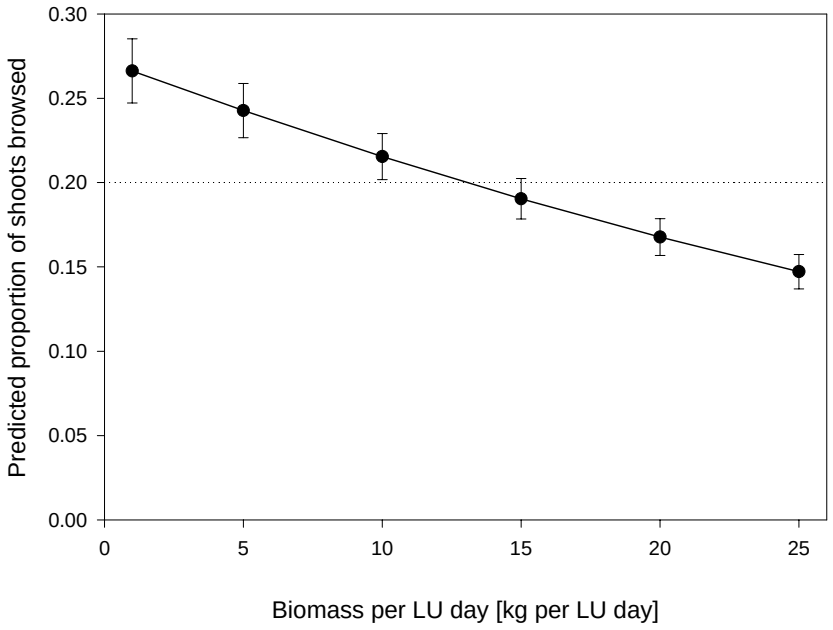
3. To prove it has worked so that public and private effort can be justified

So what needs to be monitored?

And how?

Livestock and browsing levels – Underlying concept





OPINION is divided on the best method to measure grass growth

Work through a case study:

- Establish some imaginary objectives for a site
- Plan the management system / issues / needs / solutions
- Devise the monitoring system issues / needs / solutions

The following summary covers the points raised during the workshop discussion session.

The group(s) began by considering whether planning and monitoring are separate or part of the same process and quickly agreed that there was a need to plan in order to manage and that monitoring was required to inform management decisions and achieve objectives.

Key planning considerations in relation to grazing with livestock were discussed and broadly defined as**:**

- What are the objectives?
- What indicators or factors should be used to devise a management plan?
- Pragmatic ways are needed to match objectives with reality.
- How do you solve the 'how many livestock, for how long and when?'
- Why do we need to monitor anything to make this work?

The groups were encouraged to provide examples of woodlands, that could to be discusses as case studies, where managed grazing might help to achieve silvicultural or biodiversity objectives and to help explore how planning and monitoring could be applied to these examples.

One case study was worked through per group using the following framework:

- Establish some imaginary objectives for the site.
- Plan the management system /issues/needs/solutions.
- Devise the monitoring system/issues/need/solutions.

Summary of outputs from 'worked' examples:

Monitoring

The groups came up with the following principles that should be considered when drawing up a monitoring programme:

- If monitoring for management and monitoring for compliance are the same then this makes life easier and keeps the cost down.
- Involving the manager in monitoring improves the usefulness and application of the information.
- Farmers hate numerical monitoring but are good at condition assessments
- Farmers are good at managing a field for agricultural use but for many managing a woodland for combined use may be new.
- Planning for (and monitoring of) long term, or difficult to measure objectives is unlikely to be achievable.
- Need intermediate objectives (e.g. habitat) and indicators of management impact (too little, just right, too much) - these need to relate to objectives for the site management system.

Things that could be monitored:

- Animals – weights, thriftiness.
- Grazed vegetation – measurements, condition.
- Seedlings and young trees – heights, browsing, condition.
- Older trees – basal shoots.
- Wildlife – numbers, present/absence.
- Livestock impacts – ground disturbance, patterns of grazing.
- Fences, water points.

How to monitor?

- Photography (fixed point?).
- Visual assessment of livestock condition/weight.
- Sward height/volume – visual assessment or simple measuring tool.
- Tree seedling numbers/condition – sample plots (fixed/random).

WORKSHOP 5 – Management of birch regeneration

Peter Quelch, Forestry Commission Scotland

Aims of workshop:

- To look at the main kinds of birchwoods in the West Highlands
- To examine the ways in which they can be managed
- To make recommendations, for both farm and forest birchwoods

Main types of birchwood:

Soils: As with all native woodlands, stand character is related to soil, drainage and elevation.
Birchwoods vary from tall straight silver birch stands on well drained valley sides, to stunted downy birch scrub at high elevation or on poor/wet soils.
Silver birch grows on good brown earth soils.
Downy birch is very tolerant of poor and wet soil and will grow at the treeline itself, and also will form a wet woodland in acid peats (with the grey willows).

Mixtures: Birchwoods are often in mosaic with either pine or oak, but can also be fairly pure birch, and on an extensive scale.
In a forestry situation, birch can be mixed with sitka spruce in various stand types, especially in second rotation forest stands.

Structure and condition: Birchwood structure can vary from dense thickets to very open wood pasture.
Previous management history, especially past grazing, affects woodland character.
While all birchwoods are good habitat, biodiversity values vary according to past and current management.

Birch stewardship models

- Birch as pure **high forest** stands - well drained soils, accessible, good timber potential.
- **Birch/conifer mixtures** in spruce; timber potential if managed.
- Birch in **extensive birch/pine** seminatural forests (+ or – grazing?)
- Birch **coppice**
- Birch **wood pasture** – very open, many glades, grazed all or part of the stand's life.
- Birch at the **tree-line**
- Birchwood **natural reserves** – low intervention

Discussion Topics

1. Which models/options do you prefer for farm birchwoods

2. Can you think of better wording than 'management options' or 'stewardship models'?

3. How do we develop these models

4. Is extensive forest grazing by cattle a viable future land use?

5. Is there really any scope for birch as timber in the West Highlands

Photo 1: *Dense birch-willow thicket*

Photo 2: *Thicket birch under oak*

Photo 3: *Wet birch woodland*

Photo 4: *Wood pasture birch*

Photo 5: *Wood pasture - dense birch patch*

Photo 6: *Glen Garry - no grazing*

Photo 7: *Glen Garry cattle trial*

Photo 8: *Grazed open burnside, following clearfell*

Photo 9: *Grazed forest wet birch*

Discussion Topics

Can you think of better wording than 'management options' or 'stewardship models'?
There was some confusion about the new term stewardship and options or models for management, and the subject needs more thought and careful introduction to land managers. Options is a useful term as it implies choice, whereas model is also useful as a description of an end point, a good example of that management type of woodland. Some additional models were discussed and added to the list above.

Which models do you prefer for your farm birchwoods?
There was no consensus on this question, as clearly each stand of trees, of woodland, each farm and each situation are unique and require different solutions. No one size fits all in this matter.Having a range of model stewardship options helps owners and advisers come up with what is best in each situation. More work is obviously needed in developing best practice guidance

How do we develop these models?
As above, people were interested in the idea of stewardship of farm woodlands and of model ways of working them, but that needs to be better explained and presented. The Sunart oakwood guide to good stewardship was mentioned as an existing example of this approach. Some models could use birch as a forerunner to other woodland types, eg oakwoods and this has not been much discussed. Several models involve grazing, in fact only the high forest and coppice models would not. PQ will develop these ideas further

Is there really any scope for birch as timber in the West Highlands?
Models involving timber production were discussed, but there was generally a lack of knowledge or experience in producing birch timber among land managers. Most people were concerned that poor wet west highland sites would not produce good timber, but may be OK for firewood. Even firewood production and the undoubted qualities of birch for this were not fully known. A lot more development work is needed before people take this timber aspect seriously. As one participant pointed out even some of the highland sawmillers prefer to import Latvian birch flooring. Community and perhaps farm woodlands may also be able to produce craft birch, bark and non-timber forest products.

Is extensive forest grazing by cattle a viable future land use?
People were very interested in the Glengarry example given in one presentation, and case pictures were given out to the workshop participants. First of all it is necessary to have extensive birchwoods available for grazing – where would these come from? This implied a need to keep creating new habitat either by planting or natural regeneration, or conversion of plantations as at Glengarry.

The livestock aspects of welfare, regulations for handing, sale of products, registration of forest land for IACS, and receipt of farm subsidies for conservation grazing were all discussed. Obviously a new code of practice is needed to cover the non-farm conservation grazing practices. It was essential that the various departments involved collaborated on this aspect, as it was new territory for forestry, agriculture and conservation agencies. For example were open wood pasture stands eligible for single farm payments? Farmers made the point that at present the incentives form any source were usually not enough to attract them into woodland grazing schemes.

The provision of young animals for conservation grazing could become a marketing opportunity for hill farms in other parts of west Scotland, as it was unlikely in the short

term that breeding would take place in the forest herds. Quality free-range meat, possibly organic too, would command a better price perhaps and could be sold in local farmers markets and so on.

General points

Apart from the need to integrate incentives and regulations between government departments, there was a strong plea for careful monitoring and economic costings for the various grazing trials going on. People needed to see costed case studies before they would be convinced to go down that route themselves. This gives a strong role for the WHWGP.

Appendix 1:

WEST HIGHLAND WOODLAND GRAZING PROJECT
Project Report
March 2005

Background
There has been increasing interest in the use of stock grazing to encourage natural regeneration and to enhance the biodiversity of native woodlands. Following the CAP review, there is the possibility that modulated funds may become available for conservation grazing within woodlands through the Scottish Forestry Grant Scheme (SFGS). The need for greater understanding and more guidance on this issue is however urgently needed. It was anticipated that the findings from this project would play a vital role in informing the process.

Aims of this partnership project were to:

- Co-ordinate, review and collate information about current examples of woodland grazing by livestock in the West Highlands.
- Start a minimum of 6 new trials to gain information to better inform advisors on the effects of particular grazing regimes.
- Use those trial sites to pilot test a new form of Woodland Grazing Management Plan (WGMP), which would be applicable to a range of sites regardless of the type of incentive scheme being used.
- Work up typical costs of conservation grazing to feed into SFGS Standard Costs or other incentives to be developed.
- Set up a newsletter as a means of disseminating best practice.
- Hold a Woodland Grazing Conference near the end of the year to summarise project findings for practitioners and advisers.

Preliminary work was undertaken during 2003/4 to establish the demand for, and requirements of, the main part of the project. It was intended that work in 2004/5 would deliver the major outputs, such as the field trials and educational seminar.

Preliminary work undertaken during 2003/4:

1. **Set up steering group for project**. The first meeting of the steering group was held in December 2003, to discuss the way forward for the project in more detail. Group members include representatives from Forestry Commission Scotland, Scottish Natural Heritage, Argyll Farming & Wildlife Advisory Group and Scottish Native Woods. Argyll FWAG is currently acting as the project coordinator. The steering group was expanded to include other interests following the 2004 Woodland Grazing Workshop.

2. **Database of woodland sites**. Use has been made of the existing UK database of woodland grazing sites and other known sites. Additional sites have been identified where woodland grazing is currently not taking place but is felt to be desirable for biodiversity objectives.

3. **Grazing Woodlands Workshop**. A workshop was organised which took place at Stonefield Castle Hotel on February 26th 2004. This event brought together a wide range of people interested in woodland grazing. Most of the audience were from Argyll, and they represented three important land use sectors: farming, forestry and conservation. Other delegates came from further afield to

provide a national perspective on this increasingly important subject. The aims of the workshop were:

- to allow the sharing of current practice
- to identify gaps in our knowledge
- to establish the way forward
- to identify additional members of the steering group

All sectors of the audience supported the development of woodland grazing for the benefits that it can deliver to the farmer and also for the biodiversity benefits that woodland grazing can deliver. Proceedings of the workshop were produced and are available in electronic format by request to the Project Co-ordinator.

4. **Woodland Grazing Update.** This update gave a brief summary of current research trials and projects that relate to woodland grazing in Scotland. The update, distributed at the Stonefield workshop, through the Native Woodland Discussion Group and to others by email, introduced a more integrated approach to the concept of woodland grazing and initiated the idea of sharing good practice and information on a regular basis.

Main Project 2004/5

1. **Woodland Grazing Newsletter.** Second woodland grazing newsletter will be produced in time to be included in the delegates pack at the 2nd Woodland Grazing Workshop on March 10th (see below). In addition there are 476 names on the mailing list for the newsletter, with 290 of these receiving the newsletter via email the remainder will receive a hard copy by post. For a copy of the newsletter contact the Project Co-ordinator.

2. **The Field-based Review** of the current woodland grazing activity was completed in October/November 2004 and gathered information on the following:
    - Objectives for woodland grazing:- farming, woodland, conservation and other e.g. landscape, sporting etc.
    - Management issues relating to:- feeding arrangements, provision of water, fencing requirements, access, handling facilities, animal welfare, grants, monitoring and land tenure
    - The benefits and disadvantages of conservation grazing from the farming, woodland and conservation perspectives.
    - Whether provision of advice to the farmer or grazier was adequate.

    This Field-based Review highlighted various factors that need to be considered and issues that need to be addressed when assessing a site for the need for conservation grazing. Some of the key factor/issues identified were:
    - Type of farming system and what alternatives are available
    - Scale of woodland/enclosure
    - Interaction with adjacent habitat mosaics
    - Topography, geology and climate
    - Land tenure/management
    - Management objectives – farm, conservation and woodland
    - Integration of farming and conservation objectives i.e. a win-win situation
    - Quality of grazing and productivity of the site

- Handling facilities and access to the site
- Animal welfare
- Stock levels
- Deer numbers and control
- Labour requirement/availability/skills
- Maintaining an economically viable farming unit
- Maintaining an ecologically sustainable system
- Fencing – justification of cost and funding
- Level of monitoring required
- Establishing browsing damage thresholds
- Future woodland condition
- Flexibility within the system

For full details see the Field-based Review Report.

3. **Woodland Grazing Management Plan (WGMP) Field Trials.** Following the field-based review, the original project proposal was to set up six trial sites in which to pilot the concept of WGMP. Following the Stakeholder Workshop it was suggested that this could be developed in to a Woodland Grazing Toolkit. The intention was that the trial sites would demonstrate what WGMPs could encompass. The sites were to be identified and established in consultation with the owners/managers, FCS and SNH. In addition simple monitoring techniques were to be trialled in these pilot sites to allow the project to recommend a monitoring methodology for use by farmers within WGMPs/Toolkit.

   The intention had been that before the end of 2004, the results from this review and field trials could inform the process of developing a stewardship grant for conservation grazing within SFGS. The review would produce costs for woodland grazing for input into the grant, as well as a selection of best practice case studies. The field trials would demonstrate whether WGMPs would be a practical and effective way of organising a grazing grant.

   However, in November 2004 the Steering Group were alerted to the possibility that the SFGS S9 Stewardship Grant for Controlled Livestock Grazing in Woodlands was to be piloted in 2005. The Steering Group felt that this pilot now superseded the proposal for the WGMP Field Trails. To ensure that the best possible use could be made of the resources at the disposal of the WHWGP the Steering Group took the decision to delay the start of the Trials and that this should now be undertaken as part of the pilot of the S9 Stewardship Grant. This would be done using the eight trial sites in Argyll & Lochaber that the Steering Group has identified and at the same time to trial the woodland grazing "toolkit". However, it should be noted that the final selection of the trial sites is still to be decided. The final site selection will be agreed with FCS once the requirements of the pilot exercise have been clearly identified.

4. **Woodland Grazing Workshop.** The 2nd Workshop is to be held on 10th March 2005, this event will summarise the findings of this project and will allow delegates the opportunity to hear from a number of land managers who are currently practising woodland grazing. This morning session will be followed by a series of afternoon workshops looking at some of the practical issues relating to the subject. The event will also raise the level of awareness of advisers and practitioners about conservation grazing. This in turn would greatly aid in the delivery of conservation benefits within woodlands if and when grazing

becomes a grant-aidable management option under SFGS and other grants e.g. RSS Wood Pasture.

5. **Progress report, ongoing commitments, and exit strategy.** The Steering Group met regularly over the year and were additionally kept informed of progress via email. A paper, summarising the findings of the project will be presented at the Woodland Grazing Workshop on 10th March 2005, after which a final report will be produced.

Current Project Management

This project operates under the umbrella of the Argyll & Bute Biodiversity Partnership. The steering group includes members of the partnership who are able to contribute to the delivery of the project; currently FC, SNH, FWAG, SAC and SNW. Lucy Sumsion (Argyll FWAG, Farm Conservation Adviser) is currently acting as Project Coordinator. For further details of management and funding arrangements see the memorandum of agreement between funding partners.

Lucy Sumsion
Project Coordinator
West Highland Woodland Grazing Project
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March 2005

Appendix 2:

List of Attendees

Ruth Anderson	Dundavie
Helen Armstrong	Forest Research
Stephen Austin	Scottish Natural Heritage
Liz Balharry	Guisachan Wild Boar Project
Les Bates	Reforesting Scotland
Adele Beck	Forestry Commission Scotland
Catherine Becker	Ballywilline Farm
Jane Begg	Woodland Trust
Bob Black	Argyll Woodlanders
Tony Boyd	Camusnagul & Achaphubuil Crofting Trust
Stephen Brown	Forestry Commission Scotland
Niall Campbell	Scottish Agricultural College
Ewan Campbell	Laggan Forest Trust Forestry Company Ltd.
John Campbell Smith	Forsinard
Gill Christie	Strathfillan Development Trust
Alastair Clark	Scottish Natural Heritage
Ian Collier	Forestry Commission Scotland
Alasdair Colthart	Kinlochlaich Farm
Marina Curran-Colthart	Local Biodiversity Officer
Bruce Dixon	Laggan Farms
Robert Dixon	Kilbride
Neil Duncan	Stonefield Farms
Lorna Elliott	WHELK Leader+
James Fenton	National Trust for Scotland
Andrew Fletcher	Ardlussa Estate
Sam Forster	Forestry Commission Scotland
Mark Foxwell	Scottish Wildlife Trust
Brigitte Geddes	Gearrchoille Community Wood Ardgay
Iain Glen	Dalnavert Community Co-op
Evelyne Glen	Dalnavert Community Co-op
Mhairi Gordon	Lochletter Farm
Gordon Gray Stephens	Scottish Native Woods
Louise Gregory	Scottish Natural Heritage
Donald Hendry	Forestry Commission Scotland
Peter Hogbin	Glendarroch House
Kate Holl	Scottish Natural Heritage
Grant Holroyd	Knoydart Forest Trust
Colin Hossack	Forestry Commission Scotland
Syd House	Forestry Commission Scotland
Steve Hunt	FWAG Scotland
Steven Jones	Amod Farm
Donald Kennedy	Scottish Wildlife Trust
David Kerr	Argyll and Bute Council
Richard Kilpatrick	Scottish Natural Heritage
Paul Kirkland	Butterfly Conservation (Scotland)
Russell Lamont	Forestry Commission Scotland
Jim Langley	Laggan Forest Trust Forestry Company Ltd.
Ross Lilley	Scottish Natural Heritage
Margaret Lister	Dalriada Veterinary Surgery
Liam Livette	Ardslignish
Margaret MacCallum	Forestry Commission Scotland
Derek MacKinnon	SEERAD
Ann MacPhail	Muckcairn Castle Estate

Eilidh MacPherson	FarmingScotland.com
Ewen MacPherson	SEERAD
John MacPherson	Belliemeanoch Farm
Nick Mainprize	Forestry Commission Scotland
Lyn Matheson	Soil Association Scotland
Angus McFadyen	Bragleenmore
Neil McInnes	Forestry Commission Scotland
Robert McMorran	Centre for Mountain Studies
Keith Miller	Forestry Commission Scotland
Fiona Milne	National Trust for Scotland
Robert Mitchell	SEERAD
Iain Moody	Muckcairn Castle Estate
Robin Morrison	North Carrrine
Pat Morrison	North Carrrine
Kenny Nelson	Scottish Natural Heritage
Anna Nicholson	Barranrioch Farm
Ivan Nicholson	Fasnacloich Estate
Ewan Nugent	Rural Development Service
James Ogilvie	Forestry Commission Scotland
Rab Park	Ardtalla Estates Ltd
Meg Pollock	Scottish Agricultural College
Ross Preston	Scottish Natural Heritage
Elizabeth Pryor	Scottish Natural Heritage
Nick Purdy	Forestry Commission Scotland
Peter Quelch	Forestry Commission Scotland
Chloe Randell	Dunlossit Estate
Roy Rogers	Inchtavannaich
Susan Rogers	Inchtavannaich
Cameron Ross	Novar Estate
Gary Servant	Lochaber Native Woodlands
Billy Shields	Mount Stuart Trust
Peter Sinclair	Resipole
Barbara Soutar	National Trust for Scotland
Lucy Sumsion	Argyll FWAG
Stephen Sunderland	SEERAD
Richard Thompson	Forest Research
Una Urquhart	Marchfield Ecology
Frank van Duivenbode	Gearrchoille Community Wood Ardgay
Charner Wallis	Muckcairn Castle Estate
Euan Warnock	NFU Scotland
Tony Waterhouse	Scottish Agricultural College
Sally Weaser	Scottish Natural Heritage
David Whitaker	Forestry Commission Scotland
Susannah White	Forestry Commission Scotland
Phil Whitfield	Forestry Commission Scotland
Jake Willis	Morvern Woodlands Project
Carol Wormleighton	Craignich
Fergus Younger	Scottish Natural Heritage