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RESEARCH UPDATE

Stock Grazing in Woodland-Part 2

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A survey of cattle-grazed woodlands in Britain

In 2000, Woodland Ecology Branch started a programme of work on the impact of cattle on woodlands. Because of the lack of quantitative information, and the wide range of situations for which we wanted to be able to recommend stocking regimes, we decided, initially, not to set up experiments. Instead we gathered information from sites where cattle were already being grazed in woodlands. The aims were, firstly, to see who was doing what with cattle in British woodlands and, secondly, to see if we could use anecdotal information to draw out general lessons about successful cattle management regimes.

The study was at two levels:

- Initially we collated information from managers of sites across Britain.
- We then visited a proportion of these to gather more detailed information on woodland type, stocking regime and habitat areas as well as densities of, and browsing rates on, young trees.

The site visits relied on systematic observations and categorisation of tree densities and browsing rates as, for example, high, medium or low; 105 sites were recorded of which 33 were visited. The sites were spread over most of Britain but there were particularly high numbers in Argyll and Cumbria (Figure 1). This is by no means a complete inventory of cattle-grazed woodlands in Britain but is likely to be a representative sample.

In England and Wales, sites tended to be owned by public bodies or by conservation charities. By contrast, in Scotland, most sites were privately owned. We did not exclude

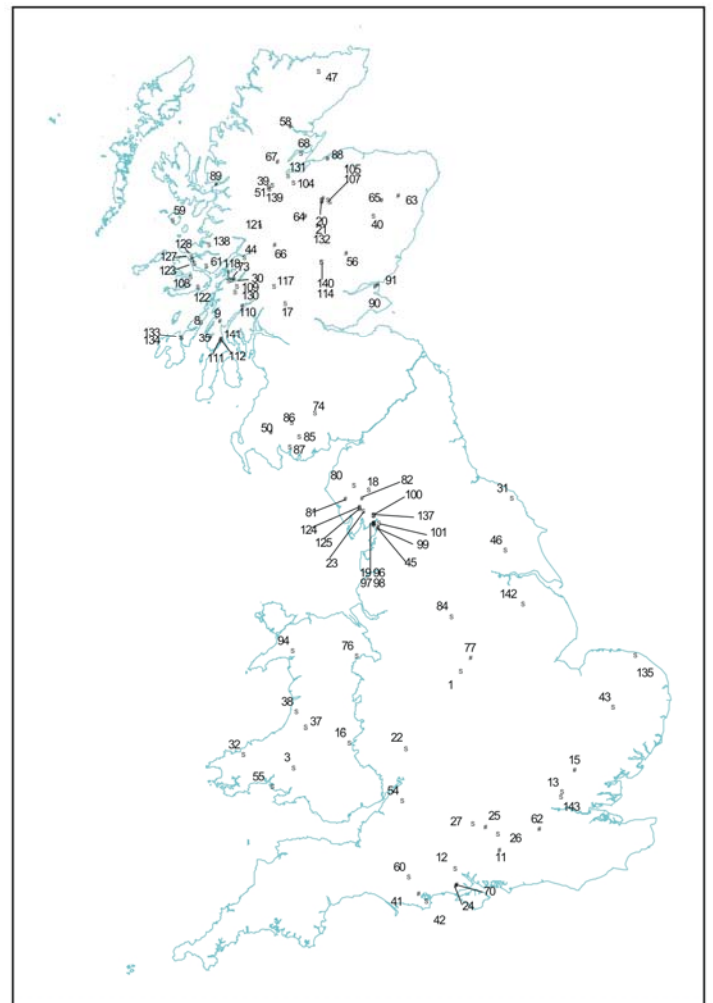


Figure 1. Location of the 105 cattle grazed woodlands documented in the Forest research database.

commercial plantations from the survey but most sites were semi-natural woodland. In England and Wales the woodlands were largely dominated by oak (*Quercus* spp.), birch (*Betula* spp.), or ash (*Fraxinus excelsior*) whereas those in Scotland were dominated largely by birch, oak and Scots pine (*Pinus sylvestris*). Sites were generally small (5 – 50 ha) though a few were much larger (up to 5,000 ha). Almost all the sites were grazed by other herbivores: most commonly roe deer, sheep and rabbits (*Oryctolagus cuniculus*). At most sites the cattle

had access to open habitats as well as woodland. In England and Wales 23 breeds of cattle, as well as crosses, were being used and none was particularly common. In Scotland, Highland, Luing or Aberdeen Angus grazed most sites.

The main objective of grazing with cattle in England and Wales was for nature conservation and in Scotland for cattle production. The nature conservation objectives fell into three main areas:

1. To benefit biodiversity generally by:
 - Reducing tree /scrub regeneration.
 - Reducing existing shrub layer.
 - Maintaining open habitats.
 - Reducing dominant plant species.
2. To benefit individual species or groups.
3. To encourage tree regeneration.

For the first two objectives, most of these schemes had been in place for too short a time to judge whether they had achieved the objectives. However, most managers were happy with results to date. A preliminary analysis of factors affecting tree regeneration was possible using data from both the general survey and the site visits. Even though other herbivore species were present at most sites, at all cattle grazing pressures up to about 10 cattle months ha⁻¹ (a little less than 1 cow ha⁻¹ if grazed all year) there was a high (70-80%) chance of getting some tree regeneration. But we only had five sites with more than 10 cattle months ha⁻¹ so this conclusion is somewhat tentative. Note also that we have no information on what would have happened in the sample woodlands without cattle. It is possible that cattle encourage tree regeneration, even in the presence of quite high densities of other herbivores. This possibility deserves more investigation.

We used the data from the site visits to look for relationships between cattle grazing pressure and the density, or species, of regenerating trees. There was no relationship between cattle grazing pressure and the species of saplings present but there was an indication that the density of saplings declined as cattle grazing pressure increased. However, the large amount of variance around this relationship suggests that many other factors also affect sapling density. These might include available food for herbivores, seasonality of grazing, how long the present grazing regime had been in operation and the species composition of the saplings. Other factors such as weather, ground vegetation, invertebrates or soils may also be having an effect. The large number of factors that can affect densities, and species, of tree regeneration means that it is difficult to predict the impact of a given cattle grazing regime. One approach to making such predictions is to incorporate information about the effects of the various factors into a



computer model. Jorritsma *et al.* (1999) provide an example of just such a model for a pine forest on sandy soils in the Netherlands.

Recommendations for managers and researchers

- It is important to set clear management objectives before deciding on what sort of stocking regime might be suitable. Low stock grazing is generally good for biodiversity but heavy, or no, grazing can be needed for particular species.
- Trees can regenerate in the presence of grazing animals. Cattle, by creating regeneration niches with their hooves, can increase numbers of seedlings. This can counteract the effects of browsing. Thorn trees, or dead wood, can protect young trees from browsing.
- Systematic monitoring of woodlands grazed by stock, even if done qualitatively, can provide very useful information that could help improve our ability to provide advice on suitable stocking regimes.
- Further research is needed on the impacts of different stock grazing regimes on woodland structure and composition generally. In particular, it would be useful to know whether cattle can stimulate tree regeneration even in the presence of densities of other grazing animals that would otherwise prevent regeneration.
- Computer modelling could help to take into account the many variables that affect both tree regeneration and the composition of the ground layer vegetation in grazed woodlands. Such models could provide the core of decision-support tools that could be used by land managers. This would reduce the need to determine suitable stocking regimes by trial and error.

Acknowledgements

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Abstract of a talk given at a Mammal Society Conference on 'Mammals in Woodlands', London, November 2002. Part one, providing an overview of stock grazing in woodlands, appeared Biotype 24, and can be found on the FC website under Biotype at: www.forestry.gov.uk/forestry/GGAE-53YCJP Full conference abstracts will be published by the Forestry Commission in 2003/2004.

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Further reading

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PUBLICATIONS

Restoration of Wooded Landscapes Jonathan Humphrey



Aimed at researchers, policymakers and practitioners, this publication comprises the proceedings of the conference 'The Restoration of Wooded Landscapes', held at Heriot Watt University in September 2000. The theme of the publication is native woodland restoration at the landscape scale - tying in ecological theory with practical implementation illustrated through a number of case-studies. There are five main sections in the publication. The first section covers current international and UK forestry policies, incentives and restoration activities; the second describes the latest research and modelling tools, the third and fourth sections look at national and regional planning strategies and local initiatives. Section five draws these themes together and highlights future priorities for research and implementation.

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The National Trust Nature Conservation Newsletter

Rosalind Codd



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- Information about the conservation web page
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- A list of conservation publications.

If you would like to receive a copy of the newsletter or information about any of the features included, please contact the editor:

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Biodiversity News

Ruth Peacey



Biodiversity News is the newsletter for people involved with or interested in the UK Biodiversity Action Plan (UKBAP). It is published quarterly, and can be viewed in the library section of the UKBAP website: www.ukbap.org. It contains articles on biodiversity and updates on the progress of all aspects of the UKBAP.

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