

# **Cultures of Nature Conservation**

**Biodiversity and the Management of  
Pinewoods in Abernethy, Scotland,  
1988-2002.**

**Andrew C. Midgley**



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# Abstract

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This thesis explores the cultural politics of nature conservation in the UK in the 1990s. Working with the insights provided by social constructivist approaches to nature and to knowledge and extending the insights of Michel Foucault to the natural world, the thesis examines the social and cultural processes that underpin the contemporary practices of conserving nature. Calling upon ethnographic work on nature reserves, semi-structured interviews with site managers and policy-makers and the analysis of texts, it examines two examples of conservation practice: the broad shift in policy at the national scale marked by the institutionalisation of the concept of 'biodiversity' and the changes in management at Abernethy Forest in the Cairngorms, Scotland. These examples are examined to investigate the processes and practices through which appropriate conservation action is achieved and renegotiated.

The institutionalisation of 'biodiversity' is examined in two ways. First, the establishment of the 'biodiversity process' around a business model of target-led species and habitat action planning is investigated through the practices that give it shape. The classification of habitats, the prioritisation of species and writing of plans are examined. It is argued that this new regime of practice, through which new 'objects' of conservation and new forms of knowledge are constructed, should be understood in the broader social and political context of fights over nature and over the achievement of powerful social positions. Secondly, the institutionalisation of biodiversity is examined through the ways that people talk and argue about it. Calling upon the concepts of discourse theory, the thesis focuses on the repertoires and rhetorical strategies used by individuals to argue for particular understandings of nature. The development of 'biodiversity conservation' is revealed as negotiated through complex social and political power relations and as involving the introduction of new sets of practices, the development of new forms of knowledge and fights over the meaning of nature and naturalness.

This analysis is extended by examining the process of policy change in one detailed example of practice. By focusing on the changing construction of pine woodlands and the changing management of Abernethy Forest Reserve, the thesis draws out the complex relations between ideas of nature, ecological knowledge and conservation action. It illustrates how the initial policy of minimal intervention was an achievement that required multiple constructions of the forest to be balanced. But it also illustrates how, as that policy began to have negative effects, the ideas of nature, the ecological knowledge and appropriate practice were reworked and argued over. The very idea of what constitutes a natural pinewood is shown to be revised and the management changed with moves towards greater levels of intervention.

The purpose of adopting a broadly constructivist orientation to nature conservation is to provide an analysis that allows insight into how conservation works and how it has arrived at the present situation, a situation where the natural world seems to be controlled and managed in increasingly sophisticated ways. The thesis therefore has a critical intent. It seeks to argue for, and contribute to, greater reflection on where present developments might be taking us and on the sorts of knowledge and practices that are, at present, shaping nature conservation.

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# Declaration

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In accordance with University of Edinburgh regulations, I declare that this thesis is my own work except where otherwise stated.

Andrew C. Midgley

12 December 2003

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# List of Abbreviations

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|       |   |
|-------|---|
| BoCC  | Birds of Conservation Concern                       |
| BAP   | Biodiversity Action Plan                            |
| CAP   | Common Agricultural Policy                          |
| CBD   | Convention on Biological Diversity                  |
| CEH   | Centre for Ecology and Hydrology                    |
| EU    | European Union                                      |
| HAP   | Habitat Action Plan                                 |
| ITE   | Institute of Terrestrial Ecology (subsequently CEH) |
| JNCC  | Joint Nature Conservation Committee                 |
| NCC   | Nature Conservancy Council                          |
| NGO   | Non-Governmental Organisation                       |
| NNR   | National Nature Reserve                             |
| RGS   | Royal Geographical Society                          |
| RSPB  | Royal Society for the Protection of Birds           |
| SAP   | Species Action Plan                                 |
| SNH   | Scottish Natural Heritage                           |
| SSSI  | Site of Special Scientific Interest                 |
| UKBAP | United Kingdom Biodiversity Action Plan             |
| UKBSG | United Kingdom Biodiversity Steering Group          |
| WCA   | Wildlife and Countryside Act 1981                   |

## PREFACE

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On the 21<sup>st</sup> of May 2002, the Natural Environment Research Council held a debate in Edinburgh entitled 'Land Use or ABUSE – a debate on managing the Scottish uplands'. The great and the good of Scottish land management were there. There were eminent research scientists, prominent figures in wildlife conservation and representatives from NGOs, land-owning interests and government. They were treated to brief talks on the role of the researcher in environmental issues, research on over-grazing by sheep and deer, attempts to find a resolution to conflicts over raptors on grouse moors and a plea that policy should be changed to reward good management rather than productivity. The purpose of the meeting was to discuss the place of natural science in land management.

After the talks, the debate was opened to the floor. Speakers rose to their feet to challenge points made by the panel or to argue that a good way of managing the uplands would be to create zones where different land uses could be catered for. The issues that were raised were complex ones about how to find the best way forward and what constituted good land management. These were questions that science could not address and after many speakers had spoken and after the land-owners had locked horns with the RSPB, one researcher – despite the moral and social issues evident in the very title – queried the debate: 'surely these are social issues, but we are here to discuss the role of science'.

In questioning the way this debate on natural science had veered towards social issues, this researcher raised some crucial questions. What is the place of science in environmental issues? How do we decide on the appropriate way to tackle these problems? There were two responses to this query. The first was to agree that social issues and science are separate and say, as John Lawton the Chief Executive of NERC did at the end of the debate, that 'we need to decide what sort of countryside we want, but this is not a scientific question, it is a social one. Science can help us achieve that vision, but first of all it is a question for society'. The second response was raised in suggestions that, if these complex issues of land management were to be adequately addressed, the social sciences had to be brought in. You cannot, one speaker said, divorce natural and social science: you need the social scientists to address the social or economic impacts of certain management scenarios or to investigate why interest groups understand the issues in the ways that they do or how they might react to specific policy initiatives.

This thesis takes issue with these responses to questions of how to deal with environmental problems. It approaches environmental issues from the social sciences, but it

does not accept the role that is usually prescribed for them as a bolt-on addition to a natural science project, and it does not assume that science is simply applied to technical problems after social decisions have been made. Rather, the thesis seeks to illustrate that the social sciences have more to contribute to resolving these issues than assessing socio-economic impact or responses to policy.

While the social sciences are currently involved in understanding environmental issues – within an implicit division of labour where the natural sciences study ‘the environment’ and the social sciences study ‘the people’ – the people that the social sciences are meant to study are invariably *other* people. But if we think about the way that academics, policy-makers and managers argue over what the problems are, how to proceed and possible solutions, we have to recognise that the whole field of environmental policy-making is itself a social arena. Environmental policy-making is not simply an instrumental response to environmental problems; it is a social phenomenon. It is not simply a neutral and objective process, as is often assumed by many involved. It is a power-laden, moral activity that has significant implications for how we relate to others and to the world around us. As such, it is possible to approach the social practice of conservation itself, with tools provided by the social sciences and, through its study, contribute towards critical reflection on where conservation might be heading.

This is important because as more and more technical solutions are proposed for environmental problems, and as environmental management driven by the natural sciences becomes increasingly sophisticated, many commentators question whether we are simply addressing the symptoms rather than the actual problems. One of the problems is, I suggest, the very way that we conceptualise environmental issues. And one manifestation of that conceptualisation is evident in the lines that are drawn between the natural and social sciences and the division of labour that this implies. If we are to tackle environmental issues in meaningful ways, I believe that we need to rethink the relationship between the natural and the social sciences and the roles that they have conventionally been understood to perform in relation to those issues. Social and natural scientists need to enter a dialogue and find new ways of thinking about environmental problems and nature more generally. This thesis is intended as a contribution to that dialogue and an illustration of the sorts of insights that constructivist social science can contribute to the process of rethinking nature.



# 1

## Introduction

### Exploring the Cultures of Nature Conservation

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Writing in 1980, thirty-one years after the institutionalisation of the Nature Conservancy (for a glossary see appendix I), Mabey assessed how far nature conservation had come and made suggestions about how it might go forward. While he noted the successes that had been achieved in terms of the development of a system of reserves, he closed his assessment by saying that ‘all this economic and administrative activity will be pointless – and quite likely fruitless – if it does not have the support and active involvement of the whole community’ (Mabey 1980: 248). He argued that if conservation was to succeed in protecting nature and in getting a concern for the natural world to pervade society, it would have to break out of its specialised ‘niche’ and enthuse others outside the field of conservation.

Sixteen years later, Adams (1996a) made broadly the same claims. Despite its apparent success – with a growing list of designations and a steadily increasing number of people becoming members of conservation organisations – nature conservation had not made significant headway. Setting out principles for future conservation, Adams echoed Mabey and suggested that ‘nature is everywhere, and nature conservation is therefore something that must be pursued everywhere and must be built into the weave of human life ... we should build connections between people and nature. Conservation must be woven into everyday life... We need to re-establish the links between people and nature’ (Adams 1996a: 171-172). Again, after nearly fifty years of nature conservation activity, it was suggested that if it was to succeed, conservation had to broaden its scope.

Today there are many encouraging developments. Agricultural policy is shifting towards rewarding responsible management rather than productivity, forestry organisations are becoming evermore sympathetic towards the needs of wildlife, conservation is being taken into urban areas with the development of community woodlands and wildflower meadows and, in Scotland, a duty to consider the impact of *any* governmental policy on biodiversity is being written into legislation. Nevertheless, Marren (2002: 306) suggests that

'nature conservation remains a rather inclusive activity with an off-putting bureaucratic language'. By 'inclusive', Marren means that conservation is still a 'sectarian activity' and that, despite these encouraging developments, it has not managed to break out of its 'sector' to develop a 'universal ethic' throughout society.

The most common response to the recognition that conservation is not making significant progress is to understand the issue to be one of communication. In one conference after another I have heard speaker after speaker bemoan how conservation is somehow not getting its message across. The implicit belief is that if only we could impart our knowledge, people would change their ways and conservation would be more firmly embedded in society. Thus, in major initiatives such as the current development of a Scottish Biodiversity Strategy, an 'education and communication' working group has the job of identifying the way that conservation 'messages' can more effectively be communicated.

In this thesis, I aim to enhance our understanding of why there has been a lack of significant progress by raising a different sort of question. Might it be that nature conservation's halting progress derives not simply from inadequate communication, but from the way that nature conservation understands and approaches 'nature'?

To answer this question what is needed is critical reflection upon nature conservation's underpinning assumptions, its ways of working and upon what conservationists mean by 'nature'. I aim to contribute to this sort of critical reflection. More specifically, I attempt to render conservation practice 'strange' and to ask why we conserve nature in the ways that we do? Why do we uproot or chop down some species and leave others to flourish? Why do we write action plans and set targets? What are the assumptions about 'nature' that underpin different forms of action? When we look at the changing way that we have conserved nature, why do certain forms of conservation seem appropriate at one moment but inappropriate at another? In short, I examine the processes through which appropriate conservation policy is developed in order to explore the ways that conservationists themselves understand conservation problems and seek solutions.

To analyse these processes of problem construction and policy development, I draw upon theoretical and methodological resources from post-structuralism and discourse analysis. I argue that conservation policies depend upon the social construction of problems and of nature more generally. Appropriate conservation policies are not instrumentally related to problems as if one necessarily implies the other because the very ability to see certain events, issues or processes as a problem depends upon the development of a socially embedded 'way of seeing'. I do not, therefore, seek to examine specific conservation policies with the intent of commenting on their utility or appropriateness. Rather, I want to approach

those policies as social phenomena that can provide insight into the culture of nature conservation.

Through the analysis of documents, twenty semi-structured in-depth interviews with policy-makers and site managers, and through periods spent as a volunteer on nature reserves, special attention is paid to two examples. The first is the development of new mechanisms through which nature conservation practice is organised at a national scale: the development of biodiversity action plans and a continuing 'biodiversity process'. The second is changing management practice on one site: Abernethy Forest in the Cairngorms, Scotland. Through these examples I investigate problem construction, the underlying assumptions that shape action and the connections between science, conservation institutions and the policy process. With reference to biodiversity action planning, I examine the practices through which the biodiversity process works and the ways that different people argue over whether or not the approach taken is appropriate. With reference to Abernethy, I explore the gradual change in management and how this involves the reconstruction of what is 'natural'. Both examples illustrate that what is understood to be appropriate conservation policy, and indeed what is understood by 'nature' or 'biodiversity', is a culturally negotiated achievement in the context of complex social and political power relations. Broad policies and specific management strategies are continually being renegotiated as the context, ecological knowledge and ideas of nature and naturalness, change.

This sort of analysis engages with the work of others that have sought to understand why we conserve nature in the ways that we do. In particular, it engages with Adams' (1997; see also Hajer 1995) analysis of the relationship of conservation to processes of rationalisation or modernisation in western society. While conservation and the establishment of nature reserves can be understood to be a reaction against these processes, Adams claims that, in the UK at least, it is also very much part of rationalisation because of its technocratic approach to controlling and manipulating nature. This thesis engages with these ideas through the work of Michel Foucault and uses a broadly constructivist analysis to examine empirically the institutional and discursive processes through which conservation appears to be increasingly becoming part of rationalisation. The analysis is intended as a means of bringing these processes to the fore – processes that can often be taken for granted or obscured – so that we can more readily debate what such developments mean for the practice of nature conservation and whether we are heading in the right direction. The thesis is presented, therefore, as a contribution to the process of developing new approaches to nature conservation.

## Structure of the thesis

In chapter two, I set the scene for the analysis that follows. In the first section, I detail, through reference to secondary literature, something of the history of nature conservation and of recent changes in the field. The intention is to draw the reader's attention to the changes that I am interested in and to contextualise them. It is here that I introduce the development of the concept of biodiversity and the interventionist nature of conservation itself. This interventionism or managerialism is then related to Adams' (1997) claim that while conservation can be understood as a reaction to the development of modern industrial society, it is, with its tendency to intervene in ecological systems in a technocratic way, also part of the process of rationalisation. Whilst I find these claims persuasive, I argue that we need analytical tools that can be employed to understand *how* rationalisation works in conservation. Chapter two therefore moves on to consider recent theoretical developments that, I suggest, should be acknowledged by those, like myself, attempting to understand and tell the story of recent change. In particular, I review the social constructivist approaches to nature and to knowledge and turn to the work of Michel Foucault. Whilst his focus was on the 'rationalisation of the body' and the 'rationalisation of populations' by new combinations of power/knowledge, I hope to add to the voices of others (Hajer 1995; Darier 1999) in suggesting that his work has relevance for understanding the rationalisation of nature. I close the chapter by addressing the question of whether this approach represents either a productive or destructive move. While some suggest that the constructivist approach ushers in a relativism that removes the authority of conservationists to speak on nature's behalf and that it undermines conservation, I suggest that it provides useful and important insights.

In chapter three, I detail my methodology in a way that engages with the implications of a constructivist approach. An important issue here is reflexivity. It would be contradictory to adopt a constructivist stance and emphasise the situated and 'messy' nature of the knowledge claims of others, only to then implicitly suggest that I have direct reference to some external reality irrespective of my own situation. For this reason, chapter three does not simply recount what methods were used and why they were chosen and thought to be most appropriate. Rather, it critically reflects upon the construction of my own knowledge claims. In particular, this chapter engages with the problem of how to represent the research process. This is important because while the acknowledgement of the need for reflexivity encourages researchers to see their own practice as situated and messy, it is common for the research to be reported in ways that suggest that it adhered to a neat ideal of design, collection and analysis. I have tried to represent my own research in a way that does not misrepresent it and make it fit an ideal that was not apparent in the doing, by providing a

'thick description' (Geertz 1973) of the research process using the materials that I generated at the time. Just as I use texts and interviews to tell the story of conservation, I use the texts that I produced for supervisors or letters written to interviewees and 'gatekeepers' to tell the story of my own research.

Chapter three concludes by considering three issues in detail. The first is the ethics of my research. In particular, I focus on the negotiation of access as a continuous process and on the issue of *uninformed* consent. I suggest that it is impossible to provide enough information for informed consent to be given, precisely because the researcher is not normally sure where the research is going. Consequently, I question rigid ethical procedures and align myself with those that subscribe to a situated ethics. The second issue is the practice of discourse analysis. I explain my intention to perform a discourse analysis similar to that of Fairclough (1992), but detail what I actually did and how it differed. The third issue is the move I made from examining the biodiversity process to examining the changes in management at one site.

In chapter four, I begin my substantive engagement with conservation by examining the development of the biodiversity process *as* discourse. With Foucault's analyses of disciplinary society and sexuality in mind, I pay attention to the way that the natural world is classified and thus to the way that new conservation objects are created and rendered manageable. I explore the development of new mechanisms for prioritising species and the development of new practices based around action planning and I suggest that these practices connect to a more rigorous system of site management planning. Thus, I argue that with the development of the biodiversity process, what we begin to see is the establishment of a more coherent nature conservation. Site management, which used to be relatively diverse, comes to be co-ordinated by scientists in a new regime of practice. It is a regime that should be understood as inherently political, because with the establishment of the biodiversity process we see both the re-negotiation of the place of science within conservation and the negotiation of the place of conservation within wider society. In the biodiversity process, then, I suggest we see the introduction of a new conservation discourse, a new way of understanding and doing conservation.

In chapter five, I extend my analysis of biodiversity *as* discourse to examine biodiversity *in* discourse. Calling upon more linguistically-oriented discourse analysis, I supplement Foucault's emphasis on institutional practice by paying attention to how people argue over, and speak about, that practice. I focus on the way that different interviewees articulated different sorts of arguments in support of their respective positions in order to draw out how the development of the biodiversity process was actually negotiated. In

particular, I identify two rhetorical strategies for dealing with the apparent dilemma of whether conservation should be species or habitat based (species and habitat action planning lies at the heart of the biodiversity process). This approach extends the analysis of the last chapter because what is emphasised is negotiation and argument. People are not simply subject to the development of a bureaucratic process: they argue over it and fight to see their position achieve ascendancy. In order to draw out how this negotiation is worked out in practice, I focus on one example: Insh Marshes Nature Reserve on the River Spey in the Highlands of Scotland. By looking at the different forms of management and the arguments that are made to support those practices, it is possible to see how different and even contradictory constructions of nature and rhetorical positions can be accommodated.

In chapter six, I move from my engagement with biodiversity to the first of two chapters on the changing management at Abernethy in the Cairngorms. In this chapter, I focus on the management regime in the early years of RSPB ownership (1988-1995). The early policy was essentially one of minimal intervention in the pinewoods. I examine what minimal intervention means and how it was arrived at as the appropriate form of practice. In particular, I emphasise the dual construction of the pinewoods as 'natural' and 'unnatural', as remnants of past naturalness and as drastically altered over time. I argue that this dual construction sits at the heart of the policy of minimal intervention, which allows drastic management intervention in some areas and not in others. I emphasise that the practices that are undertaken rest firmly on the way that the forest has been constructed as an idea. Large plantations can be felled or restructured precisely because they are constructed as being relatively unnatural, while 'ancient semi-natural' areas must be left alone precisely because of their apparent naturalness. In the process, I illustrate the way that new sorts of forest – such as the 'ancient' or 'semi-natural' woodland – were invented. In the end, I suggest that the policy of minimal intervention was an achievement that involved balancing different constructions of the pinewoods and pinewood species.

Chapter seven moves on to illustrate how that balance was renegotiated. As the policy of minimal intervention started to have what were understood as negative effects, the practices that had been undertaken, and the constructions of the pinewoods that underpinned those practices, were questioned. Calling upon interview material with site managers, reserve ecologists and researchers, I explore how the idea of the natural pinewood was reconstructed. By re-emphasising the site's human history, by calling upon developments in ecology and by referring to forests elsewhere, this reconstructed natural forest is understood to be in a continual state of upheaval rather than stability (the idea of stability underpinned the notion of minimal intervention). Thus reconstructed, new forms of conservation practice based

around the idea of mimicking natural disturbance processes, are suggested. Management practice at Abernethy goes through a shift towards greater intervention and thus represents an opportunity to examine the process by which that technocratic, rationalising tendency gains the ascendancy.

In the final chapter, I suggest that what these analyses emphasise is that nature conservation is, much more than is usually recognised, an arena of cultural politics. Nature conservation practice is not only culturally negotiated, it is based upon culturally constructed ideas and knowledge of 'nature'. I argue that the implications of this for conservation are profound. I suggest that once this cultural politics has been recognised, much more attention has to be paid to how nature is being represented in conservation and questions have to be asked about who is doing the representing and what interests such representation serves. In particular, I suggest that recognising that nature is a product of culture forces us to also recognise that there are strongly entrenched habits of meaning making that separate nature from culture and channel our relation to 'nature' through the prism of science. Bringing these habits to the fore allows us to assess whether they provide the means for allowing conservation to achieve its aims of broadening its scope and enthusing wider society about nature. The conclusion that I reach through undertaking this research, is that they do not and that we need to re-imagine nature. I argue that we need to reconstruct nature so that it is not pushed into the distance, separate from culture, and that we need to develop a much less idealistic view of science. I close by calling for conservationists to recognise and value other ways of knowing nature, to find space for art and emotion and to reclaim wonder. It is only, I believe, through recognising the importance of the culture of nature conservation itself, that we will be able to critically reflect upon why conservation remains a specialised sector of society and ultimately work towards the development of new cultures of nature.

# 2

## Nature Conservation and Social Theory

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### **New answers to old questions**

A question central to nature conservation is ‘what is the best way to protect nature’? Answers to this question have varied. Sheail (1976), for example, noted that the preservation movement in the early twentieth century sought to prevent cruelty to animals and their extinction due to over-collecting through legislation and education. Of the then three established ways of preserving wildlife – legislation, education and nature reserves – nature reserves were rejected as ineffective and costly: ‘they were at best stop-gap measures when the other two methods had failed’ (Sheail 1976: 22). Legislation was thought to be more effective because it would have a wider and more immediate effect. Yet, by the late 1990s, Adams (1997: 279) was able to suggest that ‘nature conservation strategies have involved primarily the creation of places for nature, in National Nature Reserves (NNRs), Sites of Special Scientific Interest (SSSIs) and reserves of NGOs such as the RSPB and the wildlife trusts’. As conservation developed from a preservation movement into a state responsibility interwoven with the science of ecology, the answer to the question – how best to protect nature – had changed. In recent years, answers to this question have, I suggest, changed again.

In this thesis, I examine this re-negotiation of appropriate conservation practice in order to ask why and how nature conservation does what it does. I want to examine the history of recent change in conservation in order to appreciate how nature is being understood and how those understandings connect with certain forms of practice. This chapter sets the scene for the analysis that follows. In the first section, I briefly sketch out some of the history of nature conservation in order to contextualise recent changes such as the accommodation of the concept of biodiversity and the development of what came to be called the ‘biodiversity process’. In the second section, I move on to examine one broad way of conceptualising contemporary nature conservation that situates it with respect to processes of ‘modernisation’ or ‘rationalisation’. Viewed with reference to the development of western



society, nature conservation can be interpreted as being both a reaction to and part of the development of a societal model based on progress and the control of nature. Such interpretations are compelling and potentially provide resources for understanding the changing relations between knowledge, ideas of nature and the institutional practice of present day conservation.

In the third section, I review recent theoretical developments – that emphasise the social construction of nature and of knowledge – which, I suggest, should be taken in to account by anyone attempting to tell the story of nature conservation. In distinction to much historical work on conservation, I engage with this literature because it provides a useful means of reflecting upon conservation and its development. With constructivist arguments in mind, I suggest that ‘rationalisation’ should be understood less as an explanatory category and more as requiring an empirical explanation itself. In the fourth section, therefore, I turn to the work of Michel Foucault. This work provided the basis for, and is thus compatible with, much of the constructivist approach to nature and knowledge and, I suggest, provides useful resources for understanding the importance of biodiversity and target-led approaches in contemporary nature conservation and changes in reserve management. Finally, I address criticisms that could be levelled at a broadly constructivist orientation to nature.

### **A new era in nature conservation?**

Nature conservation has a long history, arguably taking in the changing attitudes towards the natural world that pre-date the establishment of its institutional home, but I start this brief history at the point where the nature reserve became important. I do so because recent developments take conservation based on reserves as a point of departure. The reserve can be traced back to the protection of game in Royal Forests (Hinde 1985; Adams 1993), but areas only became reserved for ‘nature’ in the late nineteenth century as concern developed over changes in the English countryside. By 1912 the National Trust had acquired thirteen sites that could be classed as reserves and the Society for the Promotion of Nature Reserves (SPNR) had been formed (Sheail 1976). These events were significant, but both the SPNR and the idea of reserves were peripheral to the preservationist movement before the late 1930s. In part due to the preferred importance of legislation, this was also due to the continuing debates over the relative merits of national parks and nature reserves and the ability of national parks to protect nature given their other role of providing an organised arena for outdoor and rural recreation. It was not until the Second World War that nature reserves came to occupy a more prominent position (Sheail 1976, 1998; Bocking 1993; also see Adams 1986, 1993; Lowe 1983).

Ecologists had been seeking the advancement of their science, but gradually became convinced that this was impossible without the creation of a new institution dedicated to ecology. Whilst they had, prior to this point, kept preservationists' calls for nature reserves at a distance, in seeking this new institutional home they saw potential in the reserve movement. Recasting its objectives to be consistent with the theory and practice of ecological research, the ecologists assumed leadership of the nature reserves movement and argued that nature conservation (as opposed to preservation) was itself the responsibility of government (Bocking 1993). Both conservation and the ecologists benefited from this move. In the context of the public respect for science generated in the Second World War, nature conservation as applied science, and nature reserves as outdoor laboratories, could be recast as potentially contributing to the national good. Conservation became useful.

In this early transition from preservation to conservation there was a change in the conception of the nature reserve. For the preservationist, the function of the reserve was the protection of valued places from all human interference except quiet contemplation. Charles Rothschild, probably the single most important advocate for nature reserves in the early twentieth century and founder of the SPNR, defined a reserve as 'an area, perhaps small, perhaps large, possibly only a single tree, which is specifically kept in its wild state' (cited in Lowe 1983: 341). For ecologists, however, the reserve came to have a different function. Ecologists were interested in the relations between species or communities and habitats and understood the need for reserves to provide habitats in order to protect species. Further they realised that those habitats could, and should, be manipulated to maintain particular species. The research of Godwin and Tansley at Wicken Fen, for example, suggested that leaving the Fen 'in its natural state' had resulted in the development of scrub and was the quickest way to lose the species that the site was there to conserve (Cameron 1999). Britain's countryside needed to be managed (Tansley 1946). In a review of Britain's Nature Reserves, Nicholson noted that

recently it has been appreciated that this task of preserving natural conditions is not simply one of putting a ring fence round certain wilderness areas and hoping for the best, but is dependent on knowledge and therefore on research. The emphasis has swung over to scientific investigation (and where necessary management) of nature reserves, particularly in order to understand how to preserve interesting relics, conditions, habitats and species which would otherwise tend to disappear (Nicholson 1957: 20).

Reserves should be managed and that management should be scientifically informed. Consequently, as ecologists established themselves institutionally in the Nature Conservancy (NC) and as reserves and Sites of Special *Scientific* Interest (SSSIs) became part of

mainstream conservation practice, the idea of a more manipulative conservation gained ascendancy. Norman Moore illustrated this when, reflecting on the management of National Nature Reserves thirty years after Nicholson, he said that 'moderate physical disturbance of habitats in British nature reserves is nearly always beneficial' (Moore 1987: 73). Ecologists presented themselves as 'the ideal scientific 'managers' of environment, the engineers of nature' (Livingstone 1995a: 368). Conservation became characterised by the control of nature. Indeed, it was precisely this 'enthusiasm for environmental intervention and manipulation' that Henderson (1992: 397) identified as the distinguishing feature of British nature conservation when compared with North America (Sheail *et. al.* 1997).

The institutional links between ecology and conservation were reinforced throughout the 1940s with ecologists dominating the committees that shaped the National Parks and Access to the Countryside Act of 1949 (Sheail 2001). This Act established the structure of nature conservation (as distinct from landscape conservation) for the next 50 years, with a governmental body in the form of the Nature Conservancy (later the Nature Conservancy Council and then the country agencies such as Scottish Natural Heritage) and a focus on National Nature Reserves (NNRs) and SSSIs (for a glossary see appendix I).

By 1950, then, the nature reserve was central to nature conservation and through the 1950s and 1960s the Nature Conservancy undertook the task of scheduling the sites recommended by the Nature Reserves Investigation Committee in the early 1940s. This centrality remained irrespective of the upheaval of 'the split' in 1973, when the management and legislative side of the Conservancy was divorced from the scientific research side (which resulted in the formation of the Nature Conservancy Council (NCC) and the Institute for Terrestrial Ecology) (see Sheail 1998). Indeed the importance of the special site was reinforced in 1977 when rigorous criteria by which reserves should be chosen, along with a list of all those sites that should ideally be protected, were published in *The Nature Conservation Review* (Ratcliffe 1977). With its attention to representativeness, typicalness, size and naturalness, the *Review* was crucial in entrenching the approach to reserve choice and management that sought to cover the country with representative examples of the UK's habitats. By 1975, 140 NNRs and 3209 SSSIs had been notified (Sheail 1976: 217, 221).

The passage of the Wildlife and Countryside Act in 1981 (WCA), however, increased the importance of the SSSI and the power of the Nature Conservancy Council to promote their protection. The 1980s was a busy and controversial time (Adams 1986). Under the 1949 Act, the NC and later the NCC were only required to notify the local authority of any scientific interest, but under the WCA of 1981 the NCC had to notify the owner and the Secretary of State and to list the potentially damaging operations to that scientific interest. In

turn, owners were required to consult the NCC before carrying out any of those operations and subsequently the NCC and the owner were meant to enter into a voluntary management agreement. Whilst the notification of SSSIs prior to the WCA was 'never lax', afterwards 'the NCC was in a different 'ball game'. A new exactitude had to be applied to the entire operation administratively, technically and financially, and nothing short of the re-notification of all SSSIs would do' (Boyd 1999: 204). It was with this huge administrative task, which took most of the decade to complete, that the SSSI would become the central pillar of nature conservation in the UK (Adams 1986, 1993). But the enhanced power of the NCC with respect to SSSIs was also contentious. Not only did the ability of the NCC to suggest appropriate management of privately-owned land lead to embittered social relations, but the more high-profile clashes between 'conservation' and 'development' descended into 'a grim chess game of land designation and statutory control' (Adams 1996a: 79). The proposed extension of ski development on Cairngorm in 1981, for example, resulted in a protracted battle with the Cairngorm Chairlift Company, Highland Regional Council and Highlands and Islands Development Board pitted against the NCC, prominent NGOs and naturalists. This was only the first in a long list of conflicts in Scotland: there were disputes over moorland reclamation in Orkney and Shetland; afforestation on peat bogs (Warren 2000, 2002); cutting peat on Duich Moss on Islay; and ski developments at the Lecht, Glas Moal, Drumochter and Ben Wyvis (Boyd 1999). Lessons about how to go about designating reserves or SSSIs and how to engage others were learned from these disputes. Thus as the conservation agencies began to grapple with the next phase of designation ushered in by European legislation in the form of the 'Birds' and then the 'Habitats' directives, the process became more participatory, although no less special site centred (Dixon 1998; Marren 1993, 2002).

Although beneficial in safeguarding particular sites – indeed for Marren 'nature reserves are the greatest achievement of fifty years of nature conservation in Britain' (2002: 107) – these developments created a nature conservation that became increasingly limited in its scope. There were three key problems. First, conservation was reactionary. It was always fighting a rear guard action, only able to object to proposals *after* they had been developed. In constantly reacting to threats (a situation brought about by the nature of the planning system) conservation became the social pariah of rural development. Secondly, it became restricted to special sites since attention had – through the importance of designation and the defence of sites – centred on SSSIs and nature reserves. As early as 1980, Richard Mabey was voicing concerns that whilst the establishment of reserves was clearly necessary, there were dangers in regarding reserves as the chief purpose of conservation because they

potentially deflected attention away from the failure to maintain ecological standards outwith reserves. In focusing on special sites, conservation was potentially ignoring the changes being wrought in 'the wider countryside', which held over 90% of 'the natural resource of nature' (NCC 1984: 87). The spatial strategy of creating reserves and special sites served to create spaces of nature, thus implicitly constructing the land outside them as not nature and not so special. In the process, conservation was effectively becoming a land use sector, which meant that the sphere of influence of the nature conservationist became restricted to the site or the reserve. Thirdly, it was increasingly argued that the simple designation of reserves or SSSIs was not sufficient because whilst it looked like action was taking place and conservation agencies could point to the designation of sites as proof of action, many argued that sites were simply not 'delivering' on species and habitats. Even though a site was designated, the species or the habitat it was designated for could be declining or degrading.

By the late 1980s, then, it was not only being recognised within nature conservation that changes taking place outside reserves were influencing the reserves themselves, it was also understood that reserves were not an adequate mechanism by which to meet conservation objectives if the reserve itself or 'the wider countryside' was gradually being degraded (Adams 1993). Thus reserves potentially represented a problem in conservation and prompted the question of whether there were other, more effective, ways of protecting nature. In this context, different sorts of approaches were sought and argued for from the late 1980s onwards.

Although it is important to stress that reserves and sites remained central because of the way they are written into legislation and conservation remained reactionary because of the adversarial planning system, a new conservation discourse emerged in the late 1980s and gained ground throughout the 1990s. In particular, there were attempts to shift conservation away from a 'reactionary', 'conservative' or 'fire-fighting' model – where conservationists simply reacted to threats or proposed developments and where conservation more generally was in danger of becoming caught within the bounds of the nature reserve or the special site – to a more 'proactive' model where conservationists could set out their wishes in advance and go beyond the reserve to speak about much broader issues and to other social actors.

This change of emphasis can be highlighted in two related developments. One important attempt to move away from 'the jaded policies of conservation practice' towards a more proactive and less special site-based conservation can be seen in the calls for 'creative conservation' (Scott and Luscombe 1995: 13; Adams 1996a, 1996b; O'Connor 1983; Sheail *et. al.* 1997). Whilst there had long been calls for the need for conservation to break out of the confines of the reserve and for the need to make conservation more attractive and

relevant (Mabey 1980), it was in the 1990s that conservation began to be transformed by the rhetoric of restoration ecology. This was significant because it raised the possibility of creating or recreating desired ecological conditions (Adams 1996b). While conservationists had protected the best of what was left of nature in reserves, it was recognised that most sites of conservation value were removed from the areas where there were greatest numbers of people. In consequence, conservation as an activity was removed from the majority of people's everyday lives. Therefore it was thought that if conservationists wanted to make conservation more relevant to more people, it should seek to enhance the conservation value of sites that currently had very little conservation value but which were closer to, and part of, more people's lives. Creative conservation could complement the existing statutory protection of sites and contribute to efforts to combat habitat loss whilst at the same time making it more relevant throughout society.

The other significant development in the moves towards a proactive conservation can be seen in the increasing importance of the concept of 'biodiversity' and the establishment of the 'biodiversity process'. The term 'biodiversity', coined in 1986 as shorthand for biological diversity, emerged at a time of heightened awareness of environmental issues (Wilson 1988). Takacs (1996) suggests that the establishment of the concept of biodiversity was a case of prominent conservation biologists actively reworking conservation by refashioning the object of their concern. For these biologists the emphasis on species conservation up to that point was insufficient. Conservation needed to be moved away from its focus on charismatic species which invariably only came to the conservationists' attention when they were nearly extinct, because such an approach meant that the vast majority of species – including some of the most important, like the invertebrates – were ignored (Einarsson 1993). But at the same time, the alternative 'ecosystem' conservation was too amorphous and would run into difficulties because it lacked tangible focus comparable to charismatic species. The conservationists' response was to find a way of achieving both. They did this by reconstructing nature conservation as biodiversity conservation, which included the variety of life at the sub-species, species and ecosystem levels.

Subsequently, 'biodiversity' was one of the organising concepts of the Rio Earth Summit in 1992 and thus one of the central issues of scientific and political concern. Signatories to the Convention on Biological Diversity (CBD), which included the UK, were obliged to produce a report detailing how they would conserve their biological diversity and had, therefore, to translate the concept into their regime of conservation practice. In the UK, this obligation represented an opportunity for those that had been seeking new approaches to conservation – notably the RSPB – to advocate different sorts of conservation practice.

The RSPB had been exploring new ways of doing nature conservation since the late 1980s. As the organisation grew – in terms of membership, revenue, staff and acquisitions – it needed to be able to direct its resources to where they were needed most, whilst, at the same time, justifying that prioritisation. It therefore sought to establish mechanisms by which the spatially disparate organisation would most efficiently work towards the same ends and would most effectively, and without ambiguity, establish what those ends should be. By way of more precisely defining its objectives the RSPB, together with the NCC, produced *Red Data Birds in Britain* (Bibby *et. al.* 1989; Batten *et. al.* 1990). This list was meant to establish which species warranted greatest conservation concern and thus grounds for focusing resources, research and action. Once the list had been established, the next step, in order to work out what could be done for those species, was to assess the threats to each. In turn, identifying the threats paved the way for proposing measures that could be undertaken to deal with those threats. Thus the RSPB, drawing upon experience from elsewhere in the world (such as the inclusion of ‘recovery plans’ in the Endangered Species Act 1973 in the USA), and no doubt the broader discourse of countryside planning (Gilg 1978, 1991), proposed to develop individual strategies for each species. Each ‘species action plan’ (SAP) (the term ‘action plan’ being derived from the RSPB’s centenary slogan ‘Action for Birds’ (Lance 1990)) would detail the current status of the species, the threats to it and the current action being undertaken, before targets – centred on the population and range of the species and achievable within a realistic time-span – were proposed along with a suggested work programme (Porter *et. al.* 1990). As such, the RSPB explored the possibility of an ‘objective-led’ or ‘target-led’ approach to conservation. It wanted to specify which species were important, what it wanted to achieve for that species and to detail what it would do by when. Although the RSPB was told that while such a scheme might work for birds, it certainly could not work for invertebrates or plants (Wynne *et. al.* 1995b), they pushed on and in addition to species action plans developed habitat action plans (HAPs) in conjunction with the Joint Nature Conservation Committee (JNCC) and English Nature (Housden *et. al.* 1991; Williams and Green 1993).

In the discussions prompted by the requirement to respond to the CBD, the RSPB argued strongly that an objective-led approach should form one of the pillars upon which that response to the Convention should be built. As part of the process of preparing a national strategy, a seminar was held at the Royal Geographical Society (RGS) predominantly involving representatives from conservation agencies, government departments and academia but with representatives from farming interests, county councils and the Game Conservancy. In a presentation to one of the workshops of the seminar,

Graham Wynne (1993), then the RSPB's Director of Conservation, argued strongly for the adoption of action planning along similar lines to that already developed within his organisation:

There is no implied criticism in what follows of those who have worked so hard to achieve what we have, but I suggest that the approach taken to date has serious flaws which could be addressed. In essence, what is proposed is a more clearly objective-led approach, with objectives based on the real world of species and habitats, and much greater integration of planning and action. Easy words and hardly original, but they represent a substantial shift from current practice and one which I believe is eminently achievable (Wynne 1993: 45).

Going on to outline that objective-led approach, Wynne noted that the starting point for most nature conservation policy had been 'the identification of special sites and areas' but asked:

why start here? Wouldn't a better first step be to decide what our objectives are in species, species assemblage and habitat terms? Definition of clear objectives must be a pre-requisite of deciding the most effective conservation action, and whilst I am happy to accept that site safeguard is part of the objective as well as the action, there is surely a prior or, at least, a parallel stage which focuses on species (Wynne 1993: 45).

After the RGS seminar, where the government had been somewhat ambivalent as to the extent to which the objective-led approach might work, several NGOs (Butterfly Conservation, Friends of the Earth, Plantlife, RSPB, World Wide Fund for Nature and The Wildlife Trusts) spear-headed by the RSPB, decided to develop the approach independently. Intending to push the Government along by showing what was possible (and highlighting the importance of influencing the content of these policy documents), they met several times in the summer and autumn of 1993 to assess the applicability of the approach across many taxa and each time fed their thinking into a Working Group on objectives and principles chaired by Dr Derek Langslow (Anon. 1994; Wynne *et. al.* 1995b).

Ultimately, in late 1993, when it was too late to continue to influence that process, the group of NGOs decided that they had done enough work with sufficient wider interest to publish and released the first edition of *Biodiversity Challenge* (Wynne *et. al.* 1993), a document which set out a suggested structure for the UK Biodiversity Action Plan and the key elements of an objective-led approach with examples of targets and action plans. These 'biodiversity action plans' (BAPs) closely mirrored the format of actions plans for birds created by the RSPB and were put forward as a challenge to government and to conservation as a whole. In effect, the Challenge Group was arguing for the re-organisation of conservation and the broader adoption of planning practice based around auditing, objective setting, implementation and monitoring.



Shortly after *Biodiversity Challenge*, the Government response to the Convention was published as *Biodiversity: The UK Action Plan* (Anon. 1994). Whilst the *Action Plan* was in significant ways a review of how good Britain was and how much work was already under way, it included '59 steps' towards better biodiversity conservation. The significant 'steps' that subsequently commanded greatest attention were those that stated the need for targets and the production of action plans for species and habitats.

Drawing significantly on business management planning, a new language (of species action plans and targets) and a new set of practices (of action planning and reporting) emerged. For each species or habitat, action plan steering groups were established, action plans written, targets set, appropriate action prescribed and timeframes for action set out. New organisational structures and new forms of practice developed. These action plans and targets represented something of a sea-change in conservation policy because where conservation had hitherto been oriented towards selecting special sites as reserves or SSSIs so that there was a representative coverage of habitats, this new action-planning approach was based on threats, with money and effort directed towards those species and habitats that were most threatened. Rather than spreading resources around and trying to ensure that examples of all habitats are protected, this approach prioritised some habitats and species over others and actively works towards achieving quantitative targets in a specific timescale.

For many commentators this approach was advantageous for four reasons. First, as the focus of attention shifted towards specific targeted action for species or habitats, it shifted away from special places. With the focus on the skylark, for example, the conservationist is interested in any place where that species occurs or in any of the processes, such as agricultural or climate change, which affect its numbers and location. Focusing on species such as the skylark allows the conservationist to talk about the conservation interest of farmland or the problems facing farmland birds more generally; it allows the conservationist to break out of a concern for special places alone as if they can only deal with the bits of land they own or manage and to potentially influence the wider countryside. Conservationists can say to farmers that the skylark has declined by 50% in the last 25 years and connect that with farming practices and, potentially, introduce conservation concerns into broader social concerns. In these ways, the focus of action plans on species and habitats is an important strategy to allow conservation to 'break out' of the reserve.

Secondly, instead of simply protecting endangered species and habitats in reserves and managing those reserves to try and boost their numbers or extent, planning encouraged the conservationist to think about what they would like the situation to be. In a spirit of optimism and self-belief, the conservationist could, instead of simply protecting and accepting that X is

rare, work towards a situation where X became less rare. Conservationists could set down what was special, what they would like to achieve and how they thought they could achieve it. The introduction of planning into conservation meant that conservation itself became forward looking and proactive rather than reactionary. Conservation had hitherto appeared to many social actors as working in an ad hoc way because it was forced to react to developments as they came up and because it worked with reference to criteria and legislation that were relatively obscure to the general public. The establishment of an open, public governmental process that included representatives from business, fishing, farming, tourism and landowners and which set out what was special and what the objectives were, meant that conservation could proceed with reference to much more clearly defined criteria.

Thirdly, action planning was a means of co-ordinating conservation action. Conservation had, arguably, become extremely diverse and although it coalesced around issues such as Flow Country afforestation or funicular railways, the effect of disparate organisations with different objectives and ways of working was the muddying of the waters of social negotiation with other actors. The disparate nature of conservation laid it open to challenge because of its apparent inconsistency. Planning for species and habitats brought people together. Co-ordinated action was, however, about more than achieving a unified conservation: it was also about efficiency. As conservation organisations grew in size they encountered classic organisational problems of making sure that all the arms of the organisation were working towards the same end and resources were being allotted to the most pressing tasks so as to efficiently work towards their aims. The business-planning model was useful in this regard because it provided a mechanism by which these organisations could reorient themselves to their goals.

Finally, the practices of prioritisation that were involved in the biodiversity process meant that conservation action could arguably be made more efficient. Where in the past reserve acquisition policy, for example, had been based on the notion of representativeness (Ratcliffe 1977), it could now be based on threat. Instead of attempting to create reserves based on the best examples of all the habitats in the UK, attention could be focused more specifically on those habitats that were in greatest danger or for which the greatest conservation gain, through changes in management, could be made.

Yet for all its apparent attractiveness, this approach did not, and does not, go uncontested. I will illustrate some of the discontent with reference to contributions to *ECOS*, a journal that is amongst the principal public forums of debate in conservation. Marren (2000), for example, questioned the sorts of practices encouraged by the biodiversity process. Referring to the action plan for Flamingo Moss (UK Biodiversity Group 1998c:

172) – a species found in old magnesium limestone quarries and which is considered endangered because of the cessation of quarrying – Marren noted that whilst one might think that the future of the Flamingo Moss would depend on there being a healthy market for magnesium limestone, ‘the anonymous author of the Plan is more interested in micro-propagation than macro-economics, and has no hesitation in ordering spore banks, and “ex-situ stocks” for translocation experiments, as well as “periodic ground disturbance at all known sites”’ (Marren 2000: 43). Even though Marren thinks that ‘Fiddling about with Flamingo Moss and the like is seductive, and, in individual cases, not particularly controversial’, he worries that as all the individual species and habitats are brought within the same process, the processes’ ‘sheer scope threatens to bring about a kind of pattern-book conservation where a plan stands in the way of thought and originality’ (Marren 2000: 44). Further, ‘translocations and other intrusive techniques are practically mandatory, and never mind whether they conflict with IUCN guidelines or outrage any idea of naturalness’ (for glossary see appendix I). One reason for this, he suggests, is that ‘institutions like Kew Gardens and universities are more concerned with cutting-edge science than routine monitoring ‘n’ management’ and he ‘suspect[s] that another is to give the illusion of control’ (Marren 2000: 45). Finally, ‘the bureaucratic imperative, this apeing of ‘business methods’ that seemed so clever five years ago, drives the process along in a cloud of arbitrary targets and technical make-believe’ (Marren 2000: 45).

In a similar way, Green (2000) criticises the development of the biodiversity process by arguing that all the emphasis on targets obscures the fact that they are actually arbitrary and that the process appears to be oriented towards returning to a pre-war golden-age of biodiversity. Supporting Marren, Green noted that

the BAP process is highly manipulative – it depends on long term, even continual intervention in natural processes. We may not be passing on to future generations a countryside richer in wildlife, but a countryside where Nature is restricted to fragmented sites that need continual management to retain the habitats in the chosen state to protect a particular species chosen as valuable by this generation (Green 2000: 49).

Although these two criticisms were published well after the establishment of the biodiversity process in 1995, they show that the development of the process has by no means been understood as a self-evidently good thing. Yet by the time of writing (2003), there are 391 species action plans and 45 habitat action plans, a separate structure of local biodiversity action plans and separate country biodiversity groups (i.e. the Scottish Biodiversity Forum) which have begun to establish their own strategies. Biodiversity has become big business.

The biodiversity process is significant because while the legislative element of conservation remains the main mechanism by which the statutory agencies fulfil their objectives, it has ushered in a whole new way of undertaking nature conservation: the biodiversity process and action planning represent a new answer to that old question – ‘what is the best way to protect nature’? It is therefore one example of the changing relations between ecological knowledge, ideas of nature and institutional practice and offers one possible means by which I can examine why and how nature conservation does what it does.

### **Nature conservation and modernity**

My interest, then, is in telling the story of recent change in nature conservation. As such, there is no shortage of examples of how I might go about telling that story because the history of conservation in the UK has been told in many different ways. There have been general histories of its emergence and institutionalisation (Adams 1986, 1993, Evans 1992; Lowe 1983; Sheail 1976, 1981, 1998); histories of the development of specific sites or areas (Clifford and Forster 1997; Johnston and Balharry 2001; Ramsay 1997; Lambert 2000, 2001; Matthew 2002; Rothschild and Marren 1997; Friday 1997; Whittington 1996; Mather 1993); histories of organisations (Samstag 1988; Jenkins and James 1994; Johnston 2000; Lowe and Goyder 1983; Mackay 1995; Dwyer and Hodge 1996); and of individual species (Lambert 1998, 2001, 2002); analyses of the relationship between ecology and conservation (Sheail 1987; Adams 1997, 2003a; Bocking 1993, 1997; Toogood 1995, 1996b, 1997, 2003); more reflective work that has sought to ask what conservation exists for, why it has taken the form it has and where it ought to go (Stamp 1969; Mabey 1980; Adams 1996a; Marren 2002); and autobiographical accounts of events and institutional change (Moore 1987; Boyd 1999). These studies are, in the main, straightforward narratives of the important events in the development of legislation or organisations (exceptions being Adams 1996a; Toogood 1995, 1996b, 1997, 2003; Bocking 1997) and have been central to developing a detailed understanding of how conservation took on the shape we see today. Here, though, I want to focus on other work, which, calling upon analytical resources provided by social theory, situates conservation within broad narratives of the development of western society.

Historical accounts of the development of attitudes to nature emphasise the role of the Christian notion of dominion over nature, the importance of the development of scientific rationality and industrialisation and detail the different understandings of these developments as people worked with or challenged them (Glacken 1967; Nash 1973; Oelschleager 1991; Thomas 1983; Smout 2000; Williams 1980). The trajectory of societal development revealed in these histories involves continuous tensions between different understandings of and

approaches to the natural world. Smout (2000), for example, draws a distinction between those that approach the natural world in terms of 'use' and those that approach it in terms of 'delight'. For some, the Earth provides resources for our use: if we develop our scientific knowledge and our technologies of management we should be able to further our use and work towards a better society. For others, the natural world is not there simply to be used instrumentally; it is a source of aesthetic delight and wonder. For them, the development of science and technology in the pursuit of the extension of human control over nature only serves, in the long run, to corrupt and diminish our humanity. These are familiar battle lines, which re-appear in numerous environmental disputes – most recently in arguments over biotechnology – and can be seen to be but the most recent manifestation of long traditions embedded in the development of western society, albeit worked out in a contemporary context.

Not surprisingly, these tensions between different approaches to the natural world have been identified within environmentalism itself. O'Riordan (1976) and subsequently Pepper (1984, 1996), for example, identified 'ecocentric' and 'technocentric' traditions. Worster (1977) discerned 'arcadian' and 'imperialist' perspectives within ecology. Oelschlaeger (1993) outlined opposing scientific and aesthetic-religious approaches and Norton (1991) saw the 'moralists' and 'economic aggregators' as in opposition. Although referring to the division with different terms, these analysts highlight two broad 'schools of thought' within environmentalism. Although these categories should not be understood as hard and fast, they are useful analytical devices. A descendent of Romanticism, the ecocentric preaches 'the virtues of reverence, humility, responsibility and care; argues for low impact technology; decries bigness and impersonality in all forms (but especially in the city); and demands a code of behaviour that seeks permanence and stability based upon ecological principles of diversity and homeostasis' (O'Riordan 1976: 1). They advocate democracy among creatures to the extent that nature should be respected for its own sake, above and beyond its usefulness to people (Pepper 1984). The technocentric, on the other hand, can be identified by an 'undiluted rational, scientific approach...[and]...a belief in the ability and efficiency of management in solving problems by the use of 'objective analysis' and recourse to the laws of physical science' (Pepper 1984: 29). They are 'almost arrogant in [the] assumption that man is supremely able to understand and control events to suit his purposes' (O'Riordan 1976: 1).

Recognising these different positions means accepting that environmentalism is both a reaction to and part of the development of modern society. Yet whilst there is recognition of these different positions, contemporary interpretations stress that one – the technocratic –

comes to dominance. Hajer (1995), for example, examined the construction of, and various responses to, the problem of acid rain in northern Europe, and suggested that contemporary responses mark an 'age of ecological modernisation'. In the 1970s, as notions of environmental crisis grew, there were different responses characterised by texts such as *Limits to Growth* (Meadows *et. al.* 1972) and *Small is Beautiful* (Schumacher 1973). The first typified a hierarchical and technocratic top-down approach. The second represented a participatory bottom-up approach. Hajer analysed the discursive construction of appropriate responses and the way that the first approach won out. Ecological modernisation 'can be defined as the discourse that recognises the structural character of the environmental problematique but none the less assumes that existing political, economic, and social institutions can internalise the care of the environment' (Hajer 1995: 25). As such, the problem of acid rain became a technical problem requiring a technical solution. The response to the problem – which pointed to fundamental issues of resource use – was not to address the fundamental issues but to develop new technologies to mitigate emissions of gases and new means of social organisation; it was an attempt to modernise out of the problem:

ecological modernisation straightforwardly rejects the anti-modern sentiments that were often found in the critical discourse of social movements. It is a policy strategy that is based on the fundamental belief in progress and the problem-solving capacity of modern techniques and skills of social engineering...There is a renewed belief in the possibility of mastery and control, drawing on modernist policy instruments such as expert systems and science (Hajer 1995: 33).

While environmentalism is portrayed as occupying an ambivalent position, being both reaction to and part of processes of modernisation and thus containing within itself tensions between different understandings of appropriate action, it is the modernising element that dominates.

Similar tensions are evident within nature conservation. In studying the tension between 'use' and 'delight', Smout (2000), for example, identifies some of the strands that came together under the notion of 'delight' and which were important in the formation of nature conservation. Two strands of what might be termed a proto-environmentalism are evident with reference to two individuals: the archetypical romantic, William Wordsworth, and Alfred Newton, Cambridge zoologist and 'father of bird protection' in the UK (Smout 2000: 25). For Wordsworth, nature, a living force that could uplift and ennoble the individual, was corrupted by industry, science and progress (Macnaghten and Urry 1998). For Newton, however, science could be put to use. He was alarmed by the apparent extinction of the Great Auk in 1844 (see Lambert 1998) and suggested that once it had been

re-found there could be a breeding program in London Zoo. Taking a strong stance against egg collecting and shooting of seabirds, Newton suggested that modern science must 'transmit to posterity a less perishable inheritance' than the 'mere possession of a few skins or eggs' (cited in Smout 2000: 28). For Wordsworth nature must be protected from industry and science, but for Newton, the protection of nature involved the pursuit of science.

These two strands – the romantic and the rational scientific – co-exist within nature conservation and re-appear in the form of preservationism and conservationism, but just as for environmentalism more generally, one came to dominate (Sheail 1976, 1998; for the North American story of this dominance see Hays 1959). Adams (1997) forcefully highlights the dominance of the technocratic approach to conservation in his examination of the connections between conservation and ecology through the analytical prism of 'rationalisation' (see also Murphy 1994a). Rationalisation – which Weber (1968) argued was one of the major processes of the modern period – involves a complex of interwoven developments. It involves the development of science and technology that can be used to predict and control nature, the expansion of capitalism involving the ascendancy of the rational mastery of the market, the extension of the formal hierarchical organisation of social action, and the formation of legal systems that enable the management of social conflict. In short, 'rationalisation describes the process by which nature, society and individual action are increasingly mastered by an orientation to planning, technical procedure and rational action' (Morrison 1995: 218). With regard to 'nature' its rationale is, effectively, one of control. As such, the logic of rationalisation has been manifest in Britain in urbanisation, the growth of manufacturing and the industrialisation of agriculture.

Adams uses the concept of rationalisation as a frame to discuss conservation and environmentalism. For him, 'environmentalism represents a significant dimension of opposition to rationalisation and its effects on nature and human survival' (Adams 1997: 278) because both conservation and environmentalism can be seen to have their roots in a reaction to the effects of industrial expansion. Yet, 'not only has nature conservation formed part of a wider reaction to rationalisation but it is also part of that rationalisation' (Adams 1997: 278). Since one strand of rationalisation is the development of science and technology, within conservation, ecology has 'provided knowledge about nature that has served to classify and objectify it, to predict environmental change and to provide a technocratic recipe book for directing and controlling that change' (Adams 1997: 278). Moreover, as conservation has sought to respond to the challenge of rationalisation in terms of its effects on nature, it has itself developed complex organisational structures and legal institutions. Throughout much of the twentieth century, 'nature conservation practice has formed part of

a rationalising project engaged in controlling nature and in organising the relations between humans and nature primarily (although not exclusively) within the specific bounds of nature reserves' (Adams 1997:278). Further, Adams suggests that as ideas in ecology have changed, with the notion of instability gradually challenging the centrality of stability, there has been a re-intensification of the scientific endeavour and the development of evermore-sophisticated technologies for predicting and controlling nature. He noted elsewhere that:

Conservation through the second half of the twentieth century increasingly treated nature itself as an object. We have explained its diversity and form, its location and its demise through our science. We classified it and located it, defined it and tied it down as a set of objects, as species, as sites or habitats. In order to protect nature from industrial rationality, we have increasingly used the logics and methods of industrial rationality itself. With our science and our planning we manage and control nature, organising ourselves in corporations and calculating cost-effective ways of sustaining and reproducing species and habitats. We seek to use industrialism's weapons on nature's behalf, but in the process we substantially industrialise nature itself (Adams 2001: 24).

For Adams, then, nature conservation has come to be dominated by the technocratic and industrial approach to the natural world. While conservation is both part of and reaction to the development of modern rationality, it has, for Adams, become much more a part of rationalisation than a reaction to it.

By situating conservation in a narrative of the rationalisation of modern society, Adams and Hajer provide compelling interpretative resources for understanding recent changes in policy and practice. Can biodiversity action planning – with its focus on species and habitats that were identified by research, its organisational structure of steering groups, and its attention to targets in order to achieve efficient, cost-effective action – be understood as a manifestation within conservation of the process of rationalisation? Can reserve management, with its implicit assumptions about the ability of conservationists to engineer their way to a better future, be understood as a form of policy embedded in ecological modernisation: a technical response to the problem of protecting species and habitats?

It would certainly be easy to understand these recent developments in terms of rationalisation. It would be easy to look at the planning and research involved in the biodiversity process or reserve management and say that the rationalistic control of nature is evident. It would be easy to say that a significant element of rationalisation is the development of science, conservation is intimately connected with the science of ecology, ecology (in its managerialist guise) is interwoven in the modern project of controlling nature, therefore, conservation is part of rationalisation. But I suggest, however, that there are difficulties in simply accepting 'rationalisation' or 'modernisation' as explanatory concepts.



However much the concept of rationalisation appeals, simply applying it takes it for granted. One would start with the concept and its implicit social history and slot conservation into the narrative. As such, simply applying it would be to perpetuate a social theory without empirical substantiation. I want to suggest, then, that the issue of whether conservation represents a manifestation of rationalisation or modernisation is an empirical question. The importance of the biodiversity process and its taking on an apparently rationalist approach, for example, cannot be readily understood by referring to it as part of rationalisation because this would ignore *how* and *why* the rationalist approach came about. What is needed is an analysis that can address the accomplishment of rationalisation and ask how different traditions such as the ecocentric and technocentric are negotiated.

How is this to be done? Hajer (1995) suggests one direction by his adoption of a broadly constructivist approach to nature. It is this constructivist work and its utility that is reviewed in the next section.

### **Constructivist accounts: re-telling the story of nature conservation**

There has been much historical scholarship on the development of nature conservation (Adams 1986, 1993, Evans 1992; Lowe 1983; Sheail 1976, 1981, 1998). This work has been crucial in developing an understanding of why certain directions were taken and thus how we have arrived at the present. But in recent years this work has been challenged by those that have utilised a constructivist orientation to nature and nature conservation (Toogood 1995, 1996b, 1997, 2003; Bocking 1997). From this perspective there are two problems with many extant analyses. First, they assume that the nature being conserved is an unproblematic 'thing'. Debates, for example, between people seeking the protection of seabirds in the early days of the preservation movement and sportsmen wishing to shoot at seabird colonies, were characterised in terms of competing interests and opinions about how nature should be used or protected. Nature 'is self-evident and exists in a space outside politics; it is simply the object over which politics happens' (Braun 2002: 2). Secondly, they tell conservation's story as one of social interaction whilst effectively bracketing-off science as if it does not involve social interaction. Such a focus implicitly suggests that changes in science that have an impact on conservation are not sociological, but, rather, the result of improvements in scientific understanding alone.

These criticisms are connected to two important themes that frame a constructivist approach to nature conservation: the social construction of nature and the social construction of knowledge. With regard to the former, it is now, in the social sciences at least, commonly accepted that 'nature' is socially constructed. Following the developments in the linguistic

turn in social science and post-structuralism more generally, it is accepted that rather than simply speaking about nature as if it is a thing that is outside language, nature is brought into existence through language and is therefore thoroughly embedded in a cultural context: 'Nature is part of culture' (Wilson 1992: 12). As Soper puts it 'the one thing that is not 'natural' is nature...itself' (Soper 1995: 7). It is not simply outside or beneath culture as if the cultural takes place on the bedrock of the natural because it is in the ways we talk about it and the ways that we represent it that we give it meaning: as particular signs are interpreted in similar ways, so similar ideas, myths, or imaginative geographies of nature develop. Even as we travel through landscapes that appear uncontaminated by humanity we cannot help but experience them not just as natural landscapes but also as cultural icons. 'What we mean when we use the word "nature" says as much about ourselves as about the things we label with that word' (Cronon 1996: 25). Nature is, in this way, constructed in social interaction (Evernden 1992; Eder 1996; Bird 1987; Cronon 1995a; Demeritt 1998, 2001a, 2002; Hannigan 1995; Olwig 1984; Escobar 1996; Merchant 1981, 1996; Haraway 1992; Benton and Short 1999; Duncan and Duncan 2001; Dizard 1993).

Crucially, if we accept that 'nature cannot pre-exist its construction' (Haraway 1992: 296), then the story of nature conservation as a form of social interaction cannot simply be a story of the efforts made to conserve nature: it must also be a story of how nature itself changes as new vocabularies and practices evolve. We must accept that the very notion of conserving nature rests upon understandings of nature that have a long and complex history, and that 'nature', or our idea of nature, changes over time. In this, the constructivist approach does not, at first, appear to go much further than the 'classic histories' of the changing ideas of nature (Glacken 1967; Williams 1973, 1976, 1980; Thomas 1983; Coates 1998; Oelschlaeger 1991; Smout 2000; Nash 1973). The constructivist approach, however, does begin to go further, or at least address slightly different things. A broadly constructivist approach, influenced by post-structuralism, for example, recognises the importance of representation in relations of power. New avenues of research have thus explored the ways in which nature is represented in art (Short 1991), photography (Wilson 1992; Ryan 2000), film (Mitman 1999), news media (Burgess 1993; Holloway 1998), new technologies (Light 1997) and in zoos and wildlife parks (Anderson 1995; Mitman 1996). This work has sought to examine how particular sorts of viewing subjects and particular sorts of nature-as-object are constituted in the act of representation. Representation is crucial because as Braun and Wainwright put it 'the 'forest' in conservation discourse is not something that existed independently from the maps, tables, techniques, and practices that made it available to forms of economic and political calculation. One must see the forest before one can

rationalise it' (Braun and Wainwright 2001: 52; see also Tsouvalis-Gerber 1998). Constructivist approaches suggest that rather than exploring the changing ideas *about* nature (which leaves 'nature', as an ahistorical object, unproblematised), it is important to examine 'the *emergence* of 'nature' as a discrete and separate object of aesthetic reflection, scientific enquiry, and economic and political calculation at particular sites and specific historical moments' (Willems-Braun 1997: 5). Thus the 'emergence' of particular species and habitats has been explored. In particular, attention has been paid to the spotted owl in the US (Proctor 1998c); to foxes, cows, deer and badgers in the UK (Woods 1997, 1998, 2000); and to wetlands (Giblett 1996) and forests (Braun 2002; Schama 1995).

Due to the fact that there are different signifying practices and different languages and therefore multiple myths and contested natures – different 'ways of seeing' – the constructivist approach has also examined how such representations, serve to structure social relations and are mobilised towards certain social, political and moral ends. As such, many commentators have sought to examine the way that different constructions of nature, or of particular species or habitats (because if one looks closely one must recognise that it is rarely 'nature' that is being constructed but more often a very specific part of what is commonly understood by 'nature'), come into conflict over particular issues. Emphasis is placed on the way that particular representations work in power relations between social actors and the ways that particular groups seek to dominate others or resist dominance (Anderson and Gale 1992; Harrison and Burgess 1994; Burgess 1992; Harrison 1993; Cloke *et. al.* 1996; Braun 2002; Macnaghten and Urry 1998; Cronon 1995a; Larsen 1992, 1994; Livingstone 1995a; Schama 1995; Willems-Braun 1997; Bunce 1994; Proctor 1998c, Anderson 1995; Woods 1998, 2000; Matless 2000). In distinction to the work that examines the development of environmental policy in party political and governmental contexts (McCormick 1991; Young 1993; Garner 1996; Doyle and McEachern 1998), this work examines the *cultural politics* of environmental issues.

One example of a constructivist approach to nature conservation, which is relevant to this study's focus on Highland Scotland, is Toogood's (1995, 1996a, 2003; and see MacDonald 1998 for a critical response) examination of the debates between conservationists and hunting estates over Caledonian forest regeneration and deer numbers (on the cultural politics of Highland Scotland more generally see Lorimer 1999, 2000; Withers 1999; Hunter 1995; Mackenzie 1998; Gold and Gold 1995; Womack 1989). There is conflict because conservationists claim that there are too many deer for tree regeneration while estates maintain high deer numbers because of traditional estate practice. Toogood suggests that the conflict cannot be adequately described in terms of 'insider versus outsider'

or 'tradition versus post romanticism' as outlined by Smout (1993). Simply viewing conservationists as outsiders is inadequate because 'the debate is more about the models, or discourses, of nature and society that are implicit within the differing representations of ecology, tradition and space in and between the social groups involved' (Toogood 1995, 103). Thus, Toogood views the conflict as being based in two groups coming to the issue from different social worlds - with differing representations - where each group is competing for 'the power to define what 'nature', tradition and indeed, the Highlands, *are*' (1995, 103). In this sort of analysis, nature, and the Highland landscape, is constructed through disputes between actors. The different discourses are mapped onto different social groups because each group develops its own culture of nature. It is an analysis, therefore, which emphasises that 'nature' is thoroughly bound up in disputes, arguments and social interaction more generally, rather than being external to those debates.

This sort of constructivist work has implications for those, like myself, seeking to focus on the field of nature conservation and to explain its institutional change and current managerial emphases. It implies that if conservation is one of the contexts within which nature is constructed and within which a culture of nature develops, then recognising that meanings are never fixed and that culture is continually being re-negotiated means accepting that conservation is itself a contested cultural arena. Consequently, this constructivist work suggests that it is difficult to speak in any simple way about 'nature conservation' as a whole. Nature conservation must be understood as an arena of negotiation. If it achieves a relatively coherent position, so that reference to 'nature conservation' as a unitary whole makes sense, this must be understood as a discursive achievement. Further, the constructivist approach to nature implies that conservation's policies and practices also represent a discursive achievement. If nature is constructed within the context of nature conservation, the policies that are adopted – whether they are legislative, the practice of creating reserves or particular sorts of management – cannot be understood as relating in any simple way to an external nature (as if loss of species instrumentally leads to their protection). Rather, as Hajer (1995) illustrated in his study of the discursive construction of environmental policy in relation to the issue of acid rain, and as Toogood (1996b) has shown with reference to the history of the Nature Conservancy in the UK, both policies and constructions of nature are achieved within power-laden social relationships. A constructivist approach to nature suggests that the shape that conservation takes in terms of its legislation and its practices is discursively constructed. Under this approach institutional change is about more than the growth of certain organisations or the wielding of power by influential individuals (as is commonly re-iterated in histories of conservation); it is *also* about the negotiation of cultural

discourses *within* conservation itself. In the process, nature and nature conservation are co-constructed; nature emerges in the political terrain of its own conservation.

The second theme of a constructivist approach to conservation emphasises the social construction of knowledge. Whilst the idea that nature is socially constructed draws upon philosophical ideas contrary to the predominantly realist and positivist nature conservation world, many of those that I have spoken with in the course of this study have readily accepted (as almost a truism) that different people have different *ideas* of nature. They have, though, invariably bracketed off this area of cultural concern from the solid ground offered by science. Nature conservation, entwined as it is with the science of ecology, is surely based upon objective, rather than value-laden, understandings of nature. But if a constructivist position is taken seriously, recourse to science in this way is difficult because the focus on the constitutive nature of discourse has been extended to, and indeed took some of its impetus from, analyses of how knowledge, including scientific knowledge, is itself constructed. In short, scientific knowledge is socially produced. For Golinski, 'scientific knowledge is a human creation, made with available material and cultural resources, rather than simply the revelation of a natural order that is pre-given and independent of human action' (Golinski 1998: 6). Work in the sociology of science has thus explored such social contingencies as the 'interests' of practitioners (Mackenzie and Barnes 1979); the micro-practices of scientists at work (Knorr-Cetina 1981; Latour and Woolgar 1986; Latour 1987, 1999b); the importance of the place of production to the sorts of knowledge that get produced (Livingstone 1995b; Ophir and Shapin 1991; Outram 1996; Shapin 1998); and the gendered nature of knowledge construction (Merchant 1981, 1996; Haraway 1989, 1991, 1992).

This sociological approach to science has influenced studies of the history of ecology. Although he wanted to retain the solid ground and moral authority of 'nature', Worster, for example, says that 'the ideas of science are open to much the same kind of treatment as other ideas, such as theological or political thought. Like all of man's intellectual life, scientific ideas grow out of specific cultural conditions and are validated by personal as well as social needs. They are, in short, more closely interwoven with the general fabric of thought than is commonly supposed' (Worster 1977: xiv-xv). Although McIntosh (1985) argued that his definition of ecology was very (too) loose, Worster highlighted the connections between ecology and broader societal attitudes by suggesting a link between various ecological theories and conceptualisations and the managerial values in society. Similarly, in his book *The Social Construction of Nature*, Evernden (1992) noted how ecology has become the contemporary authority on nature's laws, defining what sorts of

action are appropriate or dangerous and, thus, extending knowledge of nature into the moral world of human action. Yet he also noted that there have been, and still are, different conceptualisations of nature within ecology. Nature can be understood, for example, as a harmonious whole and all human action as detrimental; or nature can be an arena of perpetual competition where human dominance is itself natural. For Evernden, these different interpretations, which extend to determine appropriate human conduct and which cannot be simply chosen between by reference to nature, mean that 'nature justifies nothing, or anything. Ecology is today's official voice on natural matters, an institutional shaman that can be induced to pronounce natural whatever we wish to espouse. Ecology is, in this sense, simply being used as a blunt instrument to help implement particular life-styles or social goals' (Evernden 1992:15).

Consequently, ecology is understood to be deeply embedded in wider social negotiation and it is this recognition that has generated a considerable amount of research. Working at the intersection of the history of science and studies of colonialism, Grove (1995 1997), for example, addressed how proto-conservationist ideas influenced, and were influenced by, the colonial encounter. Examining the more recent development of the discipline of ecology, Taylor (1988) interpreted the focus on energy flows in 1950s ecology as intimately connected with a post Second World War technocratic optimism and belief in the ability of people to control nature. Kwa (1987) noted the centrality given to specific sorts of ecology when their co-ordinating metaphors coincided with those of policymakers. Bramwell (1989) explored the roots of contemporary ecology in the organic movement and fascism. Mitman (1992) examined how social and political concerns in early twentieth century America influenced the research of biologists at the University of Chicago. Reacting against individualism and competition, and in the context of two world wars, this research emphasised co-operation. Bocking (1997, 1993) emphasised the importance of the institutions within which ecologists worked in shaping the choices in research and the discipline more generally and suggested that the very concept of the ecosystem 'was not only a particular set of ideas about nature but also a strategy contributing to the formation of national communities of ecologists, independent of their local contexts' (Bocking 1997: 184). Dunlap (1991) examined the gradual dominance of the scientist over the naturalist in the shift towards the bureaucratisation of conservation with reference to the history of efforts to save the whooping crane. Samuel (1996, 1998, 2000) investigated conservation science in Highland Scotland and argued that ecology and conservation took shape in the Highlands with direct reference the social structure of Highland society and the importance of landowners. Dean (1979), Nicolson (1989) and Waterton (2002) focused on the construction

of ecological classifications. Journet (1991) and O'Hara (1992) examined the role of narrative in ecological writing. Myers (1990a, 1990b) looked more generally at texts and images in making ecological arguments. Cameron (1999) explored the way that different fields of knowledge could become connected, looking specifically at the way that Tansley's interests in psychology and ecology informed each other. Yearley (1989, 1991, 1993) explored the use of science by conservation organisations and the ambivalent position that this sometimes put them in. Finally, with respect to the more recent development of the concept of biodiversity, Takacs (1996) sought to examine the role of prominent biologists in re-shaping both their science and conservation by advocating and developing the concept, and Bowker (2000) explored the implications of bureaucratic convergence around biodiversity for the sorts of knowledge that will be produced. He argues that as data sources are brought together, the heterogeneity of data and knowledge production is lost and that this is a potentially detrimental development because it means that avenues for new research are closed off before they can develop.

All this suggests that the content of ecology is related to the ecologists' broader negotiation of a position in academia and society and that the recourse by some to the solid ground of science, in the face of a constructivist orientation to nature, is problematic. Constructivist approaches have therefore challenged the classic understanding of science as neutral and objective with the resultant knowledge being the mirror of nature. Science cannot be so simply bracketed off as the authoritative ground external to cultural discourse upon which conservation rests. The implication of this is that one of the common interpretative tools in understanding conservation must be rejected. The development of conservation policy cannot be simply understood as the result of progress in ecological science or a better scientific comprehension of the problems of nature. Conservation science is, rather, another element that gives shape to, and is given shape in, discursive change.

These two themes – the social construction of nature and the social construction of knowledge – open up for investigation elements of nature conservation that are too commonly taken for granted. These constructivist understandings suggest that whilst conservation presents itself as scientific and the authoritative agent that can speak for nature, and whilst histories of conservation have commonly reinforced (or, at least, not questioned) this image, what lies behind this façade is a messy world in which science and the management associated with it are bound up in moral, social and political issues about 'the environment', industrial expansion, beauty, identity, the law and who has the right to speak for nature (Macnaghten and Urry 1998). These constructivist understandings also suggest that the analysis of this contested arena of cultural politics requires a certain amount of

agnosticism and symmetry (on the concept of symmetry in constructivist analyses see Bloor 1976). The analyst should not start from a presupposition that nature as it is constructed at present, is the 'best' or closest to a true understanding of the natural world and tell the story of the inevitable rise of that understanding. They should, rather, examine the multiple understandings that people have constructed and worked with, even the ones that are now understood to be 'wrong'.

In this thesis, I work with these constructivist ideas to show how conservation is continually being renegotiated and to seek to investigate the processes of negotiation. The centrality of the concept of biodiversity and the new mechanisms of action planning or shifts in reserve management are thus not understood as instrumental responses to the problems of nature, but as discursively arrived at, socially negotiated accomplishments to be explained. Further, 'science' is not taken for granted as that arena of knowledge formation that lies outwith politics and power: it is understood as embedded in and as taking its shape from the political world. In this way, I hope to show that ecology and conservation are embedded in, and are the context for, a cultural politics of nature.

There have been, however, criticisms levelled at this sort of constructivist approach to nature and knowledge. More specifically, it has been suggested that the emphasis on construction leads to the conceptualisation of representations of nature as floating above the social fray. Consequently, recent constructivist work has sought to engage much more substantially with the ways that constructions of nature are embedded in social and institutional practice (Macnaghten and Urry 1998; Braun 2000, 2002; Demeritt 2001b). The work of Michel Foucault has been particularly influential in this regard. Even though his work on biopolitics and governmentality does not address the category 'nature' or the natural sciences, his historical explorations of the emergence of modern forms of institutional and personal practice provide a broad conceptualisation of institutional change that has begun to be extended to inform a reading of contemporary ecological issues. In the next section, I look at his work and that of others that have utilised his ideas in relation to environmental issues. I do so because, in the context of an interest in the position of nature conservation with respect to processes of rationalisation, Foucault's ideas and approach are, I suggest, useful.

### **Foucault, governmentality and nature conservation**

While Foucault's work resists easy systematisation, Turner suggests that the unifying theme is the dual focus on 'the *rationalisation of the body* and the *rationalisation of populations* by new combinations of power and knowledge' (Turner 1984: 159; see also Matless 1992; Philo 1992; Hoy 1986; Dreyfus and Rabinow 1982; Philp 1990). The rationalisation of the body is



addressed most explicitly in *Discipline and Punish* (Foucault 1977), which is cast as a genealogy of the ways in which the modern individual has been created as object in the interstices of the penal system, wider societal disciplinary regimes and the developing human sciences (on his understanding of genealogy see Foucault 1980a). For Foucault the emergence of discipline represents the emergence of a new form of power based less on direct violence and more on regulation and normalisation through observation and the calculated correction of abnormal behaviour. Foucault exemplifies the workings of this new form of power with reference to its manifestation in the penal institution but also by examining a broader disciplinary regime in society as a whole. In prison, inmates were subject to two forms of visibility: on the one hand, the prison authorities accumulated a detailed knowledge of the physiology and behaviour of the inmates, whilst on the other, they were housed in cells where they could be observed without knowing it. The constant threat of visibility encouraged normal behaviour and the accumulation of new forms of knowledge about the delinquent or the depraved contributed to the emergent human sciences of medicine, psychology and so on, which, in turn, contributed to the construction of norms. As such, Foucault sees bodies of knowledge as tied to systems of social control. Knowledge was produced as an effect of power and power operated through knowledge (Foucault 1977: 27).

In society more generally, Foucault explored the ways that the body was made 'docile' through the meticulous, minute techniques used to control it. The spaces of work, such as factories, or of care, such as hospitals, were organised in ways that lent themselves to the controlling and surveying of the body. And the organisation of life into work, leisure and sleep, and so on, became structured and controlled with the institutionalisation of the timetable and the development of an exhaustive work ethic. Thus Foucault concentrated on understanding the development of the disciplinary regime through an analysis of the 'new micro-physics of power' (Foucault 1977: 139); it was an analysis of the ability of disciplinary power to penetrate the minute everyday practices of individuals and so render their bodies docile. This is the rationalisation of the body (Turner 1984) because with the emergent disciplinary regime the body is caught within the human sciences and rendered knowable and thus controllable.

A criticism of this work, with its emphasis on the local relations of power, however, was that it ignored the relations between institutions and the state (Rutherford 1999). But in *The History of Sexuality* (1978), Foucault extended his analyses of the disciplinary regime and its workings on the human body to an analysis of the regulation and normalisation of the 'social body' through expert discourses of sexuality. That is, he turns his attention to the connection between the micro-level operation of power on the body and the problem of

regulating entire populations by the state (rationalisation of populations). In particular, Foucault identifies a new form of power that he characterises as 'biopower', which is concerned with 'administering life' (Foucault 1978: 139). This 'power over life' evolved in two forms. The first draws on his earlier work and focuses on the discipline or the 'anatomo-politics of the human body' and the second focuses on the regulatory controls used to supervise the health and longevity of the population: the manipulation of these controls is to undertake 'a biopolitics of the population'. In as much as these two elements are connected, to attempt to regulate sexual activity is to link the discipline of the body with the management of the population. Thus Foucault argues that 'one of the great innovations in the techniques of power in the eighteenth century was the emergence of "population" as an economic and political problem' (Foucault 1978: 25). It was an emergence that Foucault associated with changes taking place in early modern Europe that marked the transition from 'rule' to 'government' (Foucault 1991). In replacing the relatively coercive rule of the state by a sovereign, this new form of thinking about and exercising power involved finding ways in which subjects would internalise state control through self-regulation. 'In contrast to sovereignty, government has as its purpose not the act of government itself, but the welfare of the population, the improvement of its condition, the increase of its wealth, longevity, health' (Foucault 1991: 100). The health and welfare of the population 'were no longer conceived of as ends in themselves...they were now seen instrumentally and empirically, as the means for the increase of the state's power' (Dreyfus and Rabinow 1984: 139-140).

It is with this attention to the population that the art of government of the state becomes a distinct activity requiring new forms of knowledge and new techniques and practices of social control. 'Biopolitics is therefore inherently linked to the development and elaboration of specific forms of expertise' (Rutherford 1999: 44). 'Experts', supported by new forms of knowledge, have the task of 'administering life' and their expertise is implicated in the way biopolitics becomes applied to the individual and collective body through the disciplines of medicine, education, public health and social welfare. This rationalisation of the population is, for Foucault, an essential element of the development of modern society because the parallel development of the *techniques* of biopower (anatomo-politics) and the *institutions* of state power (biopolitics) were also crucial in the emergence of political economy (Dean 1999). 'Biopower was without question an indispensable element in the development of capitalism; the latter would not have been possible without the controlled insertion of bodies into the machinery of production and the adjustment of the phenomena of population to economic processes' (Foucault 1978: 140-141). Foucault (1991)

dubbed the emergence of these new formations of knowledge and techniques of governing populations 'governmentality', by which he meant:

[the] ensemble formed by the institutions, procedures, analyses and reflections, the calculations and tactics that allow the exercise of this very specific albeit complex form of power, which has as its target population, as its principle form of knowledge political economy, and as its essential technical means apparatuses of security...this type of power which may be termed government, [results] on the one hand, in formations of a whole series of specific governmental apparatuses, and, on the other, in the development of whole complex of *savoirs* (knowledges) (Foucault 1991: 102-103).

With the simultaneous emergence of the population and biopower, then, Foucault identifies what he takes to be an important element of modern society – the 'governmentalisation' of the state. Formal bodies of knowledge become interlinked with administrative mechanisms that act upon both the individual and the population through a variety of techniques. He therefore offers an analysis of the emergence of modern government based on specific configurations of power/knowledge; it is, as he says of his analysis of discipline, 'a history of the modern soul...a genealogy of the present scientifico-legal complex' (Foucault 1977: 23).

In offering an historical explanation for the form of contemporary society and in suggesting important elements in its emergence, Foucault offers resources for contemporary analysis and for this study. Foucault's nominalistic approach provides the basis for, and is thus compatible with, much of the constructivist approach to nature and knowledge. Foucault argues that if one wants to understand the constitution of society one should listen to history. If one listens to history, he argues that one finds not that there is a timeless and essential secret *behind* things, 'but the secret that they have no essence or that their essence was fabricated in a piecemeal fashion from alien forms...from chance' (Foucault 1980a: 142). He adopts a genealogical approach as 'a form of history which can account for the constitution of knowledges, discourses and domains of objects etc., without having to make reference to a subject that is either transcendental in relation to the field of events or runs in its empty sameness throughout the course of history' (Foucault 1980b: 117). This nominalist position means that history, our knowledge of the world and the way that that knowledge influences the human subject, are all *things of the world*: they are contingent on relationships, interactions and struggles (Philp 1990). This sort of understanding is evident in Foucault's analysis of the emergence of the categories of 'madness', the 'body', 'discipline' and 'sexuality'. Foucault showed that there were certain sets of discursive practices that governed what could be said about a particular topic at any particular time or place and situated those discursive practices within the work of institutions such as prisons, hospitals

or schools. As such, categories such as 'the body' only emerged through situated discursive practices and only made sense within the discursive frame of reference that enabled those categories.

In a similar way, 'nature' and 'biodiversity' could be conceived as emerging through discursive practice within an institutional context of ecological science and its associated conservation agencies; as formations of knowledge and practice which bring objects into being and, in turn, perpetuate those fields of knowledge. An analysis of the emergence of biodiversity, then, could consider, in a similar way to Foucault, the small practices involved in the formation of new regimes of nature conservation. 'Biodiversity' and, more broadly, 'nature' can be understood as embedded within the emergence of new forms of power/knowledge that are the result of continuing struggle and negotiation and which constitute and underpin biodiversity conservation.

Pointers to how Foucault's ideas might be put to work in an analysis of nature conservation can be found in work that has sought to utilise the concept of 'governmentality' (Dean 1999; Rose and Miller 1992). The study of governmentality:

seeks to identify the emergence of that regime, examine the multiple sources of the elements that constitute it, and follow the diverse processes and relations by which these elements are assembled into relatively stable forms of organisation and institutional practice. It examines how such a regime gives rise to and depends upon particular forms of knowledge and...considers how this regime has a technical or technological dimension and analyses the characteristic techniques, instrumentalities and mechanisms through which such practices operate (Dean 1999: 21).

Taken as such, a study of biodiversity conservation as a regime of practice and as an arena of power/knowledge would address the emergence of the regime, the different elements that constituted the whole, the forms of institutional practice, the dependence of these practices upon specific sorts of knowledge and the techniques involved.

Does such an approach stretch Foucault's ideas beyond the bounds of their utility? In his genealogical work (as opposed to his archaeological work: Foucault 1972, 1974) Foucault was interested in the human sciences, the state and how *people* became caught up in relations of power. There is, however, potential value in extending Foucault's explicit concern with the biopolitics of the human population and the human sciences to the natural world and the natural sciences. It is possible to argue that although Foucault's analysis of power/knowledge was aimed at illustrating the relations between individuals and the apparatus of the state, his insistence that knowledge was produced as an effect of power and power operated through knowledge is compatible with contemporary analyses of science as social practice (Rouse 1987, 1993). Ecological science, as the above review suggested, is not

corrupted by power or social influence, it is thoroughly embedded in power and social practice.

It is possible to note, too, that at the same time as the 'population' was interwoven with the development of 'biopower', there developed new approaches to the natural world. Rutherford, for example, suggests that 'it is clear from [Foucault's] discussions of the biopolitical regulation of populations that this assumes not only the disciplining of individuals and populations, but also, necessarily, a concern with the administration of 'all the conditions of life' as represented by the environment' (Rutherford 1999: 45). The definition and administration of the 'population' requires the simultaneous definition and administration of the environment upon which the population depends since if the art of government is to improve the condition of the population, a central concern must be the proper balance between the population and resources. Consequently, the idea of the environment as the sum of the physical resources upon which the population depends also comes into existence and becomes a problem of government: the government of populations also entails the government of nature. In line with this argument, Demeritt (2001c: 437) claims that the 'efforts to enumerate and conserve the nation's natural resources were a distinct extension of an emergent discourse of 'biopower''. Similarly, Rutherford suggests that whilst Foucault identified an expanding series of discourses on population in the eighteenth and nineteenth century, if we look to historical scholarship, we can see evidence of other discourses which take the environment or nature as their object. Glacken, for example, points to George Perkins Marsh's treatise on *Man and Nature*, and which explicitly addressed the population-resources issue, as marking the arrival of an entirely different approach to the natural world 'influenced by the theory of evolution, specialisation in the attainment of knowledge, (and) acceleration in the transformation of nature' (cited in Rutherford 1999: 51). Just as biopower was characterised by the emergence of new forms of power/knowledge in the human sciences and associated institutions, within which the population materialised as an object, so there also developed new forms of power/knowledge and institutions concerned with the environment.

Following this sort of logic, environmental governance can, arguably, be understood as an extension of biopower. In this vein, governmentality as a concept has been extended to provide a context for analyses of the regimes of practices – the configurations of power/knowledge – through which nature, natural resources and the environment have become known and controlled. Murdoch and Ward (1997), for example, have examined the role of statistics in the UK, most especially around the time of the Second World War, in creating a new object – national agriculture – that subsequently came into the compass of

government. Hannah (2000), with a focus on Francis Walker, director of the 1870 and 1880 US censuses, and Kirsch (2002) with a focus on John Wesley Powell and the mapping of the Colorado Plateau in the nineteenth century, both examine the mechanisms by which data travelled and was invested with authority and through which the nation and the blank spaces on the map became known to the policy makers. It was through such mechanisms that 'the west' became known and bound up with the westward geographical expansion of specific systems of value and signification. Braun (2000) has focused on the processes of geological mapping on the west coast of Canada in the late nineteenth century and the co-construction of national resources and competent geological observers that allowed the surveillance of the west and the transferral of geological information back to the centres of population and calculation in the east. Demeritt (2001c) has examined the statistical and diagrammatic enframing of the forest resources of the Progressive-era United States and highlights how once transformed into a calculable quantity they became available to new disciplinary forms of state power. Thus whilst Foucault focused on the emergence of a new object of a governmental rationality – the population – others have sought to extend this usage to look at the formation of different objects, such as the national farm, or the national forest, and thus their incorporation within the rationality of government and their ultimate control and use directed from a distant centre of calculation.

The power/knowledge configurations that constitute and control 'the environment' and the population with regard to the environment, and which are interwoven with the rise of ecological science, have thus been recast as 'ecological governmentality' (Rutherford 1999: 51), 'environmental governmentality' (Darier 1996) or 'environmentality' (Luke 1999). Rutherford suggests that 'ecology and environmental management can also be regarded as expressions of biopolitics, as these originate in, and operate on, the same basic concerns for managing the 'continuous and multiple relations' between the population, its resources and the environment' (Rutherford 1999: 45). Nature conservation could, therefore, at its simplest, be understood as a part of a problem of environmental governance. Conserving the natural world is part of governing the population by regulating the actions of people through legislation to protect species or by designating reserves in the face of an expanding influence on rural areas. This is governing the population for the benefit of nature, but perhaps more importantly, for the population itself. The changing practices of conserving nature that accompany the increasing importance of biodiversity represent a renegotiation of environmental governance and will be, just as renegotiations of government were for Foucault, bound up in the development of new forms of knowledge, new institutional contexts and new practices.

Just as Foucault utilised a genealogical approach in order to offer a history of the present scientifico-legal complex, so extending biopower to the natural sciences potentially renders them open to analysis. Furthermore, just as Foucault's attention was arguably focused on the *rationalisation of the body* and the *rationalisation of the population*, if we extend biopolitics to ecopolitics and biopower to ecopower we can examine the *rationalisation of nature* but with the analytical resources provided by Foucault.

Governmentality is close to rationalisation as an understanding of the processes taking place in modern society. As Dreyfus and Rabinow point out, Foucault inherits from Weber 'a concern with rationalisation and objectification as the essential trend of our culture and the most important problem of our time' (Dreyfus and Rabinow 1982: 166). But he examines rationalisation in a different way. Rather than chart the progressive development of particular forms of rationality involved in the process of rationalisation, Foucault examines 'how forms of rationality inscribe themselves in practices or systems of practices, and what role they play within them' (Foucault 1981: 8). Instead of simply adopting the concept of rationalisation, with its implicit historical narrative of development, Foucault examines the way that particular forms of rationality work. He therefore avoids adopting a concept that is relatively closed to the rapid mutation of events and processes of change and is able to examine precisely how knowledge and practices become interwoven with particular effects (Dean 1994). Thus by drawing upon Foucault we can analyse the developments in nature conservation in new ways. From a Foucauldian perspective, explanation for the shape of conservation should not be sought in any grand narrative of the gradual triumph of rationality over nature, but the small 'forgotten' practices – in the micro-physics of power – that underpin conservation itself. We can thus offer a genealogy of contemporary rationalistic nature conservation.

### **Dangerous or productive ground?**

While it would be inaccurate to label Foucault a constructivist, his approach to understanding knowledge, power, objects and subjects as produced within discourse has an affinity with constructivism and, as such, could be interpreted as venturing into dangerous territory. In recent years the constructivist approach to environmental issues has been heavily criticised from what could be characterised as a 'realist' perspective for 'oversocialising nature' (Benton 1994; Dunlap and Catton 1994; Murphy 1994b, Dickens 1996; Gandy 1996). Indeed, Soule and Lease (1995: xvi) suggest that 'contemporary forms of intellectual and social relativism can be just as destructive to nature as bulldozers and chain-saws'. Constructivism is criticised for two reasons. First, it is argued that a constructivist approach

does not acknowledge the independent existence of nature, the environment or environmental problems; this approach, arguably, denies 'that there are features of the world which exist independent of discourse and social construction' (Dickens 1996: 74). Secondly, a constructivist approach is criticised because it means that no form of knowledge can be understood to be privileged over any other. The constructivist approach to environmental issues is thus thought to be, at best, an interesting intellectual activity, but, at worst, downright harmful to the environmental cause. It is thought to be harmful because if conservation, and environmentalism more generally, speak for nature, they do so through scientific argument. Suggesting that scientific knowledge is socially constructed, in the eyes of critics, only serves to undermine the cause of conservation because conservation's authority to speak for nature is reduced to just another claim. For them, asserting that nature is an idea opens the door to a nihilistic relativism in which any idea of nature goes. If we invent nature and cannot access a nature uncontaminated by our ideas, then we cannot choose between them; if everything is relative to our ideas, then we lose the stable ground from which to argue for the defence of the natural world (Cronon 1995a). Environmental crisis becomes *merely* a social construct (as in, either, an idea dreamt up and residing in our heads or simply false). Thus it is argued that constructivism potentially leads to political quietism and refuses a central strand of nature conservation: the possibility of advancing positive ethical standards in relation to the environment (Proctor 1998a, 1998b).

There are several possible responses to these criticisms. The first is to adopt a constructivist stance and defend it. It is possible to suggest, like Burningham and Cooper (1999), that the criticism of 'social constructivism' is actually aimed only at strong constructivism (which verges on a form of idealism) and that the majority of constructivist work actually practices a much milder form: the criticism thus misses the mark. As Eden puts it, 'if we analyse how we understand or relate to natural things such as trees, animals or floods...this does not mean that those things do not exist or matter. It does mean that we can only ever know them through (imperfect and changing) cultural and social ways...Exploding the rubric of 'nature' thus allows us to examine its power to move us to use, value or protect it but does not negate the noncultural' (Eden 2001: 82-83). It can also be suggested that a constructivist approach does not remove the possibility of engaging in political debate or making political interventions. While such interventions will not justify themselves by reference to objectivist claims to know an incontestable reality, but will rather, accept the situated and partial nature of the claims, political interventions can be made all the same. The criticism of political quietism is, as Burningham and Cooper (1999) make plain, based upon a model of theory and practice within which 'objectivism' is an indispensable element.



The second response to realist criticisms of constructivist arguments is to attempt to avoid the entrenchment of the debate as one between realists and relativists/constructivists arguing about the nature of reality and our ability to know it, by seeking a philosophical position that accepts the insights of constructivism whilst not losing touch with reality. Soper (1995, 1996), for example, sought accommodation between the 'nature endorsing' and the 'nature sceptical' camps by accepting some degree of constructivism and of realism. Hayles (1995), following Haraway (1991), advocated a program of 'constrained constructivism' that acknowledged the construction of knowledge by re-visioning the notion of distanced objectivity as embodied 'interactivity' and 'positionality' (situatedness). She claimed it to be a position that could satisfy both realists, because they would still have access to the real, and constructivists, because knowledge is still social. Similarly, Sismondo (1993, 1996) argued for a 'heterogeneous constructivism' as a means of avoiding the excesses of the poles of realism and relativism (although Hacking (1999) questions the degree to which accommodation can be reached). Each attempt at finding a resolution recognises that despite the common characterisations and fears of realists, a constructivist approach does not necessarily lead to nihilistic relativism and despite the portrayals by constructivists, realism does not necessarily entail seeing knowledge as unproblematically connected to nature. Each epistemological position has some merit.

A third, related, response to constructivism and criticisms of it has sought to avoid the dualisms that are embedded in the realist-relativist arguments by adopting a more empirical approach. More specifically, it is argued that *social* constructivism emphasises representation and thus society, and that realism emphasises a direct, unproblematic contact with nature. Both approaches therefore reproduce a nature-society dualism by emphasising one side of it. Exponents of Actor Network Theory (Callon 1986; Latour and Woolgar 1986; Latour 1987, 1988, 1993, 1999a; Law 1991, 1994) have thus sought to extend the constructivist understanding of the 'interests' – discourses and personal commitments – influencing scientific knowledge by asking how that knowledge entails the mobilisation of a variety of heterogeneous *materials*, both human and nonhuman. As such, the actor-network perspective sought to question certain assumptions that underlie constructivist understandings of science and, in particular, to repudiate *a priori* distinctions between the social and the natural or technological. What is needed, according to Latour (1999c) is 'one more turn after the social turn'. ANT, and associated projects like that of Haraway with her concept of the cyborg (Haraway 1997), attempts to work across the distinction between human and nonhuman by trying to understand how these *things* interact before they are categorised as human or nonhuman, subject or object, nature or culture. Although criticised

(Bloor 1999) and reworked (Hetherington and Law 2000; Law and Hassard 1999), this approach has been found useful by many in geography to study the interconnection of the human and non-human worlds (Whatmore 1997, 1999, 2002; Whatmore and Thorne 1997; Thrift 1996; Holloway 1998; Woods 1997; Murdoch 1997a, 1997b, 1998, Demeritt 1996; Wolch and Emel 1998).

My response to the apparent difficulties raised for environmentalism by constructivism is not, however, to engage in what Macnaghten and Urry (1998: 2) have characterised as the 'rather dull debate' between realism and constructivism. Nor do I wish to adopt the approach of ANT and its obscure terminology or attempt to fashion a position between realism and constructivism by turning to critical realism (Gandy 1996). Instead I align myself with a constructivist stance – whilst recognising that this stance itself refers to different sorts of constructivism (Demeritt 1998) – despite the criticisms that are made of it.

By adopting Foucault's methods with regard to nature conservation, I want to put the epistemological debates to one side and adopt an approach that allows me to ask why nature conservation is being reframed as biodiversity conservation and why some approaches become the basis for action while others lose ground. I want to ask how contemporary nature conservation has come to be as it is. I therefore adopt a broadly constructivist position in a pragmatic move that allows me to change the conventional conversations about the conservation of nature. Like Golinski (1998), I adopt a constructivist position as a methodological orientation because it allows me to reflect in new ways on how conservation problems are defined, articulated and acted upon. It is a useful strategy for denaturalising the practices that become normalised and taken-for-granted.

I suggest that this broadly 'constructivist' approach is useful because it emphasises that nature is not nearly as natural as it seems and that concern for nature flows more from human value than from nature itself. This is important because so often conservation retreats behind the façade of objectivity with its implicit unproblematic connection to nature. It does so because, from the position of the classic view of science as neutral and objective, if it recognises that values have 'contaminated' its claims to know, the political and moral authority it seeks is compromised. Retreating behind the façade, however, only serves to inhibit a critical understanding of what we mean by nature. Indeed, it is arguably this lack of reflection on the sometimes-contradictory assumptions at the centre of conservation that lies at the core of many environmental conflicts. Accepting that we make nature and our knowledge of it encourages critical reflection of the sorts of nature we make, the assumptions that sit at the heart of conservation and the processes by which conservation works. Far from weakening conservation such reflection has the aim of deepening and

enriching our understanding of conservation itself and the problems it engages with. Far from threatening the 'objective' credentials of conservation it would help develop what Harding (1986) has called 'strong objectivity'. That is, by recognising the societal and disciplinary cultures within which we are positioned and which shape our knowledge claims we can become more objective.

For those at the sharp end of conservation who are trying to protect species from extinction or habitats from degradation or loss, it may appear frivolous to talk about social construction. As Irwin puts it, 'it may be intellectually stimulating and entertaining to unravel the epistemological problems of knowing the environment...but it leaves us without any tools...when dealing with environmental problems...Can we afford such analysis when the problems are so pressing' (Irwin 2001: 169)? Whilst I write myself into philosophical corners, real day-to-day practical action is being carried out at conservation sites across Scotland. The people I interviewed carry on trying to manage to the best of their ability. Arguably, what they need is knowledge that will help them achieve their goals: new ecological research and management advice. Abstract analysis of their work does not seem to help at all. I suggest in what follows, however, that addressing these issues is crucial and important. The purpose of the constructivist approach adopted here is thus not to claim that the nonhuman world is somehow unreal and that it only exists in our heads. Nor is it to suggest that only those developments in conservation that I dislike are socially constructed (one incorrect interpretation of social construction, which retains the classic view of science, recognises the construction of nature or landscape 'myths' but takes those myths to be false because they have been corrupted by social influences – see Budiansky 1995). Nor is it to advance an anti-science argument as if it is simply the same as any other claim to know: I do believe that there are good reasons to believe scientists. Rather, it is to put a Foucauldian approach to work in order to situate conservation within the cultural discourses that enframe it and discursive practices that give it shape. The presupposition is that far from undermining conservation, critical reflection on its discursive basis and thus on what is actually being conserved and how we have arrived at the present approach to conserving and understanding 'nature', can only serve to strengthen it.

# 3

## Methodology

### Constructing Knowledge of Nature Conservation

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#### Writing about research

Chapter two framed this research as an exploration of the changing relations between ecological knowledge, ideas of nature and institutional practice. It suggested that examining these relationships allows reflection upon why we conserve nature in the ways that we do and pointed to the discursive negotiation involved in the institutional establishment of the biodiversity process as one example of a context within which the conservation of nature was debated. In this chapter, I reflect on how I went about researching the changing practices of nature conservation.

Chapter two contained a relatively straightforward narrative. I suggested that there are discursive changes in nature conservation that need to be explained; that there are theoretical developments that should be taken into account when attempting an explanation; and that there are certain conceptual resources to call upon to tell the story. Under the 'classic' research design – where one starts with a problem, designs a project to examine that problem, collects the data and then analyses it – the next logical step is to apply a method to reveal the discursive change. The purpose of this chapter would therefore be to recount why a particular method was chosen and how data were collected before the following chapters present analysis and results. To portray my research in this way, however, would be to subscribe to an ideal that, from a constructivist and hermeneutic perspective, is problematic.

It is problematic because it is derived from discourses developed for quantitative and positivist methodologies (although the two do not necessarily equate, see Kwan 2002) which imply that data is 'out there' to be collected, brought back and subjected to analysis. Research is portrayed as proceeding in a sequence of relatively neat stages and the authority of the research resides in the degree to which it conforms to the ideal. Constructivist scholars note, however, that the knowledge claims of others are 'messy' accomplishments. Constructivist sociologists of science, for example, have suggested that the creation of

scientific knowledge is a messy, power-laden activity and that science does not conform in any simple way to the ideal of scientific method (cf. Kuhn 1962; Latour and Woolgar 1986; Latour 1987; Merchant 1981; Haraway 1989, 1991; Harding 1991). The crucial issue, then, and the reason that the ideal of research is problematic, is reflexivity. It would be contradictory to adopt a constructivist stance and emphasise the situated and messy nature of the knowledge claims of others but then implicitly suggest that one's own claims adhere to an ideal and directly refer to some external reality irrespective of one's own situation. In what follows, then, I seek to be reflexive about my own research practice.

Reflexivity is advocated, especially by feminist theorists who have most thoroughly engaged with the concept, as a strategy for situating one's own knowledge claims and avoiding the false neutrality and universality of much academic knowledge (c.f. McDowell 1992; Nast 1994; Wolf 1996; Madge *et. al.* 1997). Since power and knowledge are understood from a constructivist and post-structuralist position to be interwoven, researchers are encouraged to acknowledge the power relations embedded in their research and their 'position' in relation to others. They are encouraged to render visible their own acts of construction, their relations with research participants and their politics. The goal is to follow Haraway (1991) and emphasise that their knowledge is partial, situated and messy.

But once the researcher has acknowledged the 'situated messiness' of their own research, they are presented with a problem. How do they convey that messiness? If research is understood to be less a series of stages where the researcher goes into 'the field' to collect data before bringing it back to analyse it, and more an iterative process of data construction (Davidson 2001), how does one write about that messy process without 'sanitising' it? If 'data collection and analysis should not be disentangled, as analysis prompts new questions, possibly new theoretical concepts, and commonly challenges interim interpretations and explanations' (Hoggart *et. al.* 2002: 238), how does one state clearly why certain methods and forms of analysis were adopted? In short, how does the researcher write about their research, emphasising its messiness whilst also claiming authority to speak?

The most common way that researchers have sought to highlight the messiness of their work has been through an emphasis on the constructive relations between themselves and their research participants. Emphasising these relationships is one way of illustrating how the research is constructed in inter-personal power-laden engagement and that the participants have an influence on the work rather than being reduced to objects of it. The researcher commonly tries to take account of their own position and that of their participants and weave these positions into their narrative. By doing so the researcher seeks to stress that their work is the result of very specific sorts of personal situated practice and that it is not a

view from nowhere. Further, because academic writing has long been recognised as one of the ways that researcher power is manifest and perpetuated (Clifford and Marcus 1986), attempts have been made at developing writing strategies that disrupt that power (Richardson 1998). Thus some researchers have sought to experiment with writing in different 'voices' so that their singular, authoritative, academic voice is disrupted. Others have experimented with 'auto/biographical' writing which emphasises how the researcher's personal history, race, gender, age or nationality impinges on the research process and how the researcher constructs their own identity as they engage in the research and construct the stories of others (c.f. Okely and Callaway 1992; Stanley 1992; Lal 1996; Birch 1998).

This sort of reflexivity provides one way by which I can address the problem of representing the messiness of my own research. In writing about the methodological process, for example, I could write about my position on the issue of intervention in nature reserves and detail how my initial desire to see some reserves left alone softened as I engaged with practicing conservationists and understood the complexity of the issues and the position in which they find themselves. I could, alternatively, detail my shifting use of social constructivism as both a means of challenging conservation and as a means of explicating the socially situated way that certain sorts of understandings of the natural world and forms of management were arrived at (on the distinction between 'social construction-as-refutation' and 'social construction-as-philosophical critique' see Hacking (1999) and Demeritt (2002)).

There are, however, two problems with detailing position in this way. The first has been highlighted by Rose (1997). She argued that when researchers attempt to detail their position they implicitly assume that their relationships to others, and indeed that they themselves, are transparent and can be 'seen' by the reflective researcher. Such 'transparent reflexivity' therefore potentially falls into the 'God-trick' of attempting to see everything whilst being detached from it (Rose 1997; Haraway 1991). Such detailing of positionality contradicts the presumptions of a constructivist position because it assumes a position outside of politics and a direct unproblematic view of research relationships.

The second problem with many accounts of positionality is that whilst they are reflexive about power and research relations, they often tend to be unreflexive about the research process in a different way. That is, while many researchers profess a belief in the processual nature of research, when it comes to writing about their own work, there is commonly an order imposed – apparent in methodological descriptions based around the ideal of research design, data collection and analysis – that, I suspect, was not apparent in the doing. Despite the insights provided by the sociology of science that natural scientists do not

adhere to scientific method, it is common for social scientists to implicitly suggest that their work adheres to the ideal of rigorous research. Even in some of the most reflexive work that seeks to understand research as a journey of self-discovery for the researcher, the study is split into stages of theoretical preparation, fieldwork, analysis and writing (Nairn 2002; Birch 1998).

This contradiction of being very reflexive in some ways but less so in others is perhaps due to the ambiguous position in which constructivist and feminist researchers find themselves. On the one hand, they want to challenge dominant knowledge making practices: as Madge *et. al.* (1997: 86) proclaim, 'feminist geography, like feminist theory, is involved in challenging academic orthodoxies about how research is undertaken'. But on the other hand, if they are to be taken seriously by the very people they wish to engage, they have to emphasise the importance of the work they want to challenge and subscribe to the accepted academic practices through which arguments are made. In order to be heard, they have to demonstrate their academic credentials by illustrating their adherence to norms of research practice, norms that they also wish to question. Nevertheless, it is with this latter problem of being reflexive about the research process and power relations but writing about it in unreflexive ways, that I wish to engage.

Despite the risks of making myself appear like an inadequate researcher because of a lack of adherence to the research ideal, I suggest that not being reflexive about how one writes the research process, and simply subscribing to the ideal of research, would itself be bad research practice. I found that if I translated the messiness of my research into a rigid model of how research is supposed to proceed, I would misrepresent my research. I am uncomfortable with such a misrepresentation because if ethical issues pervade research and are not just restricted to issues of confidentiality and trust, then how researchers present their work in written form is just as importantly a question of ethics. Finding a way of representing my research that does not misrepresent it is thus a question of honesty. Contrary to Bernard, who suggests that 'it would be a monumental waste of precious space in books and journals to describe the *real* research process for every project that is reported' (2000: 66, original emphasis), I would argue that for a constructivist project it is precisely the 'real' process that is important.

My response to the problem of representing my research is not, then, to attempt to define my positionality and illustrate the way it has influenced the research; it is to construct a narrative akin to a 'thick description' of my own research process (cf. Geertz 1973). By referring to the letters, fieldnotes, interview notes, work produced along the way, bi-annual reports to my funding body and discussion documents produced for supervisors, I construct a

narrative of my research. As will become clear, I attempt to understand, and tell the story of, the construction of contemporary positions in nature conservation, through the traces of change in documents and conversations with practitioners. In the next section, I do the same with the traces of my own research. In order to avoid excessive post-hoc rationalisation where I tell a story that renders smooth a sometimes erratic and disjointed process involving dead ends and significant changes in approach, it is more appropriate to tell the story of my research through the materials that I generated at the time. Instead of presenting my work as a polished piece that keeps the reader on the outside, this approach is intended to open up the process of its making. And instead of presenting myself as an onlooker viewing my research from a distance, in using these materials I seek to emphasise my role. In this way, I follow Haraway (1991) by seeking to emphasise my own knowledge construction as situated and partial, whilst also seeking to avoid the imposition of rigid methodological stages that were not apparent at the time.

In presenting this sort of narrative, answers to the methodological questions of what I did, when and why are woven into the text. This is to allow the reader a greater sense of the process, to open my research out so that others can assess its veracity and to suggest that method was on-going and itself worthy of scrutiny, not alone a means to an end. But more than this, I have found that emphasising the processual nature of research actually challenges the presuppositions of common methodological questions. One such question that the researcher is normally required to answer is why the methods suit the research questions. But if I am honest about the process, I only came to be able to frame decent research questions through the process of writing and continually 'juggling' my material with the literature. I only arrived at the questions at the end of the process of doing the research. As such, I did not choose the methods because they were best suited to answering the questions; rather, I started with a philosophical orientation that suggested certain methods (Guba and Lincoln 1994). Consequently, the methods were not instrumentally related to answering my research questions but were part of the process of arriving at the questions. Indeed, the sorts of data that I generated by adopting certain methods shaped the questions I asked. Representing my methods post-hoc as well suited to my research questions would erase the process of question construction in order to construct myself as the rational actor purposefully carrying out research in the positivist model. Emphasising the *process* of research and taking the constructivist position seriously therefore raises questions about the common conceptualisation of methodology itself.

The narrative that follows should not be understood as implying direct reference to my own practice or as suggesting that it can reveal how method *really* happens. Rather, it



should be seen as one means of constructing a version of my research process. Thus, the narrative does not attempt to 'get it all'. I cannot capture the influence of every conversation or text on my research; I simply select extracts from research notes and letters in order to document a chronology in an attempt to render my research practice 'visible'. This greater visibility is intended to disrupt the relatively straightforward narrative of the previous chapter. My understanding of the discursive change that needs to be explained, of the theoretical developments that should be taken into account and the conceptual resources that I want to call upon, is revealed as a messy accomplishment.

Some may say – especially those in nature conservation – that such an approach is over-reflexive, even self-indulgent. Dwelling on the process of research prompts questions of whether, in the face of pressing issues in nature conservation, such self-reflection helps. I want to suggest that it does and that it is important, especially given the lack of reflection on the presuppositions and forms of knowledge that underpin conservation. If new thinking is required in nature conservation, then reflection on the ways that knowledge is produced is crucial. Making sets of claims without thinking about their theoretical and methodological underpinnings would be to reproduce the same unreflective approach.

## **The story of this research**

### *Getting established*

When I reflect on my research and try to identify an origin I find only a tangle of interwoven roots that render problematic any straightforward attempt to situate it in personal experience, theoretical outlook or apparently obvious research question. As such, I want to resist the search for an origin and jump into my research on 12 March 2001, the day I wrote to the Director of the RSPB in Scotland seeking permission to look at the work of his organisation.

Dear Mr Housden,

...I am interested in conservation from a social science perspective and, in particular, in the ways that understandings of nature, environment and particular landscapes, such as the Highlands, are shaped within the field of conservation. I am writing to inform you of my interest in the RSPB and to seek your consent to the Society being the forum for my work.

...I would, specifically, like to use some of the publications produced by the RSPB as a means of exploring conservation issues and I would like to spend extended periods on RSPB reserves as a volunteer.<sup>1</sup>

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<sup>1</sup> The letters, preliminary work and reports for supervisors from which I cite in this chapter, are available from the author on request.

This letter marked something of a crucial moment in my research. It represented both a culmination and a beginning. It was a culmination in three senses: it marked the end of a series of false starts where I had contacted other organisations such as the John Muir Trust and various environmental partnerships; it marked the translation of my questions about why certain approaches were undertaken in nature conservation into a constructivist project; and it indicated that I had arrived at an interest in undertaking an ethnographic project involving textual analysis and participant observation.

With regard to the last of these, I was aware that in the complex interplay between ontology, epistemology and methodology, a constructivist engagement with meaning lends itself to qualitative methods (Guba and Lincoln 1994). I was also aware that a constructivist approach, itself bound up in the linguistic turn in the social sciences, pays attention to how 'nature' is brought into existence through language. Methodologically it seemed straightforward: in order to address how conservationists represent – construct – nature, I could examine spoken and written language by undertaking a series of interviews and by examining texts; I could analyse the discourse of nature conservationists.

At the same time, I was aware of the arguments of those who criticised the constructivist emphasis on representation (Whatmore 1999, 2002; Thrift 1999). This emphasis, it is argued, is problematic because representations become conceptualised as 'floating above' the social world. The emphasis upon abstract conceptualisations tends to be mapped onto social groups as if that group would adhere wholly to the position irrespective of context. More fundamentally, the emphasis on representation is thought to reproduce a dualism between representation and reality, which, in turn, is mapped onto other dualisms of 'nature'/'society' and 'realism'/'relativism'. One response to this apparent abstraction of representation from everyday practice has been to attempt to develop a non-representational theory (Thrift 1999). A more empirical approach has sought to focus either on the significance of embedded social practices (Macnaghten and Urry 1998), or the role of the body (Macnaghten and Urry 2001). With the focus of attention on embodied social practice, a great deal of this work is associated with the ethnographic tradition (especially in science studies: Latour and Woolgar 1986; Law 1994). Thus another option for researching nature conservation, which takes account of the embeddedness of representations within social practice, is to approach conservation ethnographically and more specifically to undertake some participant observation. But, aware of the potential benefits of methodological triangulation (Burgess 1984) and of the potential pitfalls of choosing to devote more attention of either representation or practice, I decided that a useful approach was to undertake both documentary and ethnographic methods at the same time. My approach to the

RSPB was thus prompted by my knowledge that they produced mountains of textual material that could be used in textual analysis and my knowledge of their residential volunteering scheme that offered the possibility of conducting participant observation.

The letter to Stuart Housden was also a beginning. It was the beginning of an exploration of a specific institutional context and of the start of a process of convincing the RSPB of the probity of my research. There was, on initial contact with the RSPB, a fair degree of suspicion about my work, my motives and a concern that I would take up valuable staff time (I was later to find out that this suspicion was in part due to the exploits of Ian Mitchell (1999) who, starting with a pre-conceived pro-local community/anti interfering agency agenda, travelled around conservation sites only to write in disparaging terms about conservation bodies – especially the RSPB). Consequently, before gaining permission I was asked to give a presentation to the staff at the regional office in Inverness.

In this presentation I explained my interest in texts and the methods of discourse analysis and participant observation, setting out my desire to work as a volunteer with nature reserve staff. I suggested that I would allow myself a year for fieldwork, ideally spending three months on three different reserves and allowing time for revisits. The outcome of the meeting was, however, more cautious. Whilst 'the RSPB [was] happy to participate in [my] research', and was thus firmly established as an organisational research context (with the Regional Manager for the North of Scotland becoming my contact and 'gatekeeper'), it was thought best that I visit sites for short periods before reporting back and finalising my plans (a strategy that allowed the site managers to evaluate me as well as allowing greater familiarity with the issues before finalising my plans). As such, I organised three weeks volunteering with one week on a different nature reserve and I visited other sites to meet staff and talk through the issues. I was also given access to the documents in the library of the RSPB's Inverness office (which contained published and unpublished reports relevant to particular issues, species, habitats and sites). As I framed it in a report to my supervisors,

I spent a week as a residential volunteer at Vane Farm, Abernethy and Insh Marshes and visited staff at Forsinard and on Orkney to 1) establish working contacts in various sites; 2) identify possible sites for long-term volunteering; 3) identify possible routes to follow in terms of research strategy; and 4) to begin to identify initial interesting themes (Report to supervisors Sept 2001).

### *Rethinking*

After the long process of getting permission from managers, organising volunteering and actually doing it, I wrote on 4 September 2001 to my contact at the RSPB to let him know how my research was shaping up and to seek his comment and further permission to

continue. In this letter I reflected (in what now appears to be incredible detail, but which illustrates my wish to be as open as possible about my research) upon what I had been doing in terms of textual analysis and volunteering and what it meant for where I wanted to go next.

Dear ...,

...If you remember, when I came to see you initially about my work, I said that I wanted to address the ways that those in conservation understand nature and the Highlands. To get to grips with this I have been working simultaneously on several fronts. I have been familiarising myself with the field through the texts produced by conservation agencies; volunteering on and visiting a few sites; and developing my theoretical position...

With regard to texts, I started to go through the texts produced by the RSPB looking at the ways that the natural world was being portrayed (for example, as under threat, as in balance or as past harmony) and at the construction of the problems facing the natural world. This initial analysis was useful because it raised questions about what I was trying to find out and how I had been conceptualising my methodological approach. After re-thinking I changed tack slightly and started to look for themes that ran through different literatures and across organisations. It was here that I started to realise the importance of the developing languages and practices of 'biodiversity conservation'. I am increasingly seeing biodiversity conservation in the UK (with its structure of audits, species and habitat action plans, local biodiversity action plans, targets, management plans and species champions) as a broad theme (or what I would call a discourse - a notion borrowed from the work of the French philosopher, Michel Foucault) that, working across organisations, structures understandings of the natural world and works through into conservation practice in terms of designations, actual site management and in terms of social relations in particular places (e.g. in community involvement, participation etc.). Thus this initial period of looking to texts has allowed me to develop a clearer focus. I now see my work as seeking to address not so much simply the ways that those in conservation understand nature and the Highlands as the ways that those understandings are mediated in changing institutional contexts (Letter to RSPB Sept 2001).

After spending several days exploring the library in the Inverness office to see how much material relevant to potential volunteering sites was available and to get a sense of the issues, I recognised the need to select texts to study in detail. Knowing I was likely to go to Abernethy – one of the largest pinewoods in the country – I chose a document entitled *Time for Pine* (RSPB 1993) and attempted to undertake some discourse analysis. In this first attempt at analysis, I found myself creating electronic documents and filing similar extracts in a preliminary system of descriptive codes: biodiversity, economy, genetic variation, native, natural, rarity, science, special sites, partnership and species and habitats. But in a write-up of this early analysis, I also drew out the underlying repertoires that framed how the

pinewoods were constructed. Pinewoods were remnants of an original nature, evidence of lost natural harmony and they were described through the vocabulary of ecology. At the time, however, this did not seem particularly interesting and appeared to focus on representation. It was this that 'raised questions about what I was trying to find out and how I had been conceptualising my methodological approach'.

After re-thinking I widened my scope and addressed other texts on woodlands looking at the broader issues such as the emphasis on 'native' species and restoration. Rather than looking for underlying repertoires I looked for common issues, vocabularies and themes. This allowed me to piece together texts and to realise the importance of 'biodiversity' because when I was faced with documents containing the word 'biodiversity' I recalled reading the RSPB's second corporate strategy for 1997-2002, which, in a section entitled 'Birds to biodiversity', claimed that 'to attain our primary bird objectives, we need to increase our biodiversity work' (RSPB 1997: 8). In swinging away from an analysis of repertoires, I turned to the post-structuralist notion of discourse as a complex of ways of speaking and acting coalescing around the concept of biodiversity. My focus shifted from addressing how conservationists constructed nature to how they constructed nature in a changing institutional context.

At the same time as I was moving towards this interest in biodiversity, I was volunteering (at Vane Farm, Insh Marshes and Abernethy). As I framed it to supervisors, 'Working as a residential volunteer [was] extremely useful'. It involved taking part in the programme of work set out for volunteers which usually revolved around 'habitat management' and 'Such habitat management [was] the glorified name for the major theme to emerge from the three sites: *the gardening or managerialist approach to nature conservation*'. After spending three weeks killing things in the name of conservation (willow, pine, ragwort), I began to get a grasp of why some parts of the natural world were more valued than others. I came away with an appreciation of why certain sites were managed in the ways they were. Talking about the need for 'scrub bashing' on Insh Marshes as we were doing it allowed insight into the value placed on marsh and the reasons for that valuation.

As well as the general value of gaining more detailed understanding, specific moments were crucial. One such moment took place as we were preparing to undertake a count of red grouse at Abernethy prior to 12 August. As one of the managers sought to explain what we were going to do and why, he verged on to much wider issues of the value of the site more generally and produced a sheet of paper detailing the site's 'biodiversity' interest. It was a summary of the species that occurred on the site and which were registered

on lists of endangerment such as the red data books. What struck me immediately was the framing of this interest in terms of 'biodiversity'. Connections were beginning to form between my reading of texts and my experience of volunteering.

Yet whilst I found volunteering useful, it was not entirely successful. One site manager, on discussing my interest in his reserve, simply refused access for long-term volunteering saying that he did not think that it was the most appropriate site. I felt that, in part, this was the result of having negotiated access with regional managers before going to particular sites. Site managers were not aware, or at best only vaguely aware, of my project when I arrived. This introduced an uncomfortable positioning that rendered problematic my forays into participant observation. As I explained to my contact at the RSPB:

In terms of volunteering, I had originally intended to get to grips with understandings of particular places by spending extended periods in those places utilising an anthropological method called participant observation. The sort of extended period of fieldwork that I had envisaged would be extremely useful in work that looked at specific sites, but as my project has developed my interest has become less explicitly site-based (because I take the workings of biodiversity planning to be more diffuse, working at the national, regional and local level) and I find that such extended periods of volunteering will not help me get to grips with these broader issues. Moreover, whilst working on a few reserves has been extremely useful in developing my understanding of some of the issues and in terms of finding the right questions to ask, I do not feel that spending a long time as a volunteer would be the best use of my time. Not least of the factors that helped in this decision was my discomfort at the role I found myself in. I was not quite an insider and not quite an outsider and my role as a researcher was sometimes lost from view so that I felt like a kind of spy. I would prefer that my role as researcher were more visible. As such, I would like to change tack from an ethnographic approach towards one that is slightly more interview-based (Letter to RSPB Sept 2001).

In addition to the fact that my research was not at all clear to the site managers and that other staff were unaware of my work, I found the role of the volunteer to be quite prescribed in reserve management terms. The relatively fixed role of the volunteer – that of an extra pair of hands – meant that I was volunteer first and researcher second. My role as researcher became obscured. In the spectrum of positions from overt to covert, the nature of the role of the volunteer meant that my position moved towards the covert. Even when I had explained to each individual what I was interested in, it was obvious that no one really knew what I was up to. People consequently treated me with a vague suspicion such that I felt like a 'spy' (Hammersley and Atkinson 1983).

I realised, too, that the location of conservation practice was an important issue. Whilst volunteering appeared to allow access to the 'sharp end' of conservation practice, by performing the role of volunteer I would be outside pulling up ragwort or measuring the

height of grass on a marsh while the site managers would be in a meeting discussing what they should be doing. I realised that the practice that was of most interest to me was the rather mundane bureaucratic practice of meeting, discussing, deciding on appropriate action and writing documents. I thus recognised anew the importance of documents, that conservation involved more than dirty practical work in the spaces of nature, and that to a significant extent it involved a great deal of *paperwork*. Consequently, I began to move away from participant observation and my plan to spend three months on three different reserves as a volunteer changed.

I followed up my interest in the meeting as a space of conservation action by sitting-in on a two-day management planning meeting at Forsinard in Sutherland. What was obvious in this sort of formal occasion was that most of the discussion was held in a continuing interpersonal engagement over the years as site managers discuss issues with SNH staff or their superiors. Sitting-in on these formal meetings could not really get at that continuing negotiation. I therefore turned towards interviews because by using this method I could discuss the issues with individuals and ask them about the continuing negotiation, how decisions were reached, why certain species and habitats were valued in the way they were and how different valuations were balanced.

After getting started, then, with some textual analysis and some preliminary participant observation, I had achieved a focus on the concept of biodiversity and had changed my methodological approach towards interviewing and textual analysis.

### *Developing an understanding of Biodiversity*

As I saw it, pursuing an interest in biodiversity meant a shift in the conceptualisation of my study and its relation to the RSPB. Moving away from an emphasis on site management, the starting point for an investigation of the concept of biodiversity was to return to texts and, particularly, those associated with the establishment of the 'biodiversity process'. This time, instead of using texts as a resource for an analysis of the construction of nature, I used them as a way to familiarise myself with the events, arguments and process through which the concept of biodiversity came to assume its important position. Stepping back from issues of sites and pinewoods, I turned to the Convention on Biological Diversity, one of the products of the Earth Summit in Rio in 1992, which provided the impulse for the subsequent developments in the UK. Starting from this document I was able to trace, through a series of subsequent texts produced for the benefit of Government, the process by which 'biodiversity' conservation became entwined in new institutional structures. I did not sit back and purposefully choose particular texts because of their apparent importance. Rather, I

benefited from the inherent intertextuality of documents (Fairclough 1992; Atkinson and Coffey 1997) with texts referring to other texts and thus suggesting further lines of inquiry. In this way, I used the documents to trace the development of the biodiversity process through time. The UK's initial response to the Convention (Anon. 1994) was followed by the Steering Group Report and an initial attempt at producing action plans (UK Biodiversity Steering Group 1995a, 1995b). This in turn was followed by further publications from the Biodiversity Group and another 'tranche' of plans (UK Biodiversity Group 2000). Through these documents and their explanation and justification of the approach that was being developed, I was able to examine how the '59 steps' to protect biodiversity established in the UK's Biodiversity Action Plan (Anon. 1994) were gradually translated into a focus on species and habitats; the extensive development of a new approach of action planning; the process by which certain species were chosen; the ways that habitats were classified; the changing institutional arrangements as the UK Biodiversity Steering Group was replaced by the UK Biodiversity Group, with the subsequent establishment of the Scottish Biodiversity Group (later the Scottish Biodiversity Forum); and the role of particular actors such as the RSPB and associated organisations in an NGO coalition called 'Biodiversity Challenge'.

This was a means of getting to know the field prior to conducting interviews. Yet if a discourse is understood as a connected complex of representations and practices, then using the documents that were bound up in the emerging practices of biodiversity action planning was also a way of exploring the discourse. As such, my reading of these documents was not shaped by a search for underlying constructions of nature. Rather – in the way I paid attention to the construction of 'biodiversity', the forms of justification for the shape of the biodiversity process, the setting out of criteria that would give shape to the process by suggesting certain species and habitats for inclusion, and the changes in these justifications and criteria – I was exploring the developing practices of an emerging institutional arena. I was gaining insight not only into how those in conservation were conceptualising and working with the concept of biodiversity, I was also learning who these documents were written by, who they were written for and what sorts of institutional relationships were embedded in the process. Interviews would follow and constitute a further exploration.

After engaging in the complexities of a Foucauldian reading of the classification of habitats and losing sight of biodiversity as discourse for a while, I moved on to a series of semi-structured or long interviews (see McCracken 1988). In the light of my volunteering experience (where a common distinction was made between policy and practice) and because I had followed the documents from the most general through to attempts at implementation, my interest had turned, as I framed it in letters to potential interviewees,



towards 'addressing the ways that biodiversity has been translated from emergent concept into conservation practice'. With this relationship between policy and practice in mind I developed an interview strategy based around the species and habitat action plans. As I explained to my supervisors,

I have crafted three discrete sets of interview schedule:

- One for the people on the sites that I visited in the summer. Each interview is tailored to the specifics of the site but is connected in the themes that they address.
- One for the people who are in charge of, or are at least the contact points for, species or habitat action plans. The species and habitats I have chosen are connected to the sites. For e.g. I would like to see the person in charge of the pinewood HAP which relates to Abernethy and so on (although I could potentially see many people here because of the many action plan lead contacts that would be relevant to each site, I have been selective).
- One for those operating in the less site-based situatedness of the policy arena (Report for Supervisors Nov 2001).

My prior experience from volunteering on sites thus informed the choices I made about interviewing. Because I had spent a week at Abernethy and already attempted some analysis of texts on pinewoods, I intended to focus on the native pinewood habitat action plan and the action plans of pinewood species such as capercaillie. In turn, because I had been to Forsinard to speak with staff and to sit in on a management planning meeting, I intended to look at blanket bog. My time at Insh Marshes suggested that I follow up fens. Identifying interviewees either from experience on reserves or from the texts embedded in the biodiversity process, my intention was to speak with the people in particular sites who were managing for species and habitats, the people co-ordinating action plans and the people who were involved in developing the whole idea of action planning. I was seeking to look at the practices that connected different elements of nature conservation and to examine whether nature was constructed in different ways in different contexts. In this way, I hoped to get at the complexity of the way that this new approach to conservation was being accommodated within nature conservation (for a list of interviewees, see Appendix II). At the same time, however, I chose to ignore parts of the biodiversity process. Due to the fact that I had been volunteering on sites and had insight into the sorts of management that were being undertaken for species and habitats, my attention was focused on the species and habitat action plans. But as one of my interviewees pointed out, the production of plans were only two of the 59 steps to conserve and enhance biodiversity. I was thus ignoring the local biodiversity action plans, environmental education, environmental partnerships and the developing emphasis on urban biodiversity.

Looking at the pile of interview schedules and the notes made on the way to the interview, it is now easy to see that each interview was tailored to my preconception of the interviewee and their area of expertise (and with each interview influenced by prior interviews). I asked site managers about the specifics of that site and how biodiversity issues affected what they did. I asked people involved in the policy arena about the development of the concept and the resultant institutional structures and explored some of the difficulties that the process raised. I thus wanted several things out of my interviews: to clarify my understanding of the biodiversity process and the role of different actors; to examine how this broad policy actually worked in practice and how it was negotiated locally; and to find out what people thought about it. Talking about biodiversity and the way that it was being incorporated in extant conservation practice ended up being a means to talk about how conservation worked and about the human place in nature and how the natural world was classified and bound up in human valuation.

In the process, however, these interviews were more than simply a means of extracting the information I wanted in terms of clarifying my understanding and examining the way that those involved constructed biodiversity. They also challenged my pre-conceived interview structure and my understanding of conservation. In the actual practice of conducting semi-structured interviews my intentions of focusing on particular species and habitats and my conceptualisation of where people fitted in the process were confounded. One interviewee that I had identified because of their involvement in the development of policy, for example, strongly self-identified more as a scientist than a policymaker and our discussions consequently took a different direction. Another was a site manager and, in my conceptualisation, the person 'on the ground'. But he was also the person in charge of co-ordinating action planning (a situation derived from the fact that the species concerned only occurred in very few places, most of which were on his patch). Whilst I had thought the manager of Insh Marshes would have a great deal to say about fens and floodplain grazing marsh, he was actually most interested in the aspen woodland and the associated specialist species of moth and fly that occurred on and off the reserve. These were productive discoveries that served to deepen my understanding of the field.

As I transcribed my eleven interviews I highlighted segments of text that struck me as interesting. In 'post-interview thoughts' for supervisors, I began to pull out themes on the 'central position of science', 'arbitrariness and pragmatism', 'applying accountancy to conservation', 'charismatic species', 'naturalness', 'playing god' and 'conflicts between habitat management' (for an extract of a transcribed interview, see Appendix III). But in a much more comprehensive report to supervisors identifying 'post interview themes', I began

to focus upon the importance of the word 'biodiversity'; the move towards an objective-led approach and how this was justified; the biodiversity process as a spatial move allowing greater co-ordination of conservation action; the importance of different audiences and the role of biodiversity in changing the relationships between social groups; the place of science in conservation; the way that the process was negotiated in specific locations; and the importance of naturalness and how it is balanced with human intervention.

These themes presented me with many possible routes forward. I could, as I commented at the time, address the tension between the national biodiversity process and the local biodiversity action plans or follow up the development of classification systems. Yet as I began to realise after conducting my interviews, my interest lay in the way that biodiversity worked in daily practice (or not). As I put it in my 'Post interview thoughts':

The interviews with people at the policy level were much less satisfying. Towards the end I had begun to wish I didn't have to go and ask them all these questions because as I went on, so the general questions, which were the only ones I could ask at this level, seemed less and less interesting (although this is not to say that there is no useful material in them). It was with the interviews that were focused on a site or species/ habitat, and with people who dealt with problematic decisions about how to go on in particular situations that much more interesting issues arose (this leads later to questions about how the abstract process of biodiversity policy and the sites are connected) (Post Interview Thoughts – report for supervisors Feb 2002).

While I had originally conceptualised an interest in biodiversity as involving a move away from looking at sites in detail, following the process through the associated documents and talking with people was leading me back to the small scale and the complexity of the situated instance of conservation practice. Nevertheless, it took further thinking by me and prompting by my supervisors before I began to achieve a finer focus. After deliberating about how to move forward, I decided to focus on one species and habitat:

The move to focus on particular species and habitats seems to me to be a good one. I have been doing that anyway up until now because the sites I have been working with deal with certain species and I have spoken with people in my interviews about them. But extending the focus on species seems to allow a greater clarity and I can use the material I have already developed in relation to specific examples. For example, looking at the capercaillie might involve looking at the action plan and the species steering group, the ways information has been circulated and how research and management in a site such as Abernethy has fed into and out of this.

I also want to address the habitat because it is here that similar networks are developed around a different object and these then come into conflict with or have to be negotiated with the species plans/networks. This would then allow me to connect to the broader negotiation of species and habitats and to classification

... I will start with the capercaillie and pinewood and see what I can make from that...(Letter to supervisors April 2002).

### *Focusing on capercaillie and pinewoods*

My choice of the pinewoods and capercaillie was partly shaped by the fact that I already had material from Abernethy and interviews with pinewood and capercaillie specialists and site managers. It was also because these were already prominent species and habitats and so had large amounts of associated documentary material. The point of focusing on capercaillie and pinewoods was to achieve greater detail and to be able to examine how they were reconstructed (if at all) as they were bound up in the biodiversity process. But a key question centred on *how* I was going to focus on capercaillie and pinewoods. At the time I thought that I would:

be continuing my three-method approach, just in finer detail. I will have to track down the research papers, conference proceedings, management advice produced on the species and habitats. I will have to speak with individuals involved in the research and translation to management and the balancing acts that need to be made, both at Abernethy and in the wider arena such as the species working group; and I will have to work out with the RSPB about the possibility of doing more ethnography (Letter to supervisors April 2002).

Focusing would involve another round of textual analysis and interviews and, in returning to situated practice, I again became interested in participant observation and the conservation site. It was at this point (May 2002), that I returned to the RSPB and to the managers at Inverness to update them on how my project was going and to ask again about the possibility of volunteering at Abernethy because of the connection with pinewoods and capercaillie. Abernethy was attractive because I knew from volunteering and my interviews about the changes in management that were taking place – there being a move towards a more interventionist management policy – and saw an opportunity to examine how questions of management in one site were negotiated in the context of the broader development of the biodiversity process. As I put it in my presentation to the Inverness managers:

The point of focusing on a site like this and its management would be to ask how, in certain situations, these general understandings of naturalness, ancientness and nativeness are worked out when hard decisions of management have to be made. How are balances found between the imperatives of different sorts of management? This is to try and get at a level of detail that will allow me to answer my initial questions: how do those involved in nature conservation understand nature and what are the processes and practices involved? (Presentation given May 2002).

In the months it took to arrange more volunteering, I embarked on an analysis of how the capercaillie and pinewoods had been textually constructed. For capercaillie I turned to its species action plan, ecological papers on its habitat requirements and booklets on appropriate management. For pinewoods, I turned to texts on woodlands and Highland vegetation, to papers and reports in journals and conference collections and to recent material produced by organisations like the RSPB. I examined the construction of the notion of a declining resource through maps and images, the concepts of 'ancient', 'semi-natural' and 'native' woodland, the contemporary emphasis on regeneration rather than planting, and perhaps most importantly, the stances of those advocating different levels of intervention in 'natural' systems. I again followed intertextual lines of inquiry into the issue of deer fences (into which capercaillie fly) and deer management in pinewoods.

With a background established by my reading of these documents, I crafted more interview schedules, this time for interviews with individuals engaged in research and management issues effecting pinewoods and capercaillie (see Appendix II). In this set of four interviews, I discussed the history of sites and the changing ideas of management; the role of science in conservation; how the management requirements of different species and habitats are balanced; and the impact of the biodiversity process.

Eventually, after giving another presentation to the site managers of Abernethy – where I had sought to go back 'occupying something like the role of the volunteer, for an extended period of perhaps two to three months, in which time I could consult the management plans and talk through the issues whilst hopefully contributing, if only through an extra pair of hands' – I was permitted to examine Abernethy in detail, albeit in a circumscribed way:

Dear Andrew,

Following on from the presentation you gave to our staff meeting last week, I am contacting you to say that you are welcome to come to Abernethy to carry out your research. We would like you to limit your research here to a 2 week period although the weeks do not have to be consecutive ... If you wish to book in as a volunteer please deal direct with the Lodge (Sandy, Beds) as volunteer requests are processed centrally ... Staff are happy to spend up to half a day with you to discuss AB management and we recommend you set aside 2 days to go through papers in our Inverness office (email received July 2002).

I had been granted access. The role of the volunteer, however, had again been separated from the role of researcher: I could spend two weeks being a researcher but volunteer if I wanted to. I returned to interviews and documents and decided not to volunteer due to a concern that I would face the same problems as before. Consequently, there followed two weeks of sifting through and copying reports, letters, memos, discussion documents, management plans,

annual reports and minutes, all punctuated by five more interviews with site managers and researchers in which I sought to discuss the changes in management and why more interventionist forms of action were being considered and how such management was the centre of continuing debate.

### *Reflecting on the research process*

What this narrative makes clear is that my research did not take place as a series of stages: I did not, in any straightforward way, design a project before engaging in the field and then collect the data before analysing it. It was then and is now difficult to distinguish where my data collection finished and analysis began or where analysis finished and writing began. The initial generation of data and early analysis prompted a focus on biodiversity and a dependence upon the methods of interviewing and textual analysis, which, in turn, prompted more data generation and analysis. In this way, there are themes – such as pinewoods – that run throughout the process of my research, with the gradual exploration of the theme involving an iterative process of collection and analysis. The research was, therefore, a convoluted, evolving, although not sequential, process. Getting to grips with how those in conservation work with certain ideas, juggle competing commitments and decide on certain forms of action, involved, in a similar way to an ethnographic approach, a more halting process of gradually ‘getting to know the field’ than is often represented in conservation research. It was a process of negotiation. The direction taken and the final shape that my research assumes is the result of negotiation between several gatekeepers, between my understanding of conservation and new instances of practice that need to be explained, and between the specifics of individual situations and my perceptions concerning the appropriateness of different methods to explain those situations.

What is also clear is that my focus on biodiversity and on the situated practice at Abernethy is itself an achievement. While I had started out with an interest in how nature was constructed by those in nature conservation, I gradually shifted that interest from simply being one of how nature is constructed to how nature is constructed in a changing institutional context. This was in part because I found that nature is never simply constructed in the abstract: it is always constructed in context, through negotiation about the best ways to act in specific circumstances. The introduction of the concept of biodiversity into the British conservation scene opened up a discursive arena within which such debates could re-circulate and it offered me an opportunity to examine the negotiation involved in institutional practice.

What is not always clear, however, are the specific implications for my research. In what follows, therefore, I extend this narrative by focusing on the continual process of gaining access and what it meant in terms of my ethical conduct; the way I actually went about analysing the discourse of nature conservation; and the adoption of Abernethy as a case study and how it is connected to biodiversity. In doing so, I continue to attempt to avoid excessive post-hoc rationalisation of my research by illustrating how my understanding of, and position with respect to, relevant theoretical and methodological issues changed as I proceeded.

### **Negotiating access and uninformed consent**

The processual nature of my research and the continual negotiation that it involved is most evident with regard to gaining access. In the majority of methods texts, access to a research context is glossed over because they seek to discuss research design or particular methods (Bernard 2000; Bryman 2001; Robson 2002). The singularity of the researcher's interest and contact with gatekeepers makes generalisation about gaining access difficult. It is just something that each researcher must do. Where it is mentioned, it is usually referred to in a way that implies that it is a one-off event; the first hurdle that occurs early in the research: once access has been secured the researcher is 'in'.

Where generalisations are made about gaining access, they relate to appropriate ethical conduct. Within what has been termed the positivist or traditional ethical model (Denzin 1997; de Laine 2000), the researcher should seek consent to proceed with their research in an honest way and they should be open about their intentions and methods and the uses to which the research will be put. The 'gatekeeper' or participant should be fully informed and have the opportunity to decline the request. Once consent has been granted (perhaps signalled by signing consent forms) and access achieved, the research can proceed.

In my research, however, it is apparent that neither the idea of access as an initial hurdle nor the ideal of ethical conduct, held. In my case, gaining access involved a process of negotiation that did not end early in the research. After ostensibly 'getting in', when I was told that 'the RSPB [was] happy to participate in [my] research', I went away to look at texts and to undertake some volunteering, but then wrote to the managers in Inverness explaining my initial use of texts and my thoughts on volunteering and seeking further permission to continue. After I had conducted interviews on biodiversity (that had involved people outside the RSPB), I returned to the managers in Inverness to give a presentation about focusing on capercaillie and pinewoods and my desire to look at Abernethy. I was negotiating to get yet further 'in'. Gaining access was not an initial hurdle but a continuing process; a process that

was, at least in part, related to my awareness of the ethical problems of conducting the research.

Contrary to the positivist model of ethical conduct and gaining informed consent, I found that it was impossible to fully inform my gatekeepers about my research at the outset precisely because, even to me as the researcher, it was still relatively incoherent. Indeed, explanations I offered changed as I gradually moved towards a focus on biodiversity and then to capercaillie, pinewoods and Abernethy. If research involves learning what questions to ask, it is impossible to fully inform one's gatekeepers or participants of what would be involved or what would happen to their words because of the impossibility of knowing how the research might develop. It was obvious that my gatekeepers and research participants did not fully understand what I was doing even after signalling their comprehension by giving their consent either on a general level or to be interviewed. When I went back to give a second presentation, for example, it was obvious that the managers' understanding of my work, derived from my initial talk, was poor. A lack of understanding was obvious when, in conducting an interview, I was interrupted as another interviewee popped his head round the door of my current interviewee's office wishing him luck because my questions 'were all too complicated for him'. Consent was based on trust rather than comprehension. Part of their lack of comprehension was, of course, related to my inability to convey in clear terms what I was doing (one only has to look at the letter to my gatekeeper (above p. 52) explaining how I had been using texts, to see the difficulty I had in translating concepts between discursive worlds). But even if it is assumed that I could clearly state in advance what my research was about *and what would result*, it is still highly questionable whether my gatekeepers and respondents would have understood, precisely because we occupy different discursive worlds. I was asking them to think quite differently about the practices that they simply 'do'. (Although experience provided a useful lesson in resisting the patronising assumption that one's participants will not understand the researcher's theoretical discourse. While my first presentation to managers in Inverness had skirted round theoretical issues, when I returned a second time I decided to explain social constructivism because not doing so would hide a large part of my interest and intent from my gatekeepers. In spelling these influences out, the managers stated themselves that they were able to understand much more clearly what I wanted to do and why).

The lack of informed consent introduced an ethical problem, and the fact that I believe my gatekeepers and interviewees were well aware that they were giving *uninformed* consent does not lessen that problem. My response was to try and keep my gatekeepers informed. I tried to keep them informed of my research as it developed for several reasons:



because I was aware that what I was doing was quite different to the research they encountered in their day-to-day work; because I knew that although I had gained access my gatekeepers did not really know what I doing; because I wanted to be open about what I was doing; and because I wanted people to understand that what I was doing was important. Because Ian Mitchell (1999) had used his interviewee's words to make them look nonsensical and thus serve his political ends, I was, if anything, over-sensitive to issues of openness – precisely because I worried that access could be withdrawn. Once access had been granted, I could have easily just have pursued my own ends with only the most cursory engagement with gatekeepers. I could have addressed the changes at Abernethy without actually seeking consent to do so. This would have been the easy approach because continually explaining and justifying became, in honesty, extremely trying. But I did not take the easier route precisely because I wanted to conduct my research in as ethically a proper manner as possible. Yet when I looked to the traditional ethical model and the norms of researcher conduct involving informed consent, it appeared that, on the one hand, my research had not adhered to ethical standards and was thus suspect, or that on the other, the easier route of cursory engagement once permission had been granted would have been adequate.

My belief that I was behaving in an ethically proper manner, even though their incomprehension suggested that I had failed fully to inform my gatekeepers or interviewees, and that not continuing to seek permission as the research changed would be to behave unethically, led me to question the traditional ethical model. I was finding that 'prescribed moves don't work' (Holliday 2002: 157). In continuing to go back to my gatekeepers I was finding a way of dealing with the ethical ambiguity of (un)informed consent. I was, I believed, behaving ethically and responsibly.

This claim, however, would appear to be contradicted by my research practice with respect to conducting interviews and my relations with interviewees. Writing to potential interviewees was effectively another negotiation of access and the issue of informed consent applied equally here. Even though I prefaced each interview with an introduction to my research, interviewees consented to be interviewed without really understanding what I was doing or what would happen to their words. After my introduction, for example, one interviewee sought to clarify my explanation with respect to other work that they knew about (a collaboration between researchers at the University of Lancaster and the Natural History Museum) and simply saying that it was generally coming from the same direction was enough. Again, consent was based on trust. Yet where I had sought an open position for myself with respect to my gatekeepers, my relationship with interviewees did not involve

any prolonged participatory engagement. Rather, I arrived, asked them questions, then left and used their words. Ultimately, my use of the words of practicing conservationists in a project that can be understood as challenging conservation itself, might be deemed ethically problematic.

Why is it that whilst I had sought to be as open as possible with my gatekeepers and thus claimed my ethical credentials, I approached interviews instrumentally? My seemingly cavalier attitude derives from my assessment of what my interviewees were expecting. Most interviewees were extremely busy and fitted me in their schedules a long time in advance. Whilst most were happy to give me some of their time, there was a definite end to our interaction. Once the interview was over, they could get on with their work. In part, this is related to the fact that this is *my* research: I initiated it and sought to explicate issues I was interested in (I was not seeking to research *for* conservationists). As such, my interviewees did not, in their terms, have anything invested in my research. Interviews were granted either because the people I contacted saw it as part of their job or because they occupied (or had occupied) prominent positions in conservation and in public life. In this context, attempting to make my interviews participatory would have required me to impinge on their time even more whilst they did not clearly see what was in it for them. They were willing to help but were not necessarily willing to be co-opted into my research more comprehensively. When I did make attempts to see if the interviewee thought I had covered the pertinent issues to them I was greeted with bewilderment as they wondered why I, as the researcher, seemed not to know what I was looking for.

In the end, I was left with the impression that they did not care what happened to their words so long as I did not use them in a way that would get them into trouble. My response in this situation, was not to attempt to make it participatory – which I thought would actually have strained relations because interviewees saw their engagement with me as a one-off encounter – but to accept the singularity of the event and to anonymise interviewees' words and to write in ways that prevented individuals being identifiable to all but those involved. My interest was about how nature was being constructed: quite who said any particular sentence was less important (where I do name people it is because I refer to published statements and so where they have put themselves in the public domain willingly).

As I reflected on my research practice and the different ethical stance with respect to gatekeepers and interviewees, I once again questioned the traditional ethical model since my interview practice was no less ethical than my approach to my gatekeepers. Ethical 'norms' do not seem to apply. I was coming to a position where I would want to argue that ethical prescriptions from a detached position may suggest a basic framework of good practice but

do not necessarily result in acceptable practice. Detached ethics appear to offer an illusory ethical probity because my experience suggested that ethical considerations need to be worked out *in context*. In doing my research, and in working out the best way to act in specific instances, I moved towards an acceptance of 'situated ethics' (Vivat 2002). Situated ethics has a great affinity with a feminist, communitarian ethical model (Denzin 1997; de Laine 2000), but I stress 'situated ethics' here since my research did not adhere to two of the presuppositions of the feminist model: namely, that research be collaborative and reciprocal. From either a situated or a feminist perspective, it is more difficult, but, ultimately, ethically more sound if decisions are made in context rather than predetermined in advance.

### **Doing discourse analysis**

'Discourse' is a hard word to pin down (Mills 1997). Different people take it to mean different things. The result is that discourse analysis as a method actually covers a multitude of approaches. If one looks to the textbooks on the topic, one can identify conversation analysis and ethnomethodology, sociolinguistics, discursive psychology, critical discourse analysis, Bakhtinian research and Foucauldian research (Wetherell *et. al.* 2001). Doing discourse analysis would appear to be a case of choosing the most appropriate approach and applying it. As I was to find out, however, the model of applying Potter and Wetherell (1987) or Fairclough (1992) is a simplification.

To be clear, I began with just this sort of mentality. Having discarded conversation analysis, sociolinguistics and ethnomethodology because they seemed too fine-grained for a study that was about to range across all sorts of conservation documents and practices, I was most interested in Foucauldian 'analysis of discourses' (Hall 1997; Parker 1990; 1992 Macnaghten 1993; Frouws 1998; Carabine 2001; Dryzek 1997) and the interpretative repertoire approach of Potter and Wetherell (1987; Wetherell and Potter 1988; Marshall and Wetherell 1989; Tonkiss 1998; Gilbert and Mulkey 1984; Hollway 1984). I was, as noted, attracted by the Foucauldian notion of discourse because it offered a broad way of conceptualising societal change and the relations between power/knowledge and practice. In this context, a 'discourse' is a set of rules that provide a language for talking about, and acting towards, a particular topic at a particular historical moment (Hall 1997). Foucault, for example, outlines how madness or sexuality, as socially constructed categories, could only have emerged when and how they did because of the particular discursive formation at that time. These constructions were based on organised social (rather than individual) representations through which people understood, and acted towards, the things – objects, people, behaviour, representational strategies, events – that constitute their social and

physical worlds. These 'things' only gained meaning within discourse; discourses produce the objects of knowledge. That is, people could only be classified as 'mad' or 'sexually deviant', they could only become the objects of the developing human sciences, within the discursive formations of madness or sexuality at that time. As such, discourses refer to what is known, determine what can be talked about and how one should write and act: discourses construct meaning.

This is a compelling interpretation and potentially offered resources for understanding conservation practice. Yet as a framework for analysis it is potentially problematic because the identification of a discourse usually starts from something actually said but extrapolates out to identify much broader social relations and practices, without further reference to the text but with implicit reference to broader cultural knowledge. This approach is therefore criticised because although it calls itself discourse analysis it actually involves very little analysis of discourse (as language in use) and, consequently, begins to make claims without empirical substantiation (Widdicombe and Wooffitt 1995).

It was for this reason that I was also interested in the approach of Potter and Wetherell (1987; Wetherell and Potter 1988). Rather than seeing discourse as a framework structuring knowledge and practice, they take discourse to be 'all forms of spoken interaction, formal and informal, and written texts of all kinds' (1987: 7). Rejecting the idea of language as a neutral transmitter, they see it as a social practice in its own right, and argue that meaning depends upon the discursive systems within which it is embedded. In their analysis of discourse, then, they study language use itself. They look at the way people construct versions of the world through language by attempting to identify what function different utterances serve and by paying close attention to the way these functions vary in different contexts. In this attention to function of language use, the approach that Potter and Wetherell take is closely related to the emphasis placed on rhetoric and argument by Billig (1987; 1997) and Myerson and Rydin (1996). Rather than attempting to identify broad societal 'discourses' that frame action and knowledge, they seek to identify 'interpretative repertoires'. These are the 'broadly discernable clusters of terms, descriptions, common-places and figures of speech often clustered around metaphors or vivid images and often using distinct grammatical constructions and styles' (Potter *et. al.* 1990: 212).

Both of these approaches to discourse analysis appeared to be useful, yet each had its potential drawbacks. On the one hand, the Foucauldian approach could be criticised for not focusing on the text. On the other, the interpretative repertoire approach could be criticised for not raising its eyes from the text; in seeking understanding of the social world in texts, the wider non-discursive social practices that are not 'constructed' can get lost from view.

With these issues in mind I found the approach of Fairclough (1992) attractive. He attempted to put together a form of analysis that synthesised linguistically-oriented discourse analysis with the insights of post-structuralism on language and discourse (also see Wetherell and Potter 1992; Wetherell 1998). The post-structuralist insights on the relationships between discourse and power and the discursive construction of knowledge are useful in precisely those areas that linguistically-oriented approaches are weak. Linguistically-oriented approaches can supplement post-structuralist approaches because the latter tend to refer to abstract sets of rules, rather than real instances of people doing or saying or writing things. Fairclough's developed a three-dimensional framework involving analysis of the text itself, analysis of discursive practice (the discourse processes of production and interpretation), and analysis of social practice (the discursive 'event' in terms of its social conditions and effects at various levels). I wanted to apply it.

This is not, however, what I did. In practice, when I was faced with specific texts this idealised synthesis fell from view and I did different sorts of analysis depending on the material. When I was faced with a text on pinewoods, for example, I ended up identifying repertoires through which the pinewoods were constructed. In a section of *Time for Pine* (RSPB 1993) that sought to set out the 'importance of pinewoods', I called upon extracts such as the following to suggest rarity as a repertoire:

Caledonian pinewoods support a specialised range of bird species including a significant proportion of the populations of several species listed in *Red Data Birds in Britain*, including crested tit, Scottish crossbill, capercaillie, osprey and wryneck ... Pinewoods provide the habitat for a series of unique vegetation types, and support several specialised and restricted plant species. These plants include several wintergreens (*Pyrola* species, *Orthilia secunda* and *Moneses uniflora*), twinflower *Linnaea borealis* and three orchids (coralroot *Corallorhiza trifida*, creeping lady's tresses *Goodyera repens* and lesser twayblade *Listera cordata*) ... Many of Britain's rarest species of moths, butterflies, dragonflies and beetles are found in the native pinewoods of Scotland. Some are confined to single pinewood stands or forest areas. Four species of fly new to Britain have recently been found in Abernethy Forest reserve (RSPB 1993: 8).

Perhaps it was because I had not been doing it properly, or perhaps it was because of the nature of the text, which spoke from an organisational rather than a personal position, but extracting large chunks of text like this and allotting it to a category did not feel particularly revealing. I could detail the way that nature was being constructed in various ways but was not relating it to social relations and negotiation. Thinking that I had tried a detailed analysis too early I sought to 'step back out' to get an overview so that I could identify themes that connected documents rather than forms of construction within single documents. But once I had picked up on biodiversity as a theme, I did not re-start my analysis of repertoires. Rather,

as I explored the texts produced in the biodiversity process I was using them as pointers to much broader social practice. Here I was influenced by Foucault's genealogical work (Foucault 1977, 1978) which 'avoids the search for depth, avoids the search for what 'really happened' underneath historical events, and locates its analysis instead on the surface, on the details; it is meticulous and patiently documentary' (Bell in Carabine 2001: 276). This sort of genealogical work is 'concerned with describing the procedures, practices, apparatuses and institutions involved in the production of discourses and knowledges, and their power effects' (Carabine 2001: 276). By tracing the concept through texts and in the ways it was defined and translated into specific policies, I was not looking for underlying constructions of nature but at institutional process. The texts were ways into the processes of allotting species to lists of prioritisation and classifying habitats. I could trace the development of new classification systems (which from a Foucauldian perspective constructed new objects which could then be brought within the realm of new configurations of power/knowledge) and the development of action plans. But in order to understand these processes, and working within a broader view of discourse as a connected set of representations and practices, I turned to all sorts of other texts. I examined ornithological atlases, international lists of endangerment, books on classification and prioritisation, action plan reporting forms, biodiversity websites and conservation textbooks. I was exploring a broad social discourse through the texts that had been produced as it took shape.

Things changed again as I turned to interviewing those involved in the biodiversity process. I moved back to focus on construction and on repertoires. I used the responses to my questions about management to identify some of the conceptual resources called upon in arguing for certain forms of action:

we've done so much management of the environment in Britain, we have nowhere natural *at all*, everywhere's been managed, been managed to some degree that you have to start saying hen harrier are in such a bad condition that we are going to have to keep some areas free of trees, cos natural regeneration of trees would deny you hen harrier habitat. Now in the grand old days, hundreds and thousands of years ago trees were naturally burning and moving and re-planting re-growing. Heath was forming and dying away and the hen harriers were moving around but keeping a stable population. Now you've changed so much of the countryside to a completely alien habitat that you're going to have to artificially say this is an area where we are going to keep hen harrier and we're not gonna allow natural regeneration. We're forced into that because so much of Britain has been managed in the past and we've got our species down into such small populations (Interviewee A, 20<sup>th</sup> December 2001).

In such extracts, I saw ideas of fallen naturalness, the unnatural state of the present and belief in the need for management. I began to sense the way that many in conservation constructed

the nature of the past and the present, and to understand how these constructions were embedded in arguments for specific courses of action. But by asking about the detailed choices of management practice I could take things further. I usually asked how balances were achieved when action plans for different habitats came into conflict. A common answer was to suggest a large-scale approach to planning:

In a sensible world you are trying to deliver the conservation of all these species and habitats, you need a spatial element to it, you don't try and do all the conservation on one site, you don't try and conserve pinewood and heathland on the same site. You decide, this is a sensible part of Scotland for expanding pinewood, over here is a sensible part of Scotland for maintaining and expanding heath and in that part [gesturing to that which is pinewood] it's acceptable to lose the heath because it should really have been pinewood...there's room in Britain for both objectives to be met but you have to plan spatially (Interviewee A, 20<sup>th</sup> December 2001).

I took such extracts to suggest a very large-scale form of managerialism where the conservationist would effectively decide what went where in the countryside and manage toward that end. I was thus able to get a sense of how managerialism was not something set in stone but malleable and changing.

When I moved on to focus specifically on capercaillie and pinewoods this dual sort of analysis, in which I was simultaneously utilising different approaches, continued. In turning towards the ecological papers on capercaillie habitat preferences, for example, I could trace the statistical co-construction of the capercaillie and semi-natural pinewood and how this worked through into proposals for very specific forms of management. The texts associated with pinewoods allowed continued engagement with the constructions of, and arguments over, appropriate management. Finally, in turning to a detailed examination of management at Abernethy, this dual approach continued. Through management plans and reports I could trace the historical trajectory of changing practice and through the memos, briefing papers, letters and interviews, I could examine how specific people argued for particular positions on the sorts of management to be taken up.

Despite my intentions, then, I did not straightforwardly manage to apply Fairclough's form of analysis. Rather, illustrating the craft dimension to qualitative research, I pieced together bits of analysis after approaching different sorts of material in different ways. Whilst I had started with a preconceived idea of what sort of analysis I wanted to pursue, I learnt in the doing that the analyst has to be guided, to some extent, by the material.

This was, importantly, a dialectical process. As I explored the world of nature conservation, I was simultaneously learning how to do discourse analysis and developing my theoretical understanding. It was in my attempts at doing discourse analysis that I gradually

started to view nature conservation through the theoretical prism of Foucault's genealogical work. Exploring the field of nature conservation allowed me to develop a greater understanding of Foucault because as I looked at the developing biodiversity process, I held it up against the stories that Foucault tells of the human sciences and his conceptualisation of power/knowledge. As I moved forward, I invested more meaning in, and reached an enhanced understanding of, both Foucault and nature conservation. Reaching an interpretation of conservation from a Foucauldian perspective was, therefore, a double achievement developed through the process of doing the work rather than starting with the analytical preference and forcing my interpretation of texts and interview material to 'fit'.

This is not to suggest that Foucault's genealogical work is without its limitations. Where the centre of attention is on practices and strategies it misses the argument and dissent that people express in their talk. I was coming to recognise in practice Fairclough's reasons for seeking a synthesis between textually-oriented discourse analysis and poststructuralist analysis of discourses. But where Fairclough had sought a single form of analysis that could combine the two, I would argue that approaching a discursive arena with different approaches amounts to a form of analytical triangulation that is actually productive. The different sorts of material and analytical approaches generate different sorts of interpretations that can complement each other. Although I did not synthesise the approaches in a pre-defined way, I suggest that I have still achieved a synthesis in the way that I bring the different sorts of analysis together in the narrative that follows. The story I tell is one of the negotiation of repertoires in a changing institutional context.

There are debates within discourse analytic studies that would question this Foucauldian interest. While Foucauldian analysis is one established approach within discourse studies, others, notably the conversation analysts, question the interpretation that results. Schegloff, for example, criticised critical discourse analysis (the word 'critical' signalling the political engagement of this sort of analysis: Fairclough 1995; Chouliaraki and Fairclough 1999). For Schegloff, this sort of analysis 'allows students, investigators, or external observers to deploy the terms which preoccupy *them* in describing, explaining, critiquing etc. the events and texts to which they turn their attention. There is no guaranteed place for the endogenous orientations of the participants in those events' (Schegloff 1997: 167). Schegloff accuses critical discourse analysts of potential and actual bias. The discourse analyst with a political objective is in greater danger of imputing spurious significance to the text than an analyst that is less politically engaged.

This important challenge suggests that the interpretation I offer could potentially bear no relation to anything except my own concerns and theoretical interest. It is related to



another potential criticism that would suggest that my choice of texts, interviewees and forms of analysis was so selective that it was easy to present an argument because I could choose to ignore those aspects of conservation that contradicted my understanding. In this context, adopting a Foucauldian perspective could be problematic for two reasons. First, Foucault had the political intent of seeking to denaturalise the present scientifico-legal complex; my adoption of his tools in respect of nature conservation could be understood – and rightly so – as an attempt to denaturalise nature conservation, which in turn could be argued to lead to questionable interpretation. Secondly, and in connection, it could be claimed that my theoretical influences mean that I only see certain things in discourse and ignore others.

There are different potential responses to these criticisms. One would be to seek to claim my objective credentials and to illustrate how my analysis was not influenced by my political position and that my interpretation would actually mean something to my respondents. My response, though, is to reject the terms of the challenge, which is grounded on the implicit adherence to the notion of objectivity. For Schegloff, the researcher's job is to uncover patterns of significance rather than invent them. For constructivists, the notion of 'uncovering' facts is flawed; one must accept that all knowledge is 'made' socially. It is precisely because people have political positions that they can reach interpretations; interpretations do not simply emerge out of the data. As such, my response has been to accept my political position and my theoretical influences by being open about them so that the reader can assess the degree to which the material substantiates the claims I make.

### **From biodiversity to situated 'case study'**

This has been a study of narrowing focus. Starting from a general interest in the construction of nature within nature conservation, I looked at texts and specific forms of practice on conservation sites. As I focused on biodiversity, my attention moved to the broader institutional arrangements involved in introducing a new approach into conservation. As I explored this institutional arena, however, I began to recognise the need to focus back on situated practice because it was really only in specific instances that I could get to the detail that would help understand how nature was being negotiated. I focused on the capercaillie and the pinewoods as examples of how decisions were being made, in order to draw out how they in particular were being constructed and caught up in the biodiversity process. This in turn took me to the site that is Abernethy.

It should be clear that arriving at Abernethy as a focused study was not a phase that simply occurred *after* looking at the biodiversity process. Due to my initial interest in an

ethnographic approach, I was interested in Abernethy from the beginning because I could volunteer there. In choosing to conduct interviews around species and habitats that were connected with sites I had visited but which were also embedded in the biodiversity process, I was still retaining an interest in the site. Coming to focus on Abernethy towards the end of the project involved gradually letting other strands of research go in order to examine one site and set of issues in detail.

This process of refinement is mirrored in the chapters that follow. In chapters four and five, I look at the development of the biodiversity process. Chapters six and seven discuss and examine the changing management practice at Abernethy. Yet it raises the question of what logical connection exists between the two. Why did I focus in this way? Do I seek to say things about biodiversity through the case study of Abernethy? What status do claims about Abernethy have in my broader argument?

In focusing on biodiversity and the development of the biodiversity process, I was using this changing institutional context as a means of exploring how nature was (re)constructed. I was interested in the way that species and habitats were defined and valued, the changing mechanisms of valuation and the way that these broad assessments of importance are dealt with and negotiated on the ground. What was important was not so much the concept of biodiversity *per se*, but what the introduction of new ways of representing nature and new ways of acting in nature conservation meant for how nature was constructed, and what new constructions of nature subsequently meant for conservation practice. Looking at the introduction of the biodiversity process was a way of examining this construction of nature and how it was embedded in changing practice. Through my reading of texts and interviewing people, I was attempting to examine how species and habitats were caught up in the process, how they were being represented and what that meant in terms of how they were conserved. I was able to trace how institutional practices of action planning were bound up with new forms of prioritisation based on decline rather than rarity and so how species came to be represented differently. I was able to examine the construction of habitats as definable entities and how, once defined, they could become part of the process and have action plans written for them. I was able to explore some of the politics that was involved in the development of action planning as organisations like the RSPB sought to introduce more rigorous practices that appeared to give conservation greater legitimacy and credibility.

At the same time, I found that I could best get at these relationships not through a pre-determined interview structure, but through discussing specific examples. Where I asked those involved at the more bureaucratic end of the biodiversity process about how it

developed and how action was decided upon, I could address issues of classification, prioritisation and the processes of action planning, but in speaking about these general topics my interviewees would refer me to the texts setting out criteria and justifications, which I had already consulted and which prompted my questions in the first place. Similarly, when I asked about the relationship between policy and research, interviewees would fall back on a standard model of science-based policymaking where science became a taken-for-granted 'black box'. When I asked about the way that species were allotted to lists of conservation concern, for example, one interviewee bolstered the list's credibility as if I was challenging it, by proclaiming its scientific credentials:

That list, those are priority species and habitats, that is a purely scientific exercise, they go on to that published document if they fulfil a certain criteria, if their rate of decline has been X percent, if their population size is X percent, if they are listed on an international threatened list. Hard facts, they go into that list (Interviewee F, 23<sup>rd</sup> January 2002).

Whilst this understanding of policy and science was important to note, it effectively forestalled any questions of actually how species were allotted to lists; why decline was important or had become important; why those criteria; who chose them; and how, in practice, a species was judged to have fulfilled the criteria.

It was only in the interviews with site managers or in those interviews where we discussed specific species and habitats that a clearer sense of the construction of nature and the relationship between research and practice could be gained. In this way, I recognised that the most interesting issues related to how specific species were being discussed and acted for or how sites were being managed. As my interviewees spoke about the issues that they faced and how they were working out how best to act, I began to get an insight into the sorts of balancing acts that were being made. But since I had centred my interviews around several species and habitats that were related to different sites, I needed to select to realise a greater level of detail.

Since many of my interviewees had been connected in some way with pinewood or pinewood species I focused on capercaillie and pinewoods. In the process of conducting interviews on capercaillie and pinewood issues, I became more aware of changes taking place in conceptualisations of pinewood management and how best to attempt to prevent the extinction of the capercaillie. I also became aware of the central position of Abernethy in these changes and the relatively small world of pinewood research and management. It was at Abernethy that the importance of fences in high capercaillie mortality was first recognised and that attempts at finding new ways of managing the forest were being tested. I thus came

to realise the importance of site-specific management. The historical development of management at Abernethy traced broader changes in research and management and offered me the opportunity to examine these relationships and changes. Where management had been based on a policy of minimal intervention, current experiments were moving towards a policy of greater intervention and questions arose as to how this sort of trajectory was negotiated.

For these reasons, the specific case of Abernethy offered a good way of extending my work on biodiversity. Where I had been examining the biodiversity process as a means of examining the construction of nature, looking at the negotiation involved in managing pinewoods allowed a more detailed examination with reference to one example. I could look at how the forest and the species that occurred within it were constructed and subsequently managed and how as the construction changed management also changed. In this way, I was extending my examination of the construction and negotiation of nature, but not of biodiversity *per se*. My examination of change at Abernethy is therefore not a case study that seeks to exemplify the biodiversity process, but simply an extension of an analysis of the construction of nature and knowledge and the negotiation of competing ideals. The purpose of focusing on the specific case is not to generalise but to understand the fine detail of one negotiation.

### **Summary: constructing an account of nature conservation**

For all knowledge claims questions of method are crucial. Making visible the sorts of data generated, the methods used to generate and analyse that data and the way that the researcher negotiated any problems allows others to judge the work and decide which knowledge claims should be trusted. Contrary to the belief that a constructivist position leads to an 'anything goes' relativism, for many constructivists these questions are, if anything, even more important. If constructivists argue that all knowledge is made rather than simply revealed, then acknowledging their own processes of knowledge construction is central to remaining consistent. Rather than hiding behind a cloak of an ideal, I have found that taking seriously the reflexivity that comes with a constructivist position actually encourages greater reflection on one's own knowledge-making practices.

In narrating the process of my research I have sought to emphasise that my focus on biodiversity, my interest in the work of Foucault and the story that I offer in the chapters that follow, were all achieved in the convoluted process of exploring the culture of nature conservation. Rather than impose a post-hoc rationalisation that suggests that the research question was obvious from the beginning or that I always saw the utility of Foucault, I have

sought to emphasise that it was only in the doing that I began to recognise interesting questions to ask and the applicability of Foucault's theoretical perspective. The discursive change in nature conservation that needs to be explained and the conceptual resources that I want to call upon, set out in the last chapter, are thus revealed as complex constructed achievements. In this way, the stories in the chapters that follow should be understood as equally constructed and the result of a process of negotiation as I tried to achieve a focus, choose appropriate methods and work out how to analyse discourse(s). In the next chapter, I begin the story by examining the development of the biodiversity process.

# 4

## Biodiversity Conservation as Discourse

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### **Biodiversity, governmentality and regimes of practice**

The RSPB's Insh Marshes nature reserve on the River Spey is a very important site. It is important as a breeding site for wading birds, as a wintering ground for whooper swans and hen harriers and it is the largest area of floodplain marsh in the country. Consequently, when I went to volunteer there in the early stages of my research, I had expected the main issues to revolve around the marsh and its management. When I arrived, however, I found that while the marsh was indeed the centre of attention, there was also a great deal of consideration being given to two invertebrates associated with the aspen woodlands that fringe the marsh. Extensive work was being undertaken for a hoverfly, *Hammerschmidtia ferruginea* (which does not have a common name) and for a moth, the dark bordered beauty.

These species were receiving attention because they had been prioritised within the 'biodiversity process' and had action plans produced for them (UK Biodiversity Group 1999a: 89-90; UK Biodiversity Group 1999a: 171-172). The site manager provided insight into the sorts of management that were being undertaken when I went back to talk to him about biodiversity and his management practice:

Andrew: so what sort of work are you actually doing for those species?

Interviewee: yeah for the hoverfly we're very very fortunate that ... In Scotland we've got a group of guys who've formed themselves into the Malloch society. ... They are the guys that have found out the amazingly specialised niche that these flies need...So really it's their management recommendations that we're instigating. And primarily for the hoverfly its providing fresh deadwood. ...If we find that there is sufficient new dead wood entering the system naturally, that's it. If it's not there at all another option, which is possibly more controversial, is to actually fell a live tree, and we've done that. So that is that continual input of fresh dead wood. Now that is only sustainable if you've got regeneration, so what we've done through a woodland improvement grant, for biodiversity, with you know, *Hammerschmidtia* at the top there [i.e. at the top of the application to help in securing funding], we've got money from the Forestry Commission to fence off all our aspen woodland. So we've put up six kilometres of rabbit netting, put

in twenty-nine rabbit boxes, and we've got an effective way of controlling rabbits so that we can hopefully get aspen regeneration going. We got twenty odd thousand pounds for doing it and it's only happened through biodiversity and the UK BAP [biodiversity action plan] process. ... So when we severed that one tree, I was there with these two guys from the Malloch Society and I've never seen anybody happier, you know, that this was the first time in Europe, maybe in the world, that there has been specific conservation action for a fly (Interview C, 16<sup>th</sup> January 2002).

While this was extensive work for a species which very few people had seen and which did not even have a common name, it did not appear, at first, to represent anything new because it essentially conformed to the model by which conservation has operated since the Second World War. Ever since Tansley (1946) argued the case for scientifically informed management, conservation in the UK has been characterised by an 'enthusiasm for environmental intervention and manipulation' (Henderson 1992: 397). Sites that were initially chosen because they represented the best examples of the UK's habitats were manipulated in order to keep them in good condition (Sheail 1976; 1998). Knowledge of ecological succession, for example, was translated into the management practice of halting the encroachment of tree species onto wetlands so as to retain the wetland as a wetland. Some sites, furthermore, would be managed with certain species in mind. A breeding site of a particular endangered species, for example, could be managed, with the help of knowledge of its requirements, to make the site optimal for its breeding success. In a similar way, here, experts in diptera (from the Malloch Society) had determined the species' requirements and translated them into management recommendations that involved ensuring sufficient deadwood. As a result, a tree was killed in order to provide that fresh deadwood and thus the habitat for the larval stages of the hoverfly. In addition, extensive measures were taken to ensure the long-term sustainability of the aspen woodlands and thus the long-term provision of deadwood. In a similar way to a great deal of conservation work – where ecologists provide a 'technocratic recipe book' (Adams 1997: 278) of management prescriptions – the habitat was manipulated in order to perpetuate a particular species and set of woodland processes.

Yet despite the fact that this work for the hoverfly appeared, at first, to conform to the model of intervention and manipulation, I came to see that it did, in fact, represent something new. One of the aims of those that originally sought to develop the concept of biodiversity was to shift the focus of conservation away from a few charismatic species towards the diversity of life and the broader ecosystem (Takacs 1996). It was thought that a conservation that was focused on relatively few species was deficient because it could ignore much that was of value. The intention was to highlight the importance of the more obscure but equally

important species such as invertebrates. Under the aegis of 'biodiversity conservation' attention could much more legitimately be paid to what was earlier ignored. Thus when the concept was translated into British nature conservation it encouraged relatively obscure species to be included in the interventionist and manipulative model. In this way, the work at Insh for the hoverfly represents an *extension* of the intervention and manipulation that has characterised conservation. It was perhaps the first 'specific conservation action for a fly' precisely because 'biodiversity' had extended the ambitions of conservation. While conservation has involved broad manipulation of habitats or specific manipulation for key species, the manipulation of habitat for a fly takes this sort of intervention to another level.

If the management undertaken for the hoverfly does represent an extension of the intervention and manipulation involved in conservation, then the concept of biodiversity and the accompanying bureaucratic process must be understood as playing a crucial role in that extension. If this is so, then the introduction of the concept of biodiversity represents a significant development in the UK conservation scene. This is important because, if the manipulative and interventionist side of nature conservation is essentially part of a rationalist project and illustrates how conservation is not only a reaction to rationalisation but also part of it (Adams 1997), then the apparent intensification of manipulation could be understood as part of the continuing process of rationalisation. That is, the biodiversity process could be understood as implicated in the intensification of rationalisation within nature conservation and thus as representing an opportunity to empirically investigate the process of rationalisation within conservation.

In this chapter, then, I start to examine *how* rationalisation takes place by exploring the development of the biodiversity process. More specifically, and for reasons outlined in chapter two, I explore this development with the help of analytical resources provided by Foucault (1977; 1978; 1991). Since Foucault inherited from Weber 'a concern with rationalisation and objectification as the essential trend of our culture and the most important problem of our time' (Dreyfus and Rabinow 1982: 166), his analyses of the processes by which specific configurations of power/knowledge emerge provide resources for those, like myself, that also want to examine rationalisation. In his analysis of the emergence of biopower and governmentality, for example, he illustrates that these configurations are contingent on relationships between people, practices that enframe relationships and the development of certain forms of knowledge. As such, he provides a useful conceptualisation of social change and grounds it in social practice. Following Foucault, an analysis of the rationalisation of nature should pay attention to the *practices* that enframe knowledge production and social interaction (see Rutherford 1999; Demeritt 2001; Braun 2000;



Murdoch and Ward 1997). Dean (1999) points to what such an analysis might look like. He says, an analytics of government

examines the conditions under which regimes of practices come into being, are maintained and are transformed...An analytics of government attempts to show that our taken-for-granted ways of doing things and how we think about and question them are not entirely self-evident or necessary. An analytics of a particular regime of practices, at a minimum, seeks to identify the emergence of that regime, examine the multiple sources of the elements that constitute it, and follow the diverse processes and relations by which these elements are assembled into relatively stable forms of organisation and institutional practice. It examines how such a regime gives rise to and depends upon particular forms of knowledge and...considers how this regime has a technical or technological dimension and analyses the characteristic techniques, instrumentalities and mechanisms through which such practices operate (Dean 1999: 21).

Following Dean, an analysis of the changing government of nature in nature conservation could, therefore, examine how a new regime of practices came into being, was assembled into relatively stable forms of institutional practice and associated with particular forms of knowledge. This chapter is thus an analysis of the development and entrenchment of the regime of practice associated with the concept of biodiversity and target-led action planning. Just as Foucault eschewed a search for deep essential meaning in his analyses of discipline and the co-emergence of the human sciences, ideas of justice and notions of scientific objectivity, by concentrating on strategies, tactics and mechanisms embedded in social relations, I want to examine the emergence of new discursive formations in nature conservation by paying attention to the strategies and tactics of planning. In distinction to Takacs (1996), who studied the role of prominent conservation biologists in developing the concept of biodiversity and emphasised their agency in shaping agendas, I examine the practices by which the biodiversity process worked. Instead of seeing specific individuals as the prime movers or the sovereign subjects with the ability to orchestrate events, I suggest that once the biodiversity process was initiated it developed into a self-supporting strategy without strategists. While the RSPB and individuals like Graham Wynne (Wynne 1993; Wynne *et. al.* 1993; Wynne *et. al.* 1995), were, indeed, important in initiating the process and persuading others to adopt a new approach to conservation, the story I tell is not primarily one of individual or organisational influence. Rather, I seek to explore how the natural world came to be re-presented as 'biodiversity' and how that representation was implicated in new sets of knowledge production and organisational practices.

I begin by focusing on species and habitats. I do so because the biodiversity process itself became centred on species and habitat action planning. More specifically, I focus on the establishment of a new habitat classification that ultimately played a crucial role in the

formation of new objects that were then rendered manageable. I examine, too, the reconstruction of the means by which species were prioritised. As the register of reasons for prioritisation changed so new 'objects' of conservation concern were constructed and new sets of knowledge producing practices established. By looking at how species and habitats are constructed anew I presuppose that focused action for a fly or a moss or a liverwort is not simply undertaken because of the fact that it was endangered. These species and habitats have to come to be understood as endangered – they have to be constructed as such – before action can be undertaken on their behalf. Just as Braun and Wainwright (2001: 52) suggest that 'the 'forest' in conservation discourse is not something that existed independently from the maps, tables, techniques, and practices that made it available to forms of economic and political calculation', so species and habitats only come to be known through the way that they are represented which is in turn interwoven in certain forms of practice and connected with certain types of knowledge production.

I subsequently address the administrative structures that were put in place to allow plans to be produced and actions reported on. In particular, I focus on the writing of action plans and the establishment of expert groups, before extending this focus by exploring the way action planning is connected, by similar logic and by direct reference, to site management planning. I suggest that whilst management plans have been written since at least the 1950s, the practice of management planning became increasingly important in the 1990s and that these management plans effectively connect with action plans. As action and management planning become interconnected what emerges is a densely interwoven, self-supporting system that shapes conservation in an increasingly unitary regime of practice.

I suggest that these practices of classification, prioritisation and writing were bound up with the desire to make conservation evermore secure in its broader social negotiations. In the context of a great deal of ambiguity and heterogeneity of conservation action, which served to undermine the claims of conservationists (because conservation appeared muddled and ill-conceived), the biodiversity process provided an opportunity to achieve a greater degree of coherence. On the one hand, attempts were made to increase the 'objectivity' of conservation claims by finding more solid foundations for identifying special species or habitats and by creating a relatively transparent process whereby the reasons for selection were set out in advance. On the other, action planning was envisaged as a mechanism by which to bring all the different arms of conservation together so that action could become focused on specific species or habitats; action planning acts as a strategy for co-ordinating nature conservationists. As such, I suggest that these attempts to achieve a more authoritative and consistent basis to conservation action were bound up in a continuing politics of the

position of science within nature conservation. With the development of the biodiversity process the scientist, who had (arguably) been slightly marginalised, is brought back to the centre of conservation.

I envisage these practices, concepts such as decline, objects such as habitats and the changing position of the scientist, as co-emergent. As the biodiversity process developed so decline became increasingly ensconced as an important concept, habitats became more solid in their use and the scientist became increasingly established as the linchpin. The biodiversity process is a continuing achievement and a process that re-affirms, through its practices, its own importance. What emerges is an increasingly coherent and unified structure to conservation action.

### **Classifying habitats**

After the UK Government had committed itself to a target-led action planning approach in its response to the Convention on Biological Diversity (Anon. 1994), it established the UK Biodiversity Steering Group to develop action plans. Ultimately this steering group produced 116 species and 14 habitat action plans (UK Biodiversity Steering Group 1995a, 1995b). But in order to be able to produce these plans, it had to establish a system of focusing attention on those species and habitats in most need. In the case of habitats, this process was not one of simply choosing which were most under threat because what constituted a habitat was ambiguous. The concept of the habitat had to be more clearly defined and a new classification developed. Habitats had to be classified as such before they could be prioritised and become part of the action planning system.

There are different ways to understand classification. One is to see it as a process of discovery: classes exist beyond our conceptualisation of them and as our knowledge develops so our classification comes closer to reality. All the conservationists I spoke with, however, took a different view. For them, classification is arbitrary. Classes are human constructs because, in the case of habitats, defining a class involves drawing a line through a continuum. Where the line is drawn is less determined by nature and more by the choices made by the classifier. This pragmatic view of classification is close to the position I take here because, following Dean (1979; but also Nicholson 1989; Bowker and Star 1999; Waterton 2002; Murdoch and Lowe 2003), I see classification as a process of invention rather than discovery. But where the arbitrariness of classification led many of the conservationists to see classification itself as relatively inconsequential (the lines had to be drawn somewhere), I want to claim that classification matters. It matters because it is both the product of, and embedded in, considerable political work. Classification has

consequences (Bowker and Star 1999). More specifically, in this section, I look at the process of creating a new habitat classification and at how, as they were classified into discrete units, habitats became the objects of knowledge and calculation around which biodiversity conservation could work. I suggest that as these categories were more clearly defined and as they gradually became entrenched as new objects, so they became implicated in and supported a wider set of practices that subsequently served to re-enforce the categories themselves.

The concept of the habitat may appear straightforward – especially now that the biodiversity process is firmly established – there are fens, native pinewoods, lowland heath, and so on. They are clearly identifiable units that can be mapped and monitored and have action plans produced for them. This obviousness is, however, an achievement. It is so because the present dominance of the idea of the habitat as an assemblage of plants and animals in physiographical context was but one of several possible definitions that rendered the concept ambiguous. Tansley, for example, took the habitat as the complex of environmental factors that influence the nature of a plant community:

In the study of vegetation the term habitat is applied to the whole complex of environmental factors which differentiates units of vegetation, and is not used in the limited sense of a particular soil or situation. It is obvious that plant communities are in the first place related to habitat. This is equally true of the largest units and of the smallest...Fundamentally, the vegetation of the world is a mosaic of plant communities whose distribution is determined by a corresponding mosaic of habitats (Tansley 1949: 216).

In this reading, different communities occur in different places that are characterised by different sets of environmental factors – different habitats. The vegetation community is related to habitat, not a habitat itself. But by the 1990s, the use of ‘habitat’ had changed. Miles *et. al.* (1997) point out that ‘habitat’ is commonly used in at least four ways. There are two forms of restricted usage: the habitat can be the natural place of growth or occurrence of a species or it can be the environment of any organism. Both definitions imply that there are as many habitats as there are species or even organisms. There are also two wider forms of usage: the habitat can be an area of ground, small or large in extent, over which the environment is essentially uniform, or the habitat can simply be used as a synonym for an ecosystem or community. In short, the habitat can be a set of environmental characteristics, a singular place, a homogeneous space or a thing.

The Convention on Biological Diversity seemed to pin things down when it defined a habitat in the restricted sense to be ‘a place or type of site where an organism or population naturally occurs’ (Johnson 1993: 84). But as the concept of biodiversity was translated into

the UK context the habitat changed again. The UK *Action Plan* used a wider form stating that ‘In the UK we often use the term habitat to refer to major assemblages of plants and animals found together, as in woodland or sand dune habitats. More properly, a habitat is the locality or local area occupied by a species, but in this chapter it is used in its familiar, broader sense’ (Anon. 1994: 31). It was thus the broader meaning of the habitat as a major assemblage of plants and animals – which has a long tradition in the UK with the late 1930s seeing proposals for a national network of habitat reserves based on the four major habitats of upland, fen, woodland and heath (Sheail 1976) – that was adopted within the biodiversity process.

This eventual dominance of one interpretation of ‘habitat’ was not, however, simply determined by tradition. The wider usage was specifically related to the politics of achieving the aims of conservation. Petren (2001) suggests that when the habitat was defined as a place of occurrence it became theoretically unpopular and incorporated within the concept of the niche, but that with the construction of the need to conserve ‘biodiversity’, the habitat emerged again as a useful tool for management. The habitat, defined much more broadly as ecosystem, has the advantage over the niche because the physical nature of habitats means that they are easier to identify and quantify. Indeed, because a habitat is synonymous with an area that incorporates natural communities, protecting the habitat/area means protecting the interconnections that are part of that community and so all the various niches. The implication here is that this is not a one-way street where biologists develop the notion of the habitat and it works through into conservation practice. To the contrary: the instrumental needs of conservation management influenced the scientific concepts that were developed to fulfil those needs. The reference to broader habitat types in the *Action Plan* thus fits with an extant system of area-based conservation.

Once the concept of the habitat had been defined, it was the task of the Steering Group to identify discrete habitats for which action plans could be written. This would appear, at first glance, to be unproblematic because existing classification systems could help in this task. The Steering Group could have turned, for example, to the existing ‘Phase 1’ habitats classification, which was developed by the NCC in the 1980s as a means of monitoring trends in habitat and land use change (NCC 1990). Or because ‘habitat’ was now synonymous with ‘community’, the Group could have turned to existing classifications of communities such as the National Vegetation Classification (NVC) or the CORINE Biotopes Classification that underpinned the EU ‘Habitats Directive’ (Rodwell 1991-1997; Hall *et al.* 2001; Commission of the European Communities 1991). But for the purposes of action planning the categories of the Phase 1 classification were too specific and the survey

techniques, which involved on-the-ground field inspection, too labour intensive. Similarly, the NVC and CORINE classifications dealt with too many discrete communities and required a significant degree of botanical knowledge to be able to distinguish categories. Consequently, with the ultimate purpose of action planning in mind, the Steering Group decided to establish a new 'broad habitat classification' which defined habitats as 'ecologically integrated units at a landscape scale, rather than seeing habitats as simply distinct types of vegetation' (UK Biodiversity Steering Group 1995b: 71). Recalling the utilitarian impulse underlying the popularity of the broad habitat concept, the Steering Group identified these new broad habitat types with reference to two criteria:

In selecting this broad classification, two main criteria were used:

- a workable number of habitat types to ensure the process remained feasible; and
- simplicity – the definitions should be easily understood, unambiguous and recognisable by a broad range of people (UK Biodiversity Steering Group 1995a: 22).

As is the case with any classification, the end to which it is put shapes the categories. In this case the instrumental needs of the process of action planning shaped the categories and the specific limits of these new conservation objects. The resulting classification divided the whole land surface of the UK, and the surrounding seas, into 37 broad habitat categories (see Appendix IV). But because these broad categories were too broad to be managerially useful, smaller more discrete habitats also had to be identified. Thus the Steering Group had to devise a way of identifying and prioritising these 'key habitats'. They established a set of criteria by which to do so. Action plans would be written for:

- habitats for which the UK has international obligations;
- habitats at risk, such as those with a high rate of decline especially over the last 20 years, or which are rare;
- areas, particularly marine areas, which may be functionally critical (essential for organisms inhabiting wider ecosystems) such as sea grass beds (for spawning fish);
- areas important for key species (UK Biodiversity Steering Group 1995a: 22).

It should be acknowledged that these criteria only present the public version of how habitats were selected. One of my interviewees put a different version when he said that 'the list of species and habitats that have been granted habitat and species action plan status are there simply because they've had a good lobby behind them'. Nevertheless, the criteria emphasise that the classification of key habitats was not a simple exercise of identifying discrete areas or assemblages: in addition to the ultimate purpose of action planning, the habitats that were

'identified' were the product of a process of negotiation. Because they did not yet exist as 'key habitats', selection against these criteria was a process of creation and the limits of these newly-created objects was, in part, related to the sorts of extant objects under different systems. In the case of those habitats for which the UK has international obligations, for example (such as the obligation to protect the Caledonian Forest under the European Union's 'Habitats Directive'), the bounds of the conservation object are already set, even if they technically require translation from one classification to another. Equally, referring to a habitat as declining implies that it is already defined and that a related field of knowledge and practice keeps it under surveillance. If we ask how it is possible to speak of a habitat as declining over the last 20 years when the habitats have only just been classified as habitats, we can see that the prior means of referring to habitats, such as the Phase 1 classification, is crucial in giving shape to this new broad habitat classification. In this way, the emergence of new habitat types involved the negotiation of various extant forms of classification in a new context. Habitats such as grazing marsh, fens and lowland calcareous grassland, only came to be clearly identified as such, with the lines drawn in the places they were, because of the imperative of creating manageable 'objects' for action planning and because of the existing structures that were in place.

The resulting list of key habitats overarched by broad habitat types can be seen in Appendix IV. The key habitats are communities or features that are understood to be under threat or special for some reason. Thus the 'broadleaved and yew' broad habitat contains the key habitats of upland oakwood, lowland beech, upland mixed ash and wet woodlands. The key habitats do not constitute the whole of the broad category but just a few selected bits of it. What began to emerge by 1995, then, was a set of categories that referred to relatively small, easily recognisable 'objects' for which action plans could potentially be produced in a way that was managerially achievable.

There was still, however, significant flexibility to these categories. In as much as the classification had been developed by the Steering Group and had not yet been adopted by other groups or worked through into material action, there was still room for revision. This flexibility is evident in the way the UK Biodiversity Group (the successor body to the Steering Group that was established to oversee the completion of the action plans and subsequent implementation) set about reviewing the categories of broad and key habitats in order to reduce some of the ambiguities that existed. The broad classification was ambiguous because a habitat, for example, could be a biogeographical zone such as the 'machair', but also a whole island or group of islands as in 'Islands and archipelagos', meaning that one broad habitat type could occur within another. In the review, some habitats were simply

'deleted' or 'removed' (phrases which emphasise the textual nature of the process). Some were added. Others were re-categorized, changing status from being broad habitats to priority habitats (in the revision the UK Biodiversity Group reworked the classification from 'broad habitats' with 'key habitats' to 'broad habitats' with 'priority habitats': see Appendix IV, V and VI). Native pine woodland, for example, was changed from being a broad habitat category to a priority habitat within a new broad habitat of coniferous woodland that encompassed both planted and semi-natural woods.

In some ways, this was simply a technical bureaucratic exercise because re-categorizing pinewoods shifted them around on pieces of paper but did not actually have an effect on the pinewoods themselves. But such reorganization was more than a bureaucratic exercise because it was envisaged as an important step in moves towards the working application of the classification. It was a step on the road to these classes actually having an effect. The subsequent step, which marks the 'solidification' of the classification, was to comprehensively describe the habitats in order to standardize the categories. It was with this aim that Jackson (2000) sought to outline each category of the terrestrial and freshwater realm in order to offer guidance on the interpretation of the classification and, ultimately, the interpretation of physical phenomena so that they could be allotted to a category:

## **2.2 Coniferous woodland**

This broad habitat type is characterised by vegetation dominated by trees that are more than 5m high when mature, which form a distinct, although sometimes open canopy which has a cover of greater than 20%. It includes stands of both native and non-native coniferous trees species (with the exception of yew *Taxus baccata*) where the percentage cover of these trees in the stand exceeds 80% of the total cover of the trees present. Woodlands that are made up of broadleaved, yew and conifer trees with less than 80% of the total cover provided by conifer trees are included in the '*Broadleaved, mixed and yew woodland*' broad habitat type. Recently felled coniferous woodland is included in this broad habitat type where there is a clear indication that it will return to woodland. Otherwise it is classified according to the field layer composition.

Scots pine *Pinus sylvestris* is the only pine tree that is native to the UK, and forms native woodland only in Scotland. Semi-natural woods of Scots pine are normally called native pinewoods. The majority of coniferous woodlands in the UK are plantations of species that are either not native to the UK or to the sites on which they occur (Jackson 2000: np).

This was an attempt to draw more definitive lines between the boxes of the classification and to make it more consistent. In the process, what happened is that the habitats, which had until then been relatively abstract (existing on paper and open to repositioning), became increasingly 'solid' objects because they were attributed with a certain set of characteristics. Subsequently, the habitats would become evermore entrenched as conservation objects



because once clearly defined, they would become the object of calls for more knowledge: each habitat should be mapped, their extent measured, their condition researched and particularly fine examples identified. Gradually, then, as knowledge was accumulated, so each category was re-enforced and began to actually inform the interpretation of real world phenomena. Consequently, whilst the act of drawing lines across continua was relatively arbitrary – influenced by the imperative of planning and the prior classification of habitats – once they were drawn and classes defined so the resultant categories became more real in the sense that they had effects.

These effects are evident in the way that each habitat becomes a ‘thing’ that is valued for a certain set of qualities. Once a fen, for example, is defined as exhibiting specific qualities, so a norm is established and questions arise as to what should be done if a fen gradually changes from that norm. Should those habitats that could be considered fens in a poor condition be improved so that they conform to the norm? If a fen that was a prime example gradually changes its species composition, should attempts be made to change it back? It is precisely this sort of norm that underpinned the targets in the fen and pinewood action plans. Their targets were to:

Identify priority fen sites in critical need of, and initiate, rehabilitation by the year 2005 (UK Biodiversity Steering Group 1995b: 241).

Maintain remnant native pinewood areas listed on the Caledonian Pinewood Inventory and restore their natural diversity of composition and structure (UK Biodiversity Steering Group 1995b: 259).

Once categories were clearly defined and management suggested to rehabilitate or restore ‘degraded’ habitats so that they conform to the norm, so the lines that were arbitrarily drawn gradually become more real in that the physical structure of real world habitats is changed. The lines that were drawn on paper become inscribed on the landscape and the habitats that are identified become the object of continued investigation and surveillance.

Ultimately, then, as the Steering Group and later the UK Biodiversity Group sought to take the biodiversity process forward and introduce a new system of planning, new conservation objects were constructed. The new objects – the habitats – became entrenched and interwoven in sets of practices of surveillance and provided the basis for the accumulation of new sorts of knowledge. The more a habitat was studied, the more defined it became, the more defined it became the more entrenched as a category it ended up. Eventually the habitats appear obvious and are intimately interconnected with systems of knowledge production and management that make them appear so.

## Prioritising species

Whilst it was recognised in the UK *Action Plan* that the concept of a species was and remained problematic and that finding a working definition had proved difficult (Anon. 1994: 15), the species was nevertheless declared as the basic unit of biological diversity (Anon. 1994: 26). Due to the orientation to action, what was required was less a discourse on the status of the species and more a robust means of choosing which species warranted greatest attention. In addition to creating and ‘solidifying’ a new set of conservation objects in the form of habitats, then, the UK Biodiversity Steering Group had to devise mechanisms that allowed the clear prioritisation of species and justified the production of action plans for some and not others. It is the argument of this section that the process of prioritisation was itself implicated in constructing a new ‘object’ of conservation concern: the declining population. This new object rests upon and reproduces a new set of practices and, in addition, represents one way that conservationists sought to achieve a greater degree of authority.

In their report, which represented the first attempt at creating a structure for the biodiversity process, the Steering Group sought to identify criteria for selecting the species of most concern. Drawing heavily on *Biodiversity Challenge* (Wynne *et. al.* 1993), it decided that if a species qualified for one or more of the following categories, they should be considered a ‘key species’:

- Threatened endemics and other globally threatened species;
- Species where the UK has more than 25% of the world or appropriate biogeographical population;
- Species where numbers or range have declined by more than 25% in the last 25 years;
- In some instances where the species is found in fewer than 15 ten km squares in the UK; and
- Species which are listed in the EU Birds or Habitats Directives, the Bern, Bonn or CITES Conventions, or under the Wildlife and Countryside Act 1981 and the Nature Conservation and Amenity Lands (Northern Ireland) Order 1985 (UK Biodiversity Steering Group 1995a: 19).

These criteria and the subsequent lists of species represent a crucial dimension of the biodiversity process. If part of the rationale behind developing an objective-led approach was to move towards a conservation that did not appear to act in an ad hoc way, then setting out criteria in advance was a means of providing a clear justification for why some species were more special than others. Crucially, within such lists of criteria are implicit aspirations for an authoritative, impartial and ‘objective’ basis for conservation action. In their review of the biodiversity process, Kerr and Bain convey the importance of criteria when they say that the

'application of clearly defined...criteria makes the process of species selection more objective' (Kerr and Bain 1997:275). The listing of these criteria constructs the person who measures a species or a habitat against the criteria as the objective, disinterested arbitrator simply implementing the scheme: deciding which species are most threatened is a mundane activity and has nothing to do with individual choice. The very setting of criteria is thus a claim to authority; a claim to a more solid basis from which to act and to argue with others. It is, as one of my interviewees sought to emphasise, a 'scientific exercise': 'That list, those are priority species and habitats, that is a purely scientific exercise, they go into that published document if they fulfil certain criteria, if their rate of decline has been X percent, if their population size is X percent, if they are listed on an international threatened list. Hard facts, they go into that list'. Yet despite the apparent neutrality of the list, both the setting of criteria and the criteria themselves have a history, a history that illustrates that there is nothing self-evident or obvious about either.

If we look closely at these criteria, we can see that they are set out hierarchically. The threatened endemic is at the top of the list because if it is lost from the UK it is globally extinct. Next are those species for which our global responsibility is slightly less – if the species is lost from the UK it would not be extinct as it occurs elsewhere. The third category is based on the decline of numbers or range of a species and the fourth is rarity. This hierarchy is significant because until the 1980s rarity was the principal means of prioritisation but here it has been demoted whilst decline has risen in importance.

The increasing importance of the notion of decline can be traced with reference to the importance of the RSPB in developing the biodiversity process. Until the 1980s rare birds like the avocet or the osprey attracted attention and action was undertaken to increase their numbers. As a concept, however, rarity could be contested because of what it meant at different spatial scales. For some a species was rare with reference to the UK, whilst for others, the same species was abundant in Europe and thus not rare. If the country's major conservation priorities were identified on account of their national rarity, the result could be the protection of many species that were at the edge of their range and thus abundant elsewhere: valuable conservation effort could be expended on a species that did not need help. Ian Mitchell, a vocal campaigner against the 'metropolitan' conservation agencies and organisations, utilised this ambiguity to ridicule the RSPB for putting so much effort into conserving the corncrake in Scotland when there were (for Mitchell) significant numbers in eastern Europe (Mitchell 1999). The RSPB, then, was on potentially difficult ground if it justified its prioritisation of a species with reference to its rarity.

The publication of *Red Data Birds in Britain* (Batten *et. al.* 1990), which was produced by the RSPB and the NCC, was a first attempt to create a more authoritative system of prioritisation. It was an attempt to set out clearly, which species were of most concern and deserved action on their behalf. The subtitle of the book, however, – *action for rare, threatened and important species* – points to the fact that the problems of rarity remained. Though it is true that these problems will not go away because the concept of rarity is, in some circumstances, the most applicable (which is why it is found in the criteria for the biodiversity process), the Red Data list was thought to be deficient because there was no attempt to prioritise the 117 species included on it. Questions arose as to which species was most in need. Gibbons *et. al.* (1996a: 8) ask, for example, whether ‘a species admitted to the list on the basis of a rapid population decline [is] of greater concern than one admitted simply on account of its rarity in the UK, even though it might be common elsewhere in its range?’ Aware that *Red Data Birds* had not managed to sufficiently ground conservation action for birds, the RSPB along with the British Trust for Ornithology sought to rework the list, its criteria and structure. The subsequent list of *Birds of Conservation Concern* was based much more strongly on decline (Gibbons *et. al.* 1996).

This focus on decline was only possible because it was in the early 1990s that three sets of ‘trends data’ gathered from repeated monitoring ‘became available’ (or was constructed to be of greater importance). In 1990, for example, the data and trends observed in the Common Bird Census that had been conducted annually since 1962 was published as *Population Trends in British Breeding Birds* (Marchant *et. al.* 1990). The second development was the mapping, between 1988 and 1991, of the entire breeding avifauna at a national level by recording the breeding species within each 10 km square in the British and Irish national grids. The resultant atlas (Gibbons *et. al.* 1993) could be compared with one produced from a similar survey undertaken twenty years before (Sharrock 1976) and trends identified. The third set of trends information was published in 1994, from data collated by Birdlife International on the population sizes and trends for breeding species in all European countries (Tucker and Heath 1994). As such, the ability to talk in terms of decline rested upon a complex system of surveillance and monitoring.

Importantly, as this trends data ‘became available’ species that were already prioritised on the basis of rarity were reconstructed through the language of decline. In *Red Data Birds* (Batten *et. al.* 1990), for example, despite reference to how it was ‘markedly decreasing in numbers’ (Batten *et. al.* 1990: 124), the capercaillie is included as a ‘vulnerable breeder’ because it was ‘confined to *rare* and vulnerable habitats, with more than half the population occurring at 10 or fewer sites’ (Bibby *et. al.* 1989: 5). In *Birds of*

*Conservation Concern*, however, it was included as a *declining* breeder because its breeding range had contracted by 50% over the last 25 years (Gibbons *et. al.* 1996). Then the species action plan refers to how '[n]umbers have declined rapidly throughout its range in Northern Europe over recent decades with the current UK population estimate now standing at 2,200 birds in winter' (UK Biodiversity Steering Group 1995b: 106). This emphasis on decline is reinforced in the section of the plan that outlines the target:

4.1 This species has declined in recent years. The plan aims to halt the decline, the causes of which are becoming clearer, and to restore the species to its former range.

4.2 Halt the decline of the capercaillie in its core range in eastern and central Scotland by 2000.

4.3 Maintain, and expand where possible, the range and population numbers of capercaillie in Scotland to 20,000 by 2010 (UK Biodiversity Steering Group 1995b: 106).

As a means of prioritisation, decline was attractive to the RSPB for three reasons. First, it provided an apparently more compelling basis for action. If some species are naturally rare, then rarity is no justification for prioritisation at all. But if species were declining it would suggest that something was wrong. Even though focusing on decline ignores questions of whether or not a species had unnaturally high numbers at the beginning of the period of monitoring, or that they might have been at a peak and go through cycles of growth and decline, or that the very notion of decline implicitly constructs some ideal former period, a negative trend implies a species in trouble and in need of conservation action. Secondly, it was possible to determine rates of decline and therefore identify which species were declining most. While some species might have declined by 10% over the last 25 years, others might have declined by 50% over the same period. As such, decline offered a means of yet further prioritising species and targeting resources. Thirdly, decline was attractive because where reference to rarity verged on the 'subjective' due to its variability at different spatial scales, a more quantitatively rigorous system of trends data was understood as achieving a greater degree of objectivity. By translating their arguments for the protection of species into figures, conservationists transferred the authority for conservation action onto the data and thus constructed themselves as simply undertaking what was obviously necessary as indicated by that data. If debates between conservationists and farmers, for example, had in the past been major clashes, by referring to the data as the authority for action, conservationists potentially diffused these clashes. Their argument was not simply their 'subjective' position, but was based on the data; a position which, in turn, allowed conservationists a range of argumentative positions: they could, for example, claim to be on

the side of the farmers but have no choice but to act in accordance with what was indicated by the figures. If someone objected to the actions of conservation agencies for a particular species, those agencies could defend themselves by arguing that these actions were not simply based on their preference for that species but on the data that indicated the species was in difficulty. As such, there could be less argument about priorities based on decline. Focusing on decline was a way of achieving a stronger, more authoritative position in fights over nature.

It is possible to see this claim to authority in the way that focusing on decline introduced another means of representing nature into the conservationist's representational repertoire. In addition to the evocative photograph of the spectacular but sadly rare and endangered species, the conservationist could now utilise the graph as a powerful means of persuasion. The authority of numbers, which is linked with the mundanity of accounting and the impartiality of the accountant/conservationist (Porter 1995; also see Demeritt 2001; Enticott 2001), provides compelling evidence of the need for action (figure 4.1).

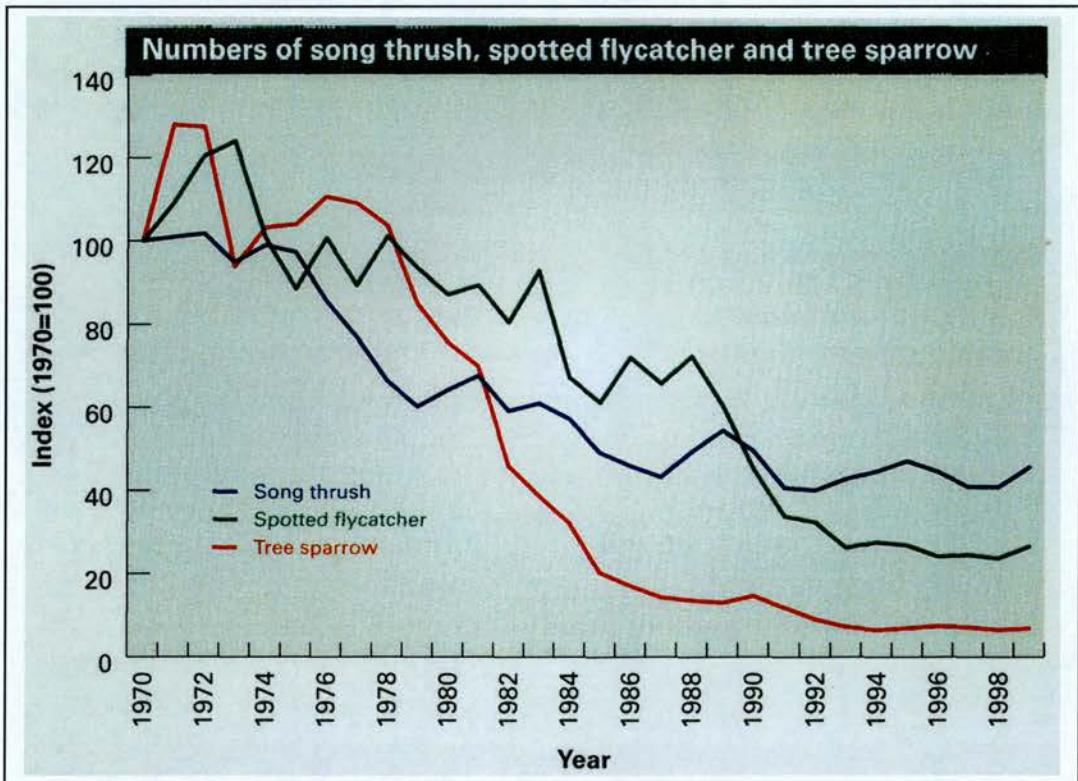


Figure 4.1 The graphical representation of decline (Source: RSPB 2001a: 6).

Ultimately, then, in ornithological circles it came to be accepted that if a species was rare but stable, it was less of a worry (although still requiring attention) than a species that might

be more abundant but declining in numbers very quickly. It was a position that quickly extended beyond ornithology. In the way that the RSPB was a prominent actor in the Biodiversity Challenge group, the importance of decline and its associated practices became embedded in the biodiversity process. Thus by ostensibly applying the criteria above, the Steering Group identified (from an estimated 90,000 species in the UK) a list of 1250 'key species', which it termed the 'long list'. In the context of producing action plans for a report to Government, however, the long list was too long. The Steering Group needed some way of further prioritising species and from the 1250 strong long list, a 'middle list' of 400 species was identified by using the 'globally threatened' or 'declining in the UK' criteria. But even this list was too long, so from the 400 species strong middle list, a 'short list' of 116 species was selected and it was for these that action plans were prepared. (Later, in 1997, when the UK Biodiversity Group set about reviewing the Steering Group's work, this terminology was simplified. The species constituting the long list were collectively renamed to become '*Species of Conservation Concern*' (SoCC) and the middle and short list species became '*Priority Species*' with the aim being to produce action plans for all priority species).

Despite the fact that trends information had only been accumulated for birds because they were the most observed group of species and because there was an army of amateur birdwatchers willing to help with surveys, and despite the fact that such coverage – such visibility – was not applicable to all species, decline became an important element of the process. And as decline and the practice of monitoring for trends gets bound up in the process, so the question of decline becomes one asked of more species. Indeed decline is the key concept around which the plan is organised: section two of each plan, which conforms to a standard structure, specifically outlines the 'current factors causing loss or decline'. Thus the practice of monitoring for decline becomes more widespread and the importance of the concept becomes more entrenched. The new 'object' of the declining population becomes interwoven with a new set of practices and the production of new forms of knowledge and in the process itself becomes more solid and important. Whilst it would be possible to say that the focus on decline is quite simply because the capercaillie, for example, has, in fact, declined in number (which is beyond dispute), accepting such a claim *on its own* would miss all the work that has gone in to being able to speak in terms of decline. It would miss the desire, derived from a recognition of the ambiguities of rarity, to find a more robust basis for action. The importance of decline is an achievement bound up in attempts to achieve a more authoritative nature conservation.

## The planning process

Classifying and prioritising habitats and species was only the first step in the establishment of the biodiversity process. Once they had been classified and prioritised and listed as in need of special attention, particular species and habitats were brought into the systematic process of action planning. In this section, I want to highlight this as a process through which certain species and habitats became further entrenched as objects of conservation calculation, and as a process through which the position of the scientist in nature conservation is re-negotiated. As the biodiversity process developed, the scientist and the different species and habitats were co-constructed through a set of practices that re-enforced their importance.

While it takes some of its impetus from the species recovery programmes in other countries, one of the significant drivers for the adoption of the action planning approach in the UK was a recognition by conservationists that they needed a more rigorous means of deciding on action. They were aware that in the context of conflicts over the natural world, the conservation case could be challenged by suggestions that conservationists were behaving in an *ad hoc* way, choosing to protect some species or sites and not others without clear unproblematic justification. As such, they wanted an approach that was logical, revisable and visible, so that they had firmer grounds for their claims. Instead of being reactive and having to justify their interest in a species or habitat after it was threatened by a development, they wanted to become proactive, and be able to set out more clearly what they were interested in and why. Developing clear mechanisms for classifying and prioritising habitats and species was the first step in introducing greater clarity. But once specific species and habitats had been singled out for special attention, the next logical question revolved around what the objectives were. If a species was endangered and was receiving special attention, what should be done to make it less endangered and what would count as success? It was in this context that conservationists turned to strategic planning models from the fields of business and management. They needed a clear structure of decision making that lent credibility to their claims. Planning performed this task.

Planning was a means of introducing a greater degree of rigour and coherence to nature conservation action because it provided a structured way of proceeding (figure 4.2). In an initial stage of auditing, the circumstances of the species or habitat are analysed. This analysis gradually feeds into a planning phase within which priorities for action are agreed upon, responsibilities for action assigned, budgets determined, detailed work programmes set out and mechanisms for monitoring and evaluating the success of the work established. Once the work has been undertaken, it is evaluated with that evaluation feeding back into an assessment of the fortunes of the species or habitat under consideration (Sutherland 2000).



Planning is, thus, a structured approach, but also a flexible one. As the cycle revolves, action is undertaken and the results monitored, so the analysis can feed into either the continuation of management or the alteration of it in the light of experience. In this way, the cycle of planning introduces a disciplined process that allows change because that change can be justified by reference to the structure of planning.

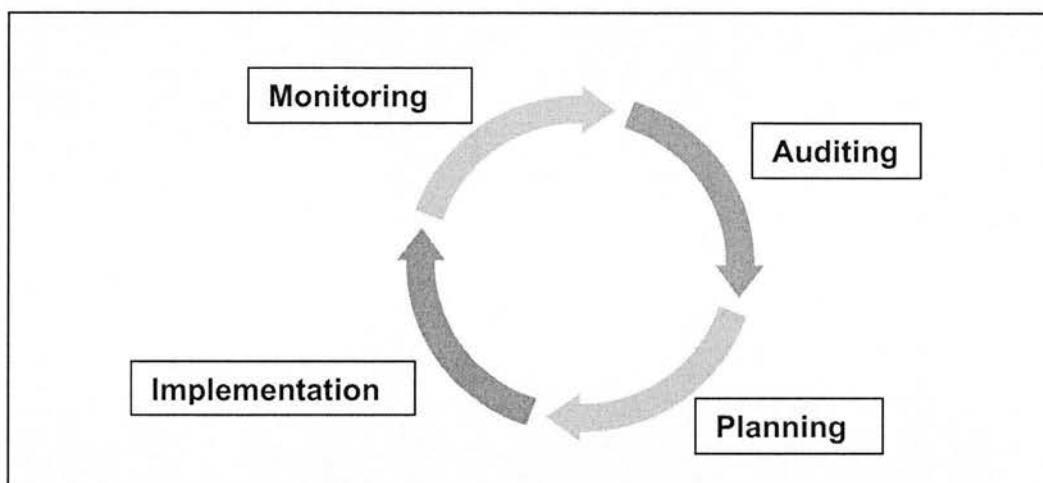


Figure 4.2. A diagrammatic representation of the action planning process

The introduction of this structured way of doing nature conservation was, as one of my interviewees put it, a means of introducing a greater degree of discipline to nature conservation:

The whole thing about the planning thing, was really I think an attempt...to bring to nature conservation the logical approach that planners in all sectors of society, of work, whether that means planners with a capital P, as in Town and Country Planning or those people who produce business plans for business or you know managers who are managers in accountancy or whatever. The whole audit, plan, implement, monitor, that kind of four phase process which has different names in different disciplines that can always be brought down to those four. Find out what you've got, decide what you want to do with it, do it, monitor your success and then use that to create the next stage of your review and it's a revolving cycle. It was an attempt to bring that form of discipline to...a discipline, in the other meaning of the word (Interview G, 25<sup>th</sup> January 2002).

In a general sense, conservation action is disciplined by being incorporated in a prescribed trajectory of social practice. The cycle of auditing, planning, implementing and monitoring introduces discipline in the sense of introducing order. It is a logical structure that could underpin decision-making. But the process is also a form of discipline because it holds

within itself the means of keeping people in the 'revolving cycle' and because the action plan serves to render the workings of conservation more visible. The plan, as a text published in governmental documents, becomes a record setting out publicly what should be done. It therefore introduces a public field of accountability. If the objective is widely known, the plan works as a prompt for action because in the knowledge of their visibility those involved are encouraged to undertake work to achieve the prescribed ends. The structure of the process with built-in deadlines and targets keeps it going. The process of planning contains within itself mechanisms that motivate action and encourage self-assessment and surveillance.

A more detailed analysis of how this process disciplines nature conservation practice – and in the process co-constructs species, habitats and conservation scientists – can be attained by focusing on one example: the capercaillie (see Appendix VII). Once the capercaillie had been short-listed for action planning by the Steering Group, on the basis of its decline, the entry point into the 'revolving cycle' of planning was to conduct an audit of the current state of knowledge about it:

The first thing that happened with the biodiversity action plans is a group of people who were interested in a species – capercaillie – be it from RSPB or be it from across the board, got together, sat down, reviewed what was known about current status and trends and biology of capercaillie. Reviewed things that needed to be done, whether they were policy or research or advisory or whatever. So from those what you get is a series of demands and in research terms what you get is a series of questions and effectively we don't know enough about the predators of capercaillie or capercaillie hitting fences, or things like this and what arises from that is a set of questions. ... So what the action plans have done is they have co-ordinated the views (Interview N, 25<sup>th</sup> June 2002).

In the first instance the informally-established Capercaillie Working Group was transformed into the Capercaillie BAP group. It was here that representatives from SNH, the Scottish Landowners Federation, the RSPB, the Institute for Terrestrial Ecology (ITE, later Centre for Ecology and Hydrology), the Game Conservancy Trust (GCT), the Forestry Commission and the Royal Zoological Society of Scotland, came together to discuss the problems and potential remedies. They wanted to know what was happening to the species, and what the mechanisms were that were causing its decline, so that corrective work could be undertaken to reverse those mechanisms and halt the decline. As such, they had to review the research that had been undertaken on the capercaillie and ask what it suggested should be undertaken in terms of practical management. They also had to ask what it did not tell them and where there were gaps in their knowledge. Further studies directed at specific questions could then

be suggested. Thus one of the functions of action planning is revealed: planning acts as a strategy for bringing people together, co-ordinating activity and reaching agreement.

But if we pay attention to the sorts of issues that were being reviewed and agreed upon we can see that the emphasis was on ecological knowledge of the species and the sorts of instrumental prescriptions that could be derived from that knowledge. This is significant because while conservation has been dominated by ecologists since its early days and is commonly understood to rest upon 'scientization' (MacDonald 1998), the centrality of ecological knowledge and of the scientist should not be taken for granted. When I asked one of my interviewees about the relationship between science and conservation, he suggested that biodiversity action planning actually marked a change in the relationship because it brought scientists *back to* the centre.

Andrew: ...has the relationship of science to conservation changed?

Interviewee: yes

Andrew: in what way?

Interviewee: erm...it has changed a lot with the arrival of things like the biodiversity action plans because I think they put science more clearly into the centre ground...I presume you are happy if we keep using capercaillie as the example...[yep] so I think before action plans, people were involved in conservation through nature reserves, they were involved in some degree of conservation through discussions with local landowners, there may have been issues about shooting capercaillie and things like this. There may have been scientists or local people saying they were a bit concerned, there seemed to be a lot of dead capercaillie beside these fences. The ornithologists were coming back and saying, you know, the survey data weren't good ... there was a general view that capercaillie numbers were in decline. What the action plans did effectively was to get these people together and set out these questions, part of the group was scientist, inside RSPB – I suppose these were the RSPB's own original species action plans – erm...and I suppose, as one of the scientists in that group ... if you come away from a meeting like that and feel that the research questions that are being asked are the wrong ones then you have not actually done your job in the meeting. And I felt that if I was in the meeting, certainly in terms of my staff, I used to say to them you know, if you come out of that meeting and you are not happy with the research questions you have got something wrong in the meeting because you are the researcher, you are the person who ought to be able to persuade the others that this is the right way to frame the right questions. Then in terms of the drawing up of the species action plan itself, it was either the research scientists or the ecologists, the reserves based ecologists, who more or less had a veto on the plan, so again if you felt the facts behind the plan were wrong, or the interpretations were wrong or the research questions were wrong, you could actually send the plan back and say do it again please...So in that respect the sort of, the ring for the plan was being held by the scientists and the scientists were smack in the middle of it... And it has put the scientist very much in control of things like reserve management

planning from the ecological perspective, production of advisory material, and interaction with policy and practical staff as to what gets done, how and where. It's not perfect but I think it is much better than it used to be (Interview N, 25<sup>th</sup> June 2002).

There is a broad politics to the position of science in nature conservation and the centrality of ecological knowledge and the scientist in action planning points to a continuing negotiation of that position. This re-negotiation is put in context by John Morton Boyd, who, reflecting on the establishment of Scottish Natural Heritage, referred to the 'fall of science' (Boyd 1999: 217; see also Marren 2002). He claimed as significant the fact that Michael Usher, SNH's top scientist through the 1990s, was not the 'Chief Scientist' as had been the case for his predecessors in the NCC, but was the 'Chief Scientific Advisor' and eventually excluded from SNH's main management team. The scientist was 'demoted' from the deviser of policy to the adviser on policy. Arguably this demotion had taken place because nature conservationists themselves had recognised that an inflammatory element of many of the past conflicts that conservation had been involved in was the imposition of scientific knowledge into contexts where lay knowledge was valued highly. In disputes over crofting, for example, many saw nature conservation as a form of state sponsored imperialism, and, as a result, in the moves to make nature conservation more inclusive with partnerships including crofters and 'local communities', the scientific elite were slightly marginalised. In this context, the position of the scientist in the biodiversity action planning process represents a significant re-negotiation of the position of the scientist in conservation. If the role of planning was to bring people together to agree on ways forward and to co-ordinate activity so that action for species or habitats became more efficient and coherent, then the centrality of the scientist meant that the biodiversity process was a means by which scientists could accrue power. 'The ring for the plan was being held by the scientists' precisely because they were able to define the terms of the problem and possible solutions. They became the actors through which all claims and proposals had to pass.

The scientists' centrality was further enhanced as the scientist-dominated action plan group moved on from reviewing the research that could be used to provide management advice and the gaps in their knowledge, to the next phase in the cycle: writing the plan. This plan (which follows a standard format for all species – see Appendix VII) re-produces the abstract planning cycle in its structure. There is an audit (implicit in sections 1-3 of the plan) of the current status, causes of decline and current management, before objectives are set (in section 4) and specific forms of action put forward (in section 5) and monitoring schemes suggested (section 5.5). Their centrality was enhanced because, as was stated in the action plan, the factors affecting the capercaillie were poorly understood in 1995; what was needed

and included in 'proposed actions' was more knowledge. By utilising their lack of knowledge to argue for yet further research they ensure their continued importance in generating that knowledge and in shaping the process. And by writing the need for more knowledge into the planning cycle they thus perpetuate the process itself. The action plan becomes the text through which the cycle revolves and because the scientists write the plan and co-ordinate action so they retain control.

As the group moved into the implementation phase, the benefits of this co-ordinated and planned approach became obvious. Research on fences has been important in changing attitudes to the role of fencing in woodlands; research on habitat requirements provided potential models for plantation management; promotional material was produced to raise awareness of the birds plight; a birdwatching code of practice was published; and the capercaillie was added to Schedule 1 of the WCA 1981. The success or otherwise of all this work, though, could only be judged if the capercaillie was continually monitored. As the last interviewee went on to say, he was quite certain that

from now on, one of the emphases in conservation is going to be monitoring and it is going to be monitoring all of those species that have been afforded special protection under whatever act or directive it is. Britain's signed up to Rio and the Biodiversity Convention on a five yearly cycle ... can't do it without monitoring. So all of these things have got to be monitored. As the data set builds up you will be able to do more sophisticated modelling to actually influence the way in which you manage those things and hopefully you make progress on conservation measures for individual species (Interview N, 25<sup>th</sup> June 2002).

While monitoring is crucial to be able to report on progress towards the objectives of the national Biodiversity Action Plan, it is also crucial on an individual species or habitat level because attempts at beneficial action can be correlated against changes in the population. In this way action that was beneficial can be recognised and adopted more broadly. For the capercaillie, monitoring involved national surveys and much more localised site based counting. Unfortunately, this monitoring suggested that numbers were still declining. Consequently, further, more urgent, action was required as the cycle started again. New plans had to be made. New knowledge was required. Could important sites – even those that were semi-natural, be managed very specifically for capercaillie? Could the field layer in which they spend their lives be managed so as to be optimal for them? More research was needed, trials have to be conducted and the results monitored.

As the cycle proceeded, what happened was that the whole set of practices of classifying, prioritising and planning became increasingly entrenched and the scientists bolstered their position. This can be further illustrated by reference to a report on the

progress of action for the capercaillie (figure 4.3), that fed back in to the public field of accountability and formed part of the national reporting mechanism that allowed the UK Biodiversity Group to produce the Millennium Biodiversity Report (UK Biodiversity Group 2001; also see Biodiversity Challenge 2001).

Figure 4.3 Extract from reporting form for Capercaillie. Source: (RSPB/ITE 1999: 4).

**Field 4: Assessment of status**

*Please tick the appropriate category to indicate the assessment of status of the species or habitat, for each country/region where appropriate, and provide a statement supporting the category selected.*

|                  | Not appropriate | Recovered | Signs of recovery | No change | Declining | Lost | Insufficient information |
|------------------|-----------------|-----------|-------------------|-----------|-----------|------|--------------------------|
| UK               |                 |           |                   |           |           |      |                          |
| England          | X               |           |                   |           |           |      |                          |
| Northern Ireland | X               |           |                   |           |           |      |                          |
| Scotland         |                 |           |                   |           | X         |      |                          |
| Wales            | X               |           |                   |           |           |      |                          |

Brief text description justifying assessment of status: (*– no more than 100 words for each country/region*)

**The 1998/99 national winter survey has yielded a provisional estimate of 1057 birds. This represents a decline of 48% on the 1992/94 national survey estimate of 2189 birds. The number of adult birds encountered during annual brood counts on several important estates has also declined at a similar rate during this period. Anecdotal evidence of range contractions; further survey work underway for 1999/2000.**

**Field 5: Summary statement**

*Please provide an overview of plan implementation, including new factors affecting the species or habitat, which will accelerate or constrain progress towards meeting of the targets. Where a factor results in new action(s) please cross-reference back to the relevant numbers under Field 3 and Table B.*

**Numerous agencies and individuals are contributing to the targets of this plan. This work, co-ordinated by the BAP Group, will be enhanced by the recent appointment of the Capercaillie Project Officer.**

**Very low recruitment, since 1991 at least, has probably been the principal reason for the decline of the species. (Inclement weather and predation are considered to be two of the main contributory factors to this low reproductive success.) However, if the mortality caused by fences was eliminated, the population decline of capercaillie could be stopped. Adequate deer control programmes are required in many forests to facilitate the removal of fences; this is an urgent requirement.**

We can see, in figure 4.3, that the revolving cycle of planning is a cycle of texts. At its most basic, the report takes the action plan as referent; monitoring encourages assessment of progress against the register of targets set out in the plan, which in the way that it is central, reinforces the importance of the plan. But we can also see the influence of other texts: we see the entrenchment of the notion of decline in the way that the options the reporter has to choose from only refer to either 'signs of recovery', 'no change' or 'decline'. Decline is

written in as if it can be taken for granted that it provides the appropriate form of description. This in turn suggests the entrenchment of monitoring mechanisms that would allow the reporter to assess whether it had declined or not. Further, if the act of reporting serves to entrench certain concepts and practices, it also serves to set up another round of the cycle by pointing to what needs to be done next. In the example given (Field 5, figure 4.3), the practical action of fence removal and change in deer management is set out, but further research on the habitat preferences of the capercaillie was also thought necessary. As the cycle revolves and more action suggested by the monitoring, the position of the scientist is further strengthened.

### **Management planning**

Writing plans for how nature reserves are to be managed pre-dates species and habitat action planning. Much of the early impetus for the writing and implementing of management plans came from foresters returning to Britain after colonial service (see Brasnett 1953; Grove 1995, 1997). In 1947, for example, Joe Eggeling, later Director of the Nature Conservancy in Scotland, was instrumental in producing working plans for Ugandan forests (Eggeling 1999). Thus as the acquisition of reserves within an institutionalised nature conservation got under way in the UK in the late 1950s, and as many foresters found positions in the new conservation structures, the practice of compiling management plans became accepted practice. Indeed, it was accepted to the extent that plans were written from the outset of reserve acquisition with a plan produced for Beinn Eighe – the first National Nature Reserve (NNR) – in 1957 (Johnston and Balharry 2001). Subsequently, plans were produced for other NNRs including one written by Eggeling (1964) for Rum and for Local Nature Reserves such as that produced for Aberlady Bay by Usher (1967; 1973).

Yet whilst management planning has been an accepted practice since at least the 1950s, and while ‘planning’ in a much broader sense has been central to governmental responses to environmental problems for much longer (Adams 1990), I suggest that it was not until the late 1980s that planning took on a more important role in site management and in co-ordinating conservation practice. Even though Adams has suggested that ‘[m]anagement plans have formed the principle element in the rationalisation of nature through conservation’ (Adams 1997: 284), I want to suggest it was only relatively recently that they achieved this importance. Referring to the management plans written for Beinn Eighe, for example, Johnston and Balharry (2001) note that the first plan was a simple document and that the following plan, written ten years later, lacked rigour and allowed the conservation work to drift off course for a long period. It was only in 1990 that a new plan

sought to 're-establish first principles and to firmly base new objectives on a thorough analysis and a strict rationale' (Johnston and Balharry 2001: 137). Although only one example, the inadequacy of the then current practice must have been recognised by at least 1976 because it was in that year that renewed interest in planning emerged. The first of a series of textual interventions that sought to persuade others of the need for a more rigorous system of management planning appeared in the form of a Conservation Report (Wood and Heaton 1976) and a Discussion Paper (Conservation Course 1976), both associated with the Masters in Conservation at University College London (UCL). These documents, revised by Wood and Warren (1978), set out the now familiar structure of description, evaluation, objective setting and management prescription. As the Ecology and Conservation Unit at UCL was developing into a significant centre of conservation thought and was an institution through which many of the future workers in conservation agencies would pass, these Discussion Papers and Reports were important texts framing future developments in conservation more broadly. But perhaps even more important because of their wider audience was the series of edited collections connected with the Conservation Course. In the second volume in the series, *Conservation in Perspective*, Wood (1983) went on to rework the Discussion Papers in a chapter on management planning and set out why plans were needed and the approach to management planning developed at UCL.

Drawing upon this work the Nature Conservancy Council produced guidance for its staff in the preparation of plans for NNRs (NCC 1983) and later produced a condensed and simplified version (NCC 1988) to speak to a wider audience because 'all sites managed for nature conservation should have a management plan' (NCC 1988:1). This 'working guide' was an attempt to broaden the practice of management planning and as such sought to persuade others of the utility of planning and provide them with an easy to follow structure. It also provided a flexible model that others could adapt to their purposes. The RSPB did just that, producing its own management plan guidance notes (RSPB 1999b). Ultimately, this series of interconnected texts, which sought to influence conservation practice, culminated in the inclusion of chapters on planning in mainstream textbooks oriented towards the aspiring or practicing conservationist (Hirons *et. al.* 1995; Sutherland 2000; Tait *et. al.* 1988).

Through this inter-textual argument for management planning, acceptable and proper conservation practice is constructed. Whilst plans have been written for forests and certain conservation sites for many years, management planning was by the early 1990s a precondition of management in connection with any conservation project or in connection with application for funding under schemes such as the Woodland Grant Scheme. Management plans have become ensconced on the conservation scene to the extent that,



referring to the management of pinewoods, Cameron says '[i]t is essential that the regeneration of any given native woodland be determined as part of a logical, planning approach...in the absence of such a plan, management decisions lack a clear and consistent direction and purpose, are more likely to be made on a subjective basis and are unlikely to achieve a satisfactory result for anyone' (Cameron 1995: 155). Pursuing 'logical', 'consistent', even 'objective' management for nature conservation is, at least in part, a textual enterprise and the management plan becomes central to conservation action.

The key to understanding the rise of the management plan can be found in the functions that management plans are thought to perform:

To describe the site by collating all available physical and biological information; to identify the objectives or purpose of managing the site; to anticipate any conflicts between, and problems achieving, the objectives for the site and suggest the best means of resolving them; to identify and describe the management necessary to achieve the objectives; to identify the monitoring needed to measure the effectiveness of management; to organise manpower and funding; to act as a guide to new staff, i.e. to guarantee the continuity of effective management; to link with national species and habitat action plans; to demonstrate the effectiveness of management; to ensure that site management objectives and operations reflect the policies of the parent organisation; to facilitate communication between sites and organisations (Hirons *et. al.* 1995: 23).

The management plan seemingly achieves a great deal. This list can, however, be divided into two parts. On the one hand, the plan serves to organise the work of on-site staff, and on the other, it does this by placing the site in a wider context. The functions lower down the list – facilitating communication between sites and organisations; ensuring that management is consistent with the policies of the parent organisations; linking with species and habitat action plans – give form to those higher up which are focused on site management. In this way management plans and planning work to achieve coherence across disparate conservation sites. Management planning should be understood as a strategy for achieving spatial coherence or control at a distance. Just as with action planning, management planning was an attempt to bring a form of discipline to nature conservation, but with management planning this form of discipline was distinctly spatial. As one interviewee put it, nature conservation did not have a 'formalised planning and managerial input until probably the mid eighties, before that it was NGOs were really...they were just groups of naturalists, retired vicars and all the rest of it, who did what they thought was the right thing in their county or their locality'. Management planning as discipline is quite strikingly spatial because plans become tools for co-ordinating action across localities. Hirons *et. al.* point out, for example, that '[c]onformity with the objectives for nature conservation at a national and international scale

is important if duplication of effort is to be avoided and efficient use of resources is to be achieved...The management plan also enables organisations to plan effective conservation in the context of and in relation to other sites' (1995: 24). Another interviewee elaborated:

Over the years management planning has become increasingly important. Because I think when the RSPB started they had very superficial management plans and I think it was ten or fifteen years ago they...through the reserves ecology department actually, they produced the first guidance notes for management planning. ... It has really formalised and prioritised on-site management and how we need to do it. Whereas in the past I think you had a nature reserve and I think the attitude would have been, do as much as you can, you know, diversify your site as much as possible and all the rest of it. So people had been planting things or doing habitat manipulations on a small scale, it was just more like gardening on a reserve just to increase their diversity. Because I can imagine in the old days wardens were probably competing for what they could do on a site, how many species they could get. But times have moved on. In the last ten years and you know priorities came in, action plans came in, and people were much more focused on, this reserve is in this part of the country where these habitats and these species are higher priorities, we should be focusing on these, and that is the way it has gone. ... Management plans come in very handy because, you know, you have your main aims and your rationale for being at the site and then your key objectives for your management of that site and I think it keeps people on the straight and narrow. It stops them going off on a tangent and doing what they want to do. You know with the best will in the world, every warden or site manager that you have is very variable in experience and skills and everything else and inclination, and if they didn't have a framework like the management plan then sure they will start going off. This management plan structure really keeps people focused (Interview T, 29<sup>th</sup> September 2002).

Where conservation action in the past was oriented towards high diversity even if the site would not 'naturally' achieve a high diversity, management planning, linked with the identification of priorities and ideas of what 'should' be present in any particular part of the country, put an end to ad hoc habitat manipulations, 'gardening' and competitions. The heterogeneity of conservation action dependent on the site warden, their ideas and inclination is, through the increasing importance of management planning, reduced. Appropriate conservation action on any particular site becomes registered against more broadly recognised standards rather than being the result of wardening whim (thus management planning also serves the function of removing responsibility for action from one individual).

How does planning achieve that coherence? I want to point to two interconnected mechanisms that are involved: the plan format and the process of planning.

In as much as the management plan as text and management planning as a discursive practice of text production are interwoven, the provision of specific plan formats in the texts which argue for the widespread adoption of planning (e.g. NCC 1988), encourages specific

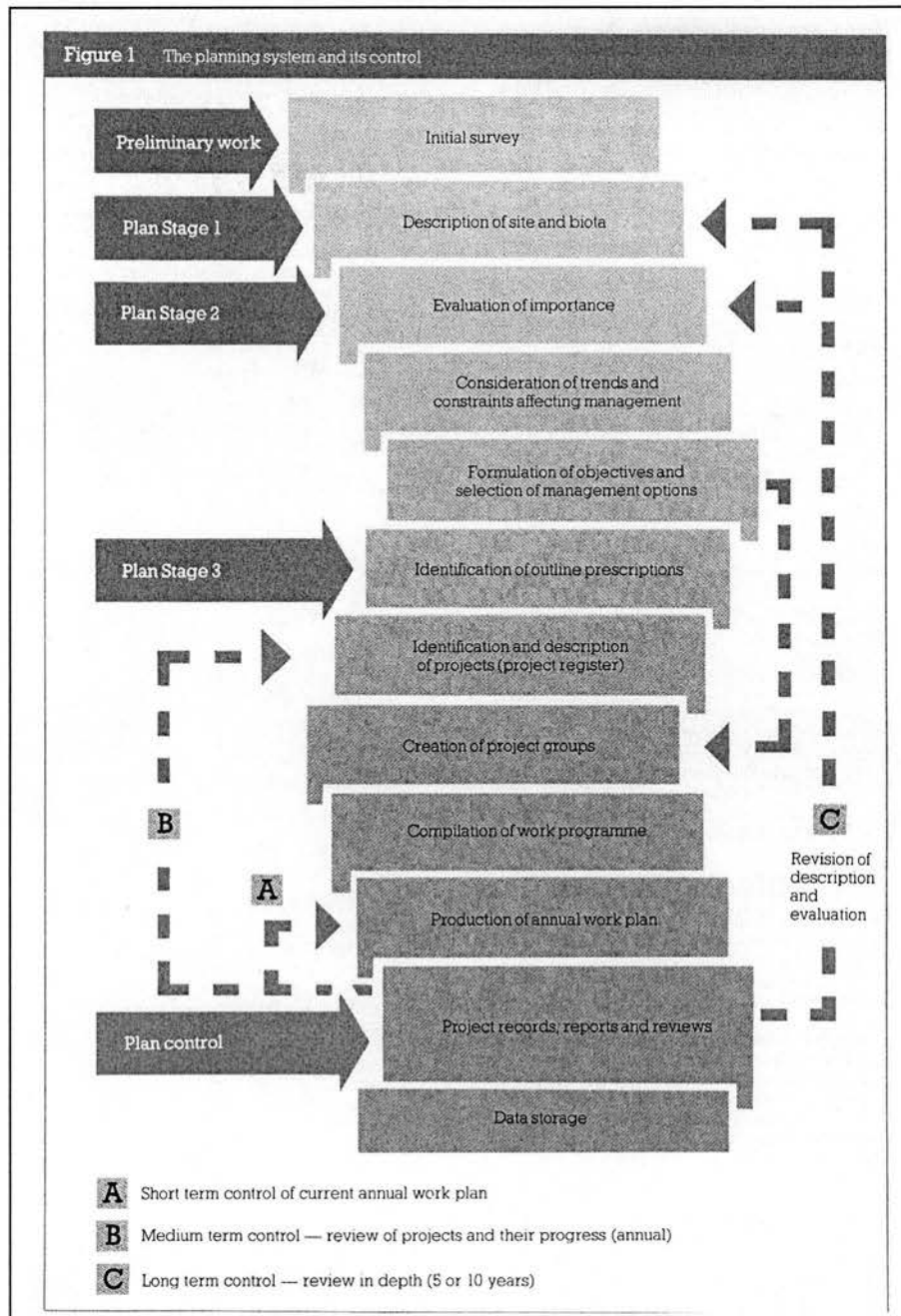
forms of practice on the part of those compiling new plans. Despite the fact that those arguing for the adoption of management planning say that the plan should 'only be as long as necessary to achieve its purpose' (NCC 1988: 5) and thus suggest a degree of flexibility in planning, a uniform process that will result in appropriate management is implicit within the structures put forward. Drawing heavily on the NCC's (1988) format, Hirons *et. al.* (1995) set out the RSPB management plan structure as beginning with general information including location, tenure and designations, followed by a description of the site in terms of its physical characteristics, the species and habitats and the cultural history. This description is followed by an evaluation of the site (against the criteria set out in Ratcliffe's (1977) *Nature Conservation Review* that sought to identify sites of conservation importance), the policies to be pursued, and prescriptions that will be carried out. This plan format – of description, evaluation, policy, prescription – is, through the inter-textual argument for management planning, now standard. For the NCC

there are considerable advantages in standardising the structure and format of plans. Standard headings provide a framework for preparing plans and guide the less experienced in their preparation. The standard format also helps to ensure that the sites are properly described; their importance is assessed against recognised standards; clear objectives of management are laid down; relevant work is prescribed, planned and executed; and the effects of the work are carefully monitored' (Nature Conservancy Council 1988: 4).

A standard format means that people in different places act in similar ways. Achieving coherence within nature conservation is, in part, about applying standardised texts. Taking this further, though, the standardised text is associated with the actual practice of planning in a relatively straightforward way. Planning is a progression bound up in the writing of the plan: 'preparing a plan requires relevant information to be assembled and appraised. Once a full understanding of the site's present conservation status has been gained, the manager can determine what must be done to maintain or enhance the important features of the site. This in turn leads to prescriptions for site management to attain these objectives' (Nature Conservancy Council 1988: 4). Just as the plan format starts with description and moves on to evaluation, policy and prescription so managers, if they gain a 'full understanding' by describing comprehensively, will be able to determine what must be done. The plan, with its progression – of description, evaluation, policy, prescription – incorporates a 'panoptical dream' (Bowker 2000: 645) of seeing all, knowing all there is to know, before proceeding to determine how it should be managed. Implicitly, comprehensive knowledge precedes the politics of decision-making. The format of the plan is thus standardised and linked with the progression of management planning in a way that 'leads to prescriptions for site

management' (NCC 1988: 4). Represented as such, it appears as a universally applicable process. Even the inexperienced can arrive at appropriate management if only they follow the format and the process. In an important sense, writing *is* planning. Figure 4.4 illustrates the management planning system. The process of arriving at management mirrors the plan format of description, evaluation, prescription and is, like action planning, cyclical.

Figure 4.4. The planning system and its control (Source NCC 1988: 5; see also Highland Birchwoods, undated).



The second mechanism by which planning achieves coherence within conservation is the 'pathfinder' meeting that is commonly arranged as part of the planning process. These meetings, which 'can be a key stage in the plan production process' (Hirons *et. al.* 1995: 33) are moments when, in the case of the RSPB, site managers, ecologists, land agents and representatives from the statutory conservation agencies and local communities come together to decide on the main policies for management. In as much as people involved in the organisation in different ways and at different levels are involved, the importance of the site team is slightly reduced. Others that are removed from the immediacy of site management and can position this particular site in the context of work going on elsewhere will act as a controlling mechanism to help achieve coherence. Particular individuals, then, become crucial in their travels and their involvement in many sites. One of my interviewees, who was an ecologist engaged in the process in this way, emphasised his role in situating the site in a broader context:

[A]s an ecologist we co-ordinate management planning, we erm advise on any form of ecological management for species or habitats...erm but the management planning role is quite a key one and I think that is where these co-ordinating roles comes in because we give that wider context because our wardens write the management plans, or our site staff, not just the wardens, and they basically have written that more in isolation and it is up to us to have an editorial role to make sure it fits in with the wide policy and objectives of the organisation or the biodiversity action plan process or whatever (Interview T, 29<sup>th</sup> September 2002).

Management planning thus achieves coherence through the connections between standardised texts and standardised forms of action and through the processes of plan production that connect the distant sites with other sites and with the 'centre'.

The management plan's importance only increases if we recognise that, as the last quote suggested, management and action plans actually interlock in an increasingly comprehensive structure of co-ordinated action. Viewed alongside the development of action planning, we can see that although they refer to different objects they incorporate the same logic of establishing objectives, setting out prescriptions and monitoring progress, which in turn requires practices of surveillance. Yet management plans and action plans are more closely interwoven than sharing the same planning logic. The same interviewee continues:

So, yeah I think management planning is quite good, but the action plan process sort of came after that. RSPB had its own habitat and species action plans...and these came about before the UKBAP process developed. You probably know that the NGOs through the RSPB and others pushed the UK hard into going down this line a lot more and a lot of the templates for the RSPB BAPs were

used to feed into the UKBAP process. So that is good, *we use those as a key sort of, our key manuals I suppose to actually feed into the management plans.* So we try to say well if we are conserving corncrakes or whatever, you know what does the corncrake action plan tell us we need to be doing and are we focusing on those actions in this management plan for this site. Is this site appropriate for corncrakes, if it is, then which objectives in the action plan should we be trying to implement. So they are keyed in together, I think it is quite a neat process...(Interview T, 29<sup>th</sup> September 2002. Italics for emphasis).

Action plans potentially feed into management plans and help shape conservation action on the ground. The species and habitats that have been prioritised in the process of identifying special cases with reference to their decline, and which have objectives and targets set for conservation action, shape on-site management, which then feeds into meeting the targets of the action plan.

### **Planning as a regime of practice**

At the beginning of this chapter I suggested that the introduction of the concept of biodiversity and the development of the biodiversity process represented an extension of the managerialism that has characterised conservation and thus an opportunity to examine the continuing process of rationalisation in nature conservation. As such, I have, with the concept of governmentality in mind, sought to follow Dean (1999) and examine the regime of practices involved in the biodiversity process and the diverse processes by which that regime has achieved relatively stable forms of organisation and institutional practice. In particular, I have emphasised the importance of the practices of classifying, prioritising and planning and I suggest that as these practices became interconnected so they developed into a larger regime of practice that introduced a greater degree of coherence to nature conservation.

The development of this regime with relatively stable forms of institutional practice and coherence was a gradual process. In the first instance, habitats were classified and species prioritised and incorporated within a system of planning. As they were, so they became further entrenched as objects of conservation calculation. Habitats became more 'real' as they were more precisely defined, as steering groups were established, action undertaken and reports written and as the classification became implicated in new practices of keeping countryside change under surveillance (such as in the Countryside Survey 2000: Haines-Young *et. al.* 2000). Similarly, as a marker of conservation concern, 'decline' became increasingly important as the practices of surveillance that were required to talk in terms of decline were incorporated within action planning and applied to all species. In this way, classification and prioritisation became interwoven with action planning and the

evermore-important practice of monitoring. In the process, conservation action became increasingly co-ordinated as it too was channelled through the action plan. Ultimately, in the way that actions proposed for individual species and habitats had to be carried out in specific locations, action plans came to be linked with management plans. The result was more coherent conservation action because site management planning was already reducing the heterogeneity of conservation practice by introducing more rigorous planning co-ordinated from a centre. As action and management plans connected so that organised practice became part of a co-ordinated and 'scientifically' managed process of selecting priorities and deciding on action on a national scale. Conservation became more coherent because the actions of the well-meaning but sometimes misguided manager or naturalist came to be more coherently directed as part of an increasingly unitary regime of practice.

This story could be understood as an illustration of the development of what Rutherford (1999) termed 'ecological governmentality'. Ecological knowledge is interwoven with the institutionalisation of the concept of biodiversity and the associated practices through which nature can be governed. Indeed it is interwoven in the practices of planning through which nature conservationists are rendered docile and themselves governed. Ecological knowledge, for example, underpinned the development of the new habitat classification that created new objects which could then be managed and brought within the cycles of action and management planning. Understanding the development of the biodiversity process as ecological governmentality, though, raises important questions of how we should understand the process of rationalisation.

To a significant degree, the analysis I have presented here supports the position on rationalisation and conservation taken by Adams (1997). Since rationalisation involves the development of science and technology as a means to understand and manipulate nature, his argument is that conservation is part of the process of rationalisation because ecological science provides the knowledge that underpins the technocratic recipe book for controlling the natural world. In line with this, the importance of ecology in governing nature is evident in the practices of classifying, prioritising and planning above. But where my analysis of conservation through the lens of governmentality adds to that provided by Adams is in the understanding of science itself. As I interpret Adams' suggestion that nature conservation offers 'critical insight into the ways in which scientific ideas about nature relate to social action' (Adams 1997: 278), his emphasis is on how science *informs* the social practice of nature conservation. But such a view potentially ignores the way that scientific knowledge is not simply produced in an abstract realm only then to inform social action: it is itself a social practice embedded in wider social practice. By following Foucault and examining the

practices through which the biodiversity process developed, this understanding of science in conservation is extended. The way that science is embedded in the social practice of nature conservation can be seen in the development of the notion of decline and of new habitat categories. As new means of prioritisation were developed for birds in the context of attempts to find more solid foundations for identifying priorities, so new forms of knowledge (connected with new practices) were also developed. This is most evident as the concept of the declining population was incorporated in the action planning process. As decline became a more common means of registering conservation concern and an important part of the action planning cycle because it was written into all the plans, so there developed a requirement for more knowledge of trends. As such, the sorts of ecological knowledge that were developed were grounded in the messy world of conservation practice, rather than being developed prior to influencing conservation. Similarly, the development of a new habitat classification was not simply derived from ecological knowledge but also from the requirement of developing action planning as a manageable practice. In this way, we can see that ecological knowledge is thoroughly interwoven in the development of the regime of practice: it does not sit outside shaping that regime but is co-emergent with new conservation objects and practices.

Once this is recognised, it is possible to see the analyses of the development of the concept of biodiversity that emphasise the agency of particularly important actors such as scientists, as somewhat wanting (Takacs 1996). While scientists were important, especially given the desire to make conservation more rigorous and 'objective', it was not the case that they simply wielded power and had the ability to shape and force through the development of the biodiversity process. Scientists could not be the sovereign power positioned outside the social fray orchestrating events, because they were thoroughly embedded in those events. In this way, the scientist is not simply a pre-formed identity that influences others; because they are engaged in social negotiation they also take shape in social practice. Their power was not simply held: it was produced as the regime of practices took shape.

Nature conservation is not, then, simply part of the process of rationalisation because it is underpinned by ecological science – not least because the position of science in nature conservation cannot be taken for granted. Conservation's position as part of the process of rationalisation is continually being achieved and re-negotiated through the tactics and strategies – the 'micro-physics of power' – that enframe new ways of conceiving nature and new ways of acting for its conservation. In the case of the biodiversity process, these tactics and strategies have served to develop a self-perpetuating system with science at the centre but which remains open for continued negotiation.



This account adds a more recent chapter to the story of nature conservation. Nature conservation saw its mainstream institutionalisation in the years following the Second World War and the stories of its emergence at this time emphasise how that institutionalisation was interwoven with the desire on the part of ecologists to find a home for themselves and to secure wider recognition within biology and the natural sciences. These stories provide the grounds for a continuing tendency to conceptualise conservation as a one-way process of scientific knowledge feeding conservation practice. But in looking at the more recent development of the biodiversity process, what we see is less a detached arena of science informing nature conservation and more a complex field of social negotiation and power relations within which science is embedded.

# 5

## Biodiversity Conservation in Discourse

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### Questioning the regime of practice

The last chapter illustrated that the establishment of the biodiversity process involved the development of tactics and strategies that enframed new ways of understanding the natural world and of acting for its conservation. Approaching conservation in this way – and taking constructivist arguments into account – provides alternative stories of conservation's 'making' and development. In particular, such an approach allows us to see that 'nature' is not simply the object over which politics happens: it is re-constructed as 'biodiversity' as it is classified, mapped, prioritised, researched, planned for and monitored. This approach allows us to see scientific knowledge, and the scientist, as embedded in the messy political world of discursive change rather than situated outside it.

In this chapter, I extend the analysis to examine how conservationists talk about biodiversity. I do so in order to acknowledge and engage with criticisms that are levelled at Foucault's work. Fairclough sums these up when he says that 'in the totality of [Foucault's] work and in the major analyses, the dominant impression is one of people being helplessly subjected to immovable systems of power' (Fairclough 1992: 57). Whilst Foucault insists that power entails resistance, he gives the impression that resistance is generally contained by power (McNay 1992). Whilst I would argue that the story of the development of action planning illustrates that power is generated in the process, it would be possible to suggest that because the focus is on classifications, prioritisation and planning, one gets the impression that the people involved were simply caught up in developments without agency to resist and that the structures of the process determine their actions. There is, apparently, no room for negotiation or disagreement. If the biodiversity process represents an intensification of rationalisation, or even the 'governmentalisation of nature conservation', then it could be argued that the sort of description I offered in the last chapter implied that this process took place smoothly and that conservation is unproblematically rationalistic and

governmental. Indeed, it could be argued that in referring to a 'regime of practice' what I end up with is, like Weber's (1968) view of the development of formal rationality, a pessimistic vision of people dependent on a disciplinary hierarchy and bureaucracy.

In part, the impression of 'immovable systems of power' results from the fact that Foucault's conceptualisation of 'discourse' as a complex of knowledge and practice in relations of power means that he does not pay close attention to specific examples of discourse as language in use (Fairclough 1992; Lemke 1995). In a similar way, in the last chapter, I used the words of interviewees to tell the story, but I did not look in detail at their ways of speaking, the language they used and the ways that they constructed biodiversity in their talk. As such, in this chapter, I extend my analysis of rationalisation in nature conservation by examining *how* different people speak about the development of the concept of biodiversity. That is, I want to extend my analysis of governmentalisation by acknowledging the importance of language that has been highlighted by the so-called 'cultural turn'. It is in language that we construct meaning and represent the world and it is therefore through language that 'biodiversity' comes to have meaning. It is through paying attention to how conservationists talk about and represent 'biodiversity' that we can further understand how it is being constructed and, importantly, fought over. In this chapter, then, I want to extend the Foucauldian reading of biodiversity *as* discourse by drawing upon discourse analytic research that examines the construction of worlds in writing and talk and the emplacement of these constructions in a continuing politics of representation. I want to examine the negotiation of biodiversity *in* and through discourse as language in use because, as Escobar (1996) reminds us from a poststructuralist perspective, 'there cannot be a materialist analysis that is not, at the same time, a discursive analysis'. In doing so, I want to look behind biodiversity as an immovable system of power and an apparent intensification of the process of rationalisation, to illustrate how this rationalising tendency is contested.

Moving from discourse as a complex of knowledge and practice in relations of power to discourse as language in use, is not, however, to set these two usages of 'discourse' in opposition. If a discourse is 'a system of possibility for knowledge' and 'makes possible a field of knowledge' (Philp 1990: 69), it provides the context for meaning making and thus enframes the way that different objects, people, behaviour and events get represented. Taking an example from Foucault's work, people could only be talked about as mad or sexually deviant, they could only become the objects of the developing human sciences, within the discursive formation of madness or sexuality at that time. Madness and perversion only gained meaning within the discourse. As such, discourses produce the objects of knowledge, determine what can be talked about and supply the interpretative resources for

speakers: 'discourses enable stories to be told' (Dryzek 1997: 15). The way conservationists speak about nature and their work is thus embedded in the construction of the broad discursive formation of nature conservation within which there is a restricted range of ways of talking about or constructing nature that make sense.

My analysis of language in use in the making of discourse extends the Foucauldian reading of the last chapter by not only examining some of the ways that biodiversity as broad social discourse enframes particular ways of speaking and acting, but also how it is resisted. Paying attention to the ways that biodiversity, the practices of action planning and appropriate forms of management are talked about is one way of examining the politics involved in the establishment of the biodiversity process. It is here that we can see some of the negotiation and the process by which certain discursive formulations achieve hegemony, are fought over and gradually changed.

In order to illustrate these claims, this chapter uses material generated in my interviews with people involved in the biodiversity process to look more closely at how they talk about the structure the process has taken and appropriate forms of management. In particular, I focus on the debate over the appropriate level of conservation action and the degree to which conservationists should intervene in 'natural' systems. I concentrate on this particular debate because when carrying out my interviews, I recognised that the further I got in questioning my interviewees about the biodiversity process, the closer I got to some fundamental issues of nature conservation practice and the more divided my interviewees became on the issue of the degree to which they should intervene. It was here that I could most obviously see contestation and disagreement about the direction the biodiversity process had taken.

This disagreement centred on an apparent 'dilemma' (Billig *et. al.* 1988) – prompted by the way that the biodiversity process evolved around species and habitat action plans – about whether conservation should be undertaken at the species or habitat level. The importance of this dilemma was brought home to me when one of my interviewees told a story of 'a huge debate in an action-planning meeting for eagles'<sup>1</sup>:

one very lucid scientist said 'well what you've got to decide, in terms of how many eagles you want is whether you want to be men of the trees or eagle farmers'. And what he was caricaturing is whether or not you took the Fraser Darling approach that the Highlands are devastated and what we actually want to get back to is a richer more fertile, much more wooded...sort of how

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<sup>1</sup> This must be an RSPB action planning meeting because the speaker refers to golden eagles which do not have an action plan in the UK biodiversity process. The RSPB initiated the action planning system and has its own parallel set of plans to guide its work. Nevertheless, the significance of the quote still holds for the UK process.

Scotland was – in which you would have fewer eagles per square mile. Or, on the other extreme, whether you want to maintain your devastated West Highlands full of dead sheep, because they are over-stocked, but which support lots of eagles. ... Are you wanting a natural, in inverted commas, environment? Or do you want, or are you coming up with a sort of recipe book of we want a Scotland that includes X of these and Y of these and Z of these and we are going to have XYZ of those in those areas, whatever nature thinks, we are going to have them (Interview G, 25<sup>th</sup> January 2002).

Here my interviewee suggests a social arena in which two mutually exclusive subject positions and ways of constructing nature come into conflict. The ‘men of the trees’ seek a more natural environment and are concerned with broad scale management. The ‘eagle farmers’ are, on the other hand, oriented towards the species and willing to undertake quite specific work to achieve their ends.

In seeking to understand this apparent conflict and the dilemma that lies behind it, I could, at this point, follow many of my interviewees who referred to, and allotted themselves to, different ‘schools of thought’, or, in an appropriately militaristic metaphor, ‘camps’. I could identify which interviewees adhered to a species or habitat approach and thus identify different groups and begin to build up a picture of their characteristics, their arguments and common ways of constructing nature. Alternatively, I could call, like others (Peterken 1996), upon common typologies of technocentrics and ecocentrics (O’Riordan 1976; Pepper 1984) or imperialists and arcadians (Worster 1977), and align those that are happier with a species approach (the eagle farmers) with the technocentric/imperialist position and those that are happier with the habitat approach (the men of the trees) with the ecocentric/arcadian position.

In analysis of this and other evidence on *how* discourse is worked with, however, I turn to the concepts of discourse theory (Billig 1987, 1997; Billig *et. al.* 1988; Burman and Parker 1993; Edwards and Potter 1992; Parker 1990, 1992; Potter and Wetherell 1987; Wetherell and Potter 1988, 1992). More specifically, my analysis draws upon those strands of discourse analysis that pay attention to broad social patterns of meaning making through the concepts of ‘interpretative repertoires’ (Gilbert and Mulkey 1984; Potter and Wetherell 1987; Wetherell and Potter 1988; Edley and Wetherell 1999) and argument or rhetoric (Billig 1987, 1997; Billig *et. al.* 1988; Myerson and Rydin 1996). From the perspective of this approach, some repertoires – or ‘broadly discernible clusters of terms, descriptions, common-places and figures of speech often clustered around metaphors or vivid images and often using distinct grammatical constructions and styles’ (Potter *et. al.* 1990: 212) – become relatively stable both at an individual and cultural level. As Edley and Wetherell (1999:182) put it ‘society provides us with a set of ready-made resources with which to think and talk

about the world'. As such, in the way that they must call upon extant resources, speakers 'are part of, and are continuing, the ideological history of the discursive themes which they are using' (Billig 1997: 49). Identifying repertoires is therefore a way of identifying broadly available social resources for making meaning which are interwoven in particular forms of practice and relationships between social actors. At the same time, however, this approach focuses on how speakers construct different accounts, or versions, of the world in their talk and sees these versions as achievements accomplished within specific rhetorical contexts. Because speakers draw upon interpretative resources in different situations they rework those resources; they actively create their own versions of the world by utilising resources in new rhetorical and micropolitical contexts. People are, therefore, both the products and the producers of discourse.

From this perspective, then, any attempt to understand conservation through a simple turn to extant classifications or typologies would be problematic because individuals do not simply operationalise a discourse associated with an *a priori* position. Individuals' conceptions of how best to conserve nature do not come neatly packaged; they do not have some kind of internally consistent set of attitudes that allow them to assume positions on any given topic and they do not adhere to a position irrespective of the rhetorical situation (on this point and its use as a criticism of attitude or questionnaire surveys see Macnaghten and Urry 1998). As such, people do not simply adhere to 'camps' as if they can only see virtue in their maxim of conservation practice. Rather, they access the same culturally available resources and can see the virtue of different approaches but end up advocating different positions by calling upon those resources in different ways in different contexts. In short, rather than understanding individuals as speaking *from* predefined positions as if the act of speaking in an interview is an enunciation of that position, the discourse analytic work that I am calling upon sees these positions as continually re-negotiated achievements. Individuals work out a position – they speak *to* a position – in discourse.

In order to begin to understand how these positions are achieved and how people argue over conservation practice, what follows draws upon interview material that delineates the species-habitat dilemma and examines the strategies that were employed to manage that dilemma. To be clear, I do not want to come to a position on which approach is right and which is wrong. Rather, I want to illustrate the contingency of these different positions and the fact that both, appropriate in most situations, provide flexible resources that can be used and re-negotiated in debates over appropriate action. My point is to illuminate *how* different approaches are argued over. I suggest that individual speakers should be seen as sophisticated rhetoricians who achieve their positions on the appropriate approach to

conservation by skilfully using language to negotiate alternatives. They pull together argumentative and interpretative resources to creatively argue a case in any given context.

Detailing strategies in this way, however, can give the impression of repertoires and discursive resources that are put to use by individuals as they take up positions in an abstract realm of continuing clashes. While I do see continuing argument as central to the reshaping of nature conservation, in the final section I focus on one example of management practice where these discursive resources are called upon and have to be balanced against each other as the site managers try to find and justify suitable forms of management. In particular, I focus on the management of Insh Marshes – one of the largest areas of fen in the UK (which is a priority habitat within the biodiversity process). Through this example I illustrate that these discursive resources and strategies are interwoven in conservation practice and that they do not simply come into conflict but are accommodated in specific circumstances where forms of management for particular species or habitats have to be balanced.

### **The species-habitat dilemma**

In each interview that I conducted with individuals involved in the biodiversity process I moved through some questions on the development of the process itself, my interviewee's role and the procedure by which species and habitats were selected. I then explored some of the ambiguities of the process as I was interested in how 'habitats' had been defined and how the lines were drawn around them; why some species were more important than others; and crucially, how the potential conflicts between species and habitat action would be dealt with (such as when action for one species contradicts another or when action for a species contradicts that for a habitat). With issues of procedure, I got responses that simply reiterated the texts produced in the biodiversity process. But with questions about the more ambiguous topics, my interviewees' responses varied considerably. This variability is evident not simply between interviewees but also within individuals' responses. In answering a question about why the ecosystemic definition had been adopted, given the different definitions of what a habitat is, the following interviewee emphasised pragmatism:

Andrew: I wondered if you knew how that particular definition was adopted because in the [Biodiversity] Convention they take a smaller definition, but we've worked with a much bigger definition and I wondered whether you know whether that was more useful or whether it was simply because that helped in different ways?

Interviewee: the broader definition was developed er because it helped encompass a whole range of species issues. With 400 species you've got a lot of work to do if you are looking at individual species and habitat action plans, often a group a species all have the same threats and issues affecting them and

so its quite sensible to have broad habitat groups that overarch erm... Where the issues affecting a range of species or a habitat are common it allows you to develop a broad habitat type. ... So that was used in a way to sort of help lump or separate issues out. What were the issues affecting them, who was your audience that you were aiming at...(Interview A, 20<sup>th</sup> December 2001).

This interviewee approvingly framed the adoption of a broad definition of 'habitat' as a utilitarian response of grouping together species with similar threats and issues. It is sensible to have an overarching category because if that habitat can be dealt with, so the common threats and issues affecting individual species can be dealt with at once. It reduces the amount of work to be done. Yet in my next question I referred to an English Nature document entitled *Biodiversity: Making the Links* (Simonson and Thomas 1999) that was produced to address a problem that had developed as a consequence of having separate species and habitat action plans: species and habitat conservation were not connecting up. In this text, the broad habitats are broken down into 'micro-habitats', which suggested to me at least, that the concept of the 'habitat' was being reworked. My interviewee responded by recounting a clash of approaches and appeared to criticise the habitat approach:

Andrew: ...I just keep reading these documents and er in here [indicating *Making the Links*] the big definition shifts to the micro-habitat which then shifts back to the small definition and I wondered why that suddenly became useful?

Interviewee: Um there was an attempt to say if we do lots of action aimed at this habitat we can sweep up on all the species that belong to that habitat and there was a conflict between two schools of thought. There was a school of thought that says look to reduce time and effort lets just have a group of people looking at the habitat, get the habitat right and all the species do their thing – hunky-dory. Saves you having to do all this species work. There is another school, which the RSPB is very strongly in favour of, that says no we've learned our lesson in the past, if you go down the pure habitat route you discover that we don't know enough about the past damage to the habitat, we don't understand the subtleties of habitat management well enough, we are still very naïve in our understanding of habitat management. You could believe the habitat is in a healthy condition but in fact find that you have been destroying the species. So examples are er national nature reserves. There were lots of examples in England where a fen or a woodland was managed – as long as the trees were still standing there it was OK. It wasn't and discovering that there were subtle management changes that meant that all the butterflies that belonged to that wood died off and that's what the site was really important for erm...What you have to do is keep your eye on the species as well as the habitat, so that you are checking that your habitat management is right and you have got to devise ways of managing that habitat that doesn't allow the species to collapse. So...those who try to lump were sort of defeated by those that said no we've got to keep our eye on the ball with species, you've got to keep splitting the habitats down to their sub-components because otherwise you'll have too general a picture and think you are doing well when actually in the detail the habitat is suffering. And it all comes down to the simple fact that we



are still learning about habitat management, what's the right way for a habitat to be managed? (Interview A, 20<sup>th</sup> December 2001).

Whilst he had initially suggested that habitats were a way of over-arching species action and potentially reducing the amount of species work, here he appears to be more strongly aware of the dangers of lumping species together and attempting to undertake generic action that will benefit them all. He comes down on the side of those that want to manage for individual species. He does not simply describe two positions. He adopts a stance on these schools and talks about them in ways that suggest that one is better than the other. In doing so, he illustrates that different ways of talking about an object are not simply spontaneous and independent: they are rhetorical and 'develop together as opposing positions in an unfolding, historical, argumentative exchange' (Edley 2001: 204). His description of the school that challenges the habitat approach, of which his organisation is strongly in favour, verges away from simply recounting a position held by others – he actually picks the argument up and makes the case from this 'side'. While he appears to offer a 'solution' to the dilemma by saying 'what you have to do is keep your eye on the species as well as the habitat', he ends by suggesting that we still do not know enough to be able to manage habitats and so, implicitly, he suggests that species work is required. As such, he oscillates between positions. Where in the previous extract he advocated the habitat approach as a useful strategy, here he also seems to argue that the species approach is useful and needed. This oscillation, as Edley (2001) suggests, is a tell-tale sign of the presence of an ideological dilemma. My interviewee can see that both the species and habitat approaches contain an element of truth and he appears to argue different cases at different times.

Another interviewee illustrated the species-habitat dilemma in a different way. When I asked a similar question (as asked of the previous interviewee) about why the notion of the habitat had taken on a broad definition, this interviewee corrected my generalisation and then specifically aligned himself with the broader approach to conservation.

Andrew: One thing that jumps out from things like this is the way that the habitat concept has taken on a particular slant. And so I am thinking of the way that the habitat could be the place of occurrence of the species or it could be the sort of ecosystem. This [pointing to the UK Biodiversity Steering Group report 1995a] takes on the ecosystemic view, in that we write habitat action plans and the native pinewood becomes a habitat on its own. And I just wondered why we have come to that ecosystemic understanding in that process and whether it's useful?

Interviewee: I don't know, because I think it's mixed. I mean if you look at the habitat action plans, some of them do take that route but some of them are very specific, some of them are very, very specific habitats. So there's a mix of

things...In an ideal world I think the broad ecosystem approach is the soundest approach that we can adopt and I think in an ideal world we wouldn't even have species action plans because they would be incorporated within a broad ecosystem approach. And you know if you are talking to me as an academic then I would say the ecosystem approach or an approach that looks at an integrated...you know integrated approach for species and their component...what ever you mean by habitats within those ecosystems, is the most sensible approach because by definition it is an integrated approach, and it recognises the fact that species populations are interdependent. And in some instances there are some hard choices to be made in terms of the way habitats and ecosystems are managed. You know it is not necessarily the case that we can always manage appropriately for every single species ...er pulls us in different directions erm so overall that is the most sensible approach and there are many people and there are people within SNH, er this is not off the record. There are people within SNH who are less happy with the species action plan approach because, you know, they feel, with some justification I would say, that it focuses your attention on one particular species, to the...perhaps slightly ignoring the needs of the wider community and for many of these people biodiversity is much more than the selected list of species that we choose to focus our attention on.... Erm, there are counter arguments to that and in the political process politicians find it much easier to deal and focus on something very specific, its much easier to focus on say something like 'save the capercaillie' rather than say lets 'save native pinewoods' really. One is sexy and one is not sexy. ... Many of us in conservation, you know, are taught really, you know, on the one hand our academic credentials, our academic training, favour taking a much more integrated approach but on the other hand most of us are astute enough to realise that the only way things often get done is by focusing very narrowly in terms of either single species or single very very important habitats (Interview B, 15<sup>th</sup> January 2002).

This interviewee is doing several things. He initially argues that an ecosystem approach (which I take to be analogous to a habitat approach) is most sound because it is an 'integrated approach'. This claim only makes sense in the context of his simultaneous claim that 'species populations are interdependent'. The natural world is thus constructed as an interconnected complex whole, the integrity of which is compromised if broken down to its constituent parts. He then substantiates this position by referring to the way that the alternative of attempting to manage for every species would lead to problems because the requirements of different species pull the conservationist in different directions. In the process he illustrates again the rhetorical nature of assuming a position by arguing for one approach whilst simultaneously criticising the other. He argues against the 'species action plan approach' (whilst distancing himself from this position by referring to the way others in SNH are less happy with this approach), by suggesting that it has the drawback of being too focused. Finally, he acknowledges the counter arguments and indicates that whilst he might believe the broader ecosystem approach to be the most sound there are other pragmatic considerations. This interviewee does not, therefore, illustrate the species-habitat dilemma by

oscillating between positions, but by explicitly taking up an argumentative position. By signalling his awareness of the different arguments about a difficult issue he points to the importance of the dilemma around which the arguments are made.

Both interviewees, then, indicate an awareness of the dilemma: should they undertake targeted action for specific species and risk disrupting an integrated system or should they undertake general management and risk missing the subtle changes that could endanger those parts of the system that are valued most? Work for the habitat is a means of reducing the amount of work that had to be done for individual species and is, arguably, a sound approach because it treats the ecosystem as a complex integrated whole. If one attempts to reduce that complexity by focusing on individual species, what appears like a means of reducing complexity actually turns out to increase it because more knowledge about all the requirements of individual species and their connections with other parts of the system ends up demanding a difficult balancing act. Work for species, on the other hand, enables focused action to be undertaken to achieve specific ends for endangered species. It is, moreover, practically more achievable and it is for precisely this reason that it is likely to get funding and actually be undertaken. Small, practical gains in the name of conservation can be highly useful in convincing others of conservation's cause: breaking down the complexity of the habitat to its constituent parts at least allows some of those parts to become more manageable and those small gains to be made.

As we can see by the way that these interviewees do not simply argue a case and ignore the truth of the alternative, this dilemma does not represent a choice as if they simply have to decide between the species or habitat approach: in any situation both approaches will be appropriate to some extent. It is precisely because a final decision about the advantages of one approach over the other is not achievable, that it is a dilemma. Consequently, as these interviewees – and conservationists more generally – draw upon discursive and rhetorical resources to negotiate this dilemma, they become the locus of continuing struggle between approaches. They become the battleground upon and through which the war between cultural ideals of appropriate conservation practice is played out (the notion of people as 'battlegrounds' is adapted from Edley and Wetherell (1999)). The dominant understanding of what appropriate conservation action is depends on how they position themselves ideologically and how they argue the case. In the next section, I examine how these struggles are played out by looking at two strategies that are employed to negotiate the dilemma.

## Strategies for managing the species-habitat dilemma

### Strategy 1 – Claiming the need for intervention

The first strategy can be illustrated by returning to the interviewee who recounted a clash between schools of thought and the way that those who preferred the species approach defeated those more interested in the habitat approach. He himself came out in favour of species action. In the way that his answer to my question about habitats suggested a conflict between species and habitat action, I was reminded of conflicts between species and habitats that have arisen in the biodiversity process and, consequently, I asked how a balance could be achieved. My interviewee directed the conversation towards the issue of competing *habitat* action plans saying that the conflicts between habitats (such as when pinewood and heathland action plans both have targets for expansion of habitat area, but in practice expanding one could mean encroaching on the other) were easily solvable. ‘You don’t try and do all the conservation on one site’, he said, ‘you don’t try and conserve pinewood and heathland on the same site. You decide, this is a sensible part of Scotland for conserving pinewood, over here is a sensible part of Scotland for maintaining and expanding the heath ... you have to plan spatially’. Conflicts are easily resolved if the conservationist decides what goes where and organises their management and planning around that decision. Addressing this point, I referred to my experience of volunteering at Abernethy and suggested that there were difficult balances to be found, in order to leave my interviewee free to suggest ways of finding a balance. This time the interviewee shifted the conversation from being about the relative merits of the species or habitat approach to the need for management *per se*:

Andrew: I did a bit of volunteering at Abernethy, and that was my question, the main management objective at Abernethy is the expansion of the pinewood and yet it does go into the heath. And then the species that are associated with that which would make, like the black grouse for example which wants both, you’ve got hideous balancing acts to try and work out here.

Interviewee: you have to decide sometimes, is this a site where we want lots of this species or is this a site where we want lots of that species. And you have to set, and it’s something on SSSI management that we have been calling for for years. You can’t just say this is a heathland SSSI and therefore it should just be managed as a heathland. It may be a heathland, but it may be a SSSI where you want short heath to support a certain range of species, or it may be a heathland where you want long heath to support another range of species and you have to set your objectives – what do you want your SSSI to deliver? Because we’ve done so much management of the environment in Britain, we have nowhere natural at all, everywhere’s been managed, been managed to some degree that you have to start saying hen harrier are in such a bad condition that we are going to have to keep some areas free of trees, cos natural regeneration of trees would deny you hen harrier habitat. Now in the grand old days, hundreds and

thousands of years ago trees were naturally burning and moving and re-planting re-growing. Heath was forming and dying away and the hen harriers were moving around but keeping a stable population. Now you've changed so much of the countryside in to a completely alien habitat that you're going to have to artificially say this is an area where we are going to keep hen harrier and we're not going to allow natural regeneration. We're forced into that because so much of Britain has been managed in the past and we've got our species down into such small populations. Fens, you artificially hold a fen and stop it becoming a scrub woodland. Again in the past fens were being created all over the place. We haven't got the room for fens to be created because its agricultural land, so you are holding habitats in a moment in time (Interview A, 20<sup>th</sup> December 2001).

Consistent with the idea that conflicts are resolvable if conservationists plan spatially, here my interviewee negotiates the conflicts between habitats and habitats and between species and habitats by suggesting that the conflicts are not really conflicts because 'we' simply have to choose that we want. Yet after summing this position up with respect to SSSIs by asking 'what do you want your SSSI to deliver?', he changed his line of argument completely by saying 'Because we've done so much management of the environment in Britain, we have nowhere natural *at all*'. In making such a dramatic shift of register, this interviewee indicates that he was aware that others might object and accuse him of being a managerialist technocrat disregarding any notion of what would occur naturally. Or that they might say that the high levels of manipulation required could lead to an artificial landscape solely managed for the ends of the conservationist according to the latest priority. By shifting the line of argument he sought to forestall the claims of those who would challenge his position by suggesting that the intensive management advocated is artificial. He shifts the conversation in order to provide justification for his position and, significantly, turns to the notion of naturalness. By saying that there is nowhere that is natural, he puts into play the common construction of nature and culture as distinctly separate – 'nature is what man has not made' (Williams 1976: 219) – and implicitly suggests that land that has been managed or influenced by people has fallen from its pristine naturalness. Once influenced it is no longer natural. Since the history of human influence is so long and the country so small, that influence is everywhere evident and there is, therefore, nowhere natural in the UK. In this way, this interviewee is, in true dialogical fashion, implicitly saying that everywhere is to some degree 'artificial'. This undermines the assumption of naturalness that supports the criticism of artificiality. In effectively saying that everywhere is artificial he provides a context within which an artificial form of management appears less bad.

He takes this further by emphasising the contrast between the natural past and the unnatural present and argues that it is because of the fact of the unnatural present that we need to manage. Contrasting the natural processes of the pristine 'grand old days' with the

'alien habitat' of the present, my interviewee suggests that the countryside is managed to such a degree that natural processes do not operate. He suggests that if we do not decide to halt natural regeneration of scrub on heathland and thus allow hen harrier habitat to diminish, or if we do not hold fens at an early successional stage thereby allowing them to become scrub and eventually woodland, then those species and habitats will be lost. His argument is that the very artificiality of the present necessitates 'artificial' forms of management.

The strategy by which this interviewee manages the dilemma, then, is by calling upon discursive resources from associated dilemmas – of artificiality and naturalness and interventionist and non-interventionist forms of conservation – to argue that the more interventionist species approach is not necessarily negative, and, does not necessarily produce a landscape that could be construed as artificial and unnatural (precisely because of the artificiality of the British countryside). As such, he argues his way into a position – in this case a position supportive of the apparently more interventionist forms of management associated with species conservation.

### *Strategy 2 – Seeking natural character*

An alternative strategy for dealing with the species-habitat dilemma is employed by my interviewee who was sceptical of the utility of the species approach and who thought that the ecosystem or habitat approach was the most sound. In the following extract we can see that while he espoused an acceptance that there is nowhere that is natural in the UK, he did not follow the logic that because nowhere is natural we inevitably have to manage:

Andrew: OK my last one is along similar lines ... with this process you get actions that are prescribed for different species and habitats. Take pinewood for example, there might be actions, we'd be managing that pinewood for particular species which we value for various reasons, we'll be taking the fences down for capercaillie, or chopping limbs off trees to provide deadwood for particular invertebrates and so on. My question is, do we begin to manage that habitat in minuscule detail to the extent that it comes into conflict with the values that we give it in terms of its naturalness...

Interviewee: ...there are no natural ecosystems out there; we have been bugging around with just about everything to some extent for the, you know, ever since the Neolithic period. And a lot of people say, a lot of people hold their hands up and say these aren't natural ecosystems and therefore we can make the choice of what we want to do with them in a way that we want to. There is some support, I have some sympathy with that argument, but I think the tenor of your question, yes I think we can over-manage. Erm and I think we can, sometimes we do things at the expense of just, just letting things get on. Most woodlands, if they are left alone will develop perfectly satisfactorily (Interview B, 15<sup>th</sup> January 2002).

At first glance, this interviewee's claim that 'there are no natural systems out there' appears similar to the claims of those that might seek to go on to claim the need for management. But even though he recognises that there is nowhere natural he is not necessarily willing to therefore hold his hands up and make the choice of what he wants sites to deliver. He still thinks we can over-manage. In this context, then, the claim that there is nowhere natural acts like a 'disclaimer' (Hewitt and Stokes 1975). Just as a speaker espousing anti-black sentiments might preface their remarks with 'I'm not racist, but...' (see Billig *et. al* 1988; Potter and Wetherell 1987; Wetherell and Potter 1992), so this speaker uses an initial statement about the lack of natural ecosystems to prevent what follows appearing to adhere to the idea that there are natural untouched systems in the UK. Not adhering to the logic that there is nowhere natural, therefore everywhere is artificial to some extent and needs to be managed for its own protection, could appear to suggest that the speaker adheres to the opposite position and believes that there are natural systems. From the perspective of those that separate out nature and culture and see nature as corrupted by human influence such a belief would appear naïve. So by prefacing their remarks with a disclaimer that there is nowhere natural when they go on to say that we do not necessarily have to manage as much as we do, they avoid appearing naïve.

By saying that there is nowhere natural and then also suggesting that we can over manage, his use of the available discursive resources is slightly different to those that claim the need of intervention. He does not say people have influenced everything therefore further influence does not matter so much. He calls upon a different notion of naturalness; a notion that is made clearer by another interviewee who responded to a question about the importance of the notion of naturalness by offering the disclaimer before going on to speak of naturalness in terms of a set of characteristics:

Andrew: I notice a couple of times you've raised the notion of naturalness and artificiality. How important is the notion of naturalness?

Interviewee: yeah I think it's actually quite important. There's virtually nothing natural in the UK. It has all been to some extent managed for something or other in Scotland, the largest land area for sheep grazing and the sea around for trawling ... everything has been very much modified. I guess that one of the things that I have enjoyed doing in my life is going to other parts of the world which haven't had anything like that intensity of management. We've got 55 million people on a pretty small island erm and just looking at what similar ecosystems would be like and saying that's what I wish we had. Like Loch Maree islands is a good example of that...so that I think that the way that these species would occur without a huge amount of human intervention is probably what I am looking at (Interview K, 7<sup>th</sup> February 2002).

After the disclaimer, which ends with 'everything has been very much modified', the interviewee takes a different tack. While the construction of nature and culture as separate still holds and underpins this interviewee's search for ecosystems that are more natural because they have had less intensive human intervention, what matters is what those ecosystems would be like. Earlier in the interview the speaker emphasised that habitats are not uniform entities and that they encompass much natural variation. Referring to pinewoods, he suggested that a natural pinewood is not simply thick with pine trees; there are also boggy areas and heathland. He said, 'if you look at Scandinavia where things have been much less damaged than here in Scotland, as you come to a boggy area, the pine trees get smaller, they then thin out and you just get one or two out on the bog and that's it and you've got this kind of mosaic structure'. While he said it was very difficult to find that structure in Scottish pinewoods there was one place where he could see, as in Scandinavia, this complete structure 'of the pine forest as it ought to be': the Loch Maree islands. 'They've got natural pine on them that's never really been managed and it's absolutely brilliant. And as you go out on the edge of the islands where you get the loch you get bonsai pines that are about this high and probably a couple of hundred years old...as well as the boggy areas and you've got this whole diversity of what we'd want'.

What matters is less the fact that present ecosystems have been influenced by people and more the characteristics that those natural systems 'ought' to have. The register of naturalness is thus changed slightly. Where the strategy of claiming the need for intervention rests upon a sharp either/or distinction between the natural and the artificial, this strategy is based on a sliding scale where relatively less artificial management would lead to a relatively more natural system. This is a strategy of accepting that nowhere is untouched but, at the same time, arguing that if people were to interfere less a greater degree of *natural character* would develop. Thus where the prior interviewee who was seeking to defend the species approach drew upon wider resources to bolster his position and argue that intensive management was not necessarily harmful, this interviewee calls upon similar wider resources but to argue that less intensive management can have beneficial results. Less intensive management could lead to sites or habitats taking on a more natural character. What is sought is not so much a 'natural' (in the untouched sense) site or habitat, but a site or habitat with a certain set of attributes that would be present in a habitat that was natural in the untouched sense. Those attributes are implicitly bound up in an inversely proportional relationship with human influence (the more human influence the less natural character). Thus the speaker can argue for less interventionist species management and more broad scale 'lighter touch' management.



Both these strategies illustrate the rhetorical basis to nature conservation discourse. Interviewees assumed positions on the species-habitat dilemma by constructing arguments for one form of action and against another and by calling upon wider discursive resources. They translated their arguments about the relative merits of the species and habitat approaches into different but associated dilemmas to do with artificiality and naturalness and interventionist and non-interventionist forms of conservation. In the process, they illustrated that the boundaries between dilemmas are porous and that speakers slip between concepts easily – one reason conservation discourse is so convoluted and confused.

Recognising this rhetorical side of conservation offers a useful corrective to the immovable systems of power of the last chapter because we can see that different people employ different strategies and are not simply subsumed under the developing biodiversity process. We can glimpse a world of power, and therefore, a politics of representation, where different people construct nature and conservation in different ways and fight to see their position achieve dominance.

This analysis is, however, slightly problematic for two reasons. First, the impression is given that these two strategies are mutually exclusive, when in fact the distance between them is not that great. An individual that argued for species action on the grounds of the relative artificiality of the UK's landscape and the need for continued intervention, might for example, also conceptualise that intervention as needing to conform to some sort of natural character. These discursive strategies should be conceptualised as flexible resources. Secondly, recognising that the species-habitat dilemma is argued over, that the arguments take place in historical context as speakers call upon discursive resources in creative ways, does not shed light on how one approach wins more adherents than the other or how conservation takes one route rather than another in any given situation. By focusing on argument and repertoires and by utilising interviews where the discussion was relatively abstract, I have implicitly suggested that repertoires clash together above the social fray. What is missing, therefore, is a situated analysis that highlights how these resources are put to use in specific instances of conservation practice. In the next section, one interview with a site manager illustrates how these repertoires are called upon and balanced in given situations.

### **Managing the dilemma in practice**

Insh Marshes is a wetland of international importance covering around 1000 hectares of the floodplain of the River Spey between Kingussie and Kincaig and has been managed as a

nature reserve by the RSPB since 1973 (RSPB 2000). It is ‘the largest continuous area of base-poor fen in the UK’ (UK Biodiversity Steering Group Report 1995b: 241), and, as such, constitutes an important element of the national extent of both the ‘fens’ and ‘coastal and floodplain grazing marsh’ habitats, for which there are action plans. As one of the sites that I was familiar with from volunteering at the beginning of my research, I had contacts and insight into the issues, so once I had decided to focus on the development of the biodiversity process I returned to interview the site manager. This manager was dealing with several species and habitats included in the biodiversity process. Here I focus on the management of the marsh because it is relevant to the question of how discursive strategies are worked out in practice and because the interwoven dilemmas – of species conservation/habitat conservation, artificiality/naturalness and intervention/non-intervention – are evident.

The site management plan states that the reserve is important because it is a ‘natural floodplain’; it is ‘the most important floodplain mire in Britain primarily due to its unspoilt character’. Consequently, ‘maintaining the natural features of the site is of prime importance’ (RSPB 2000: 36). At the same time, it is important because of its population of breeding waders: ‘about a thousand pairs of waders nest on the floodplain between Kingussie and Kincaig making it one of the most important sites in Britain’ (RSPB 2000: 36). The site is simultaneously valued in different ways, and the sorts of management that could be undertaken to safeguard or enhance the different features that are valued can come into conflict. Do the site managers, for example, manage for the wetland in general and attempt to ‘maintain the natural features of the site’ or do they manage more specifically to encourage the populations of breeding waders?

The potential conflict between managing for breeding waders or naturalness was clear when I asked the site manager which habitat action plan applied to Insh. In asking this question, I was interested in how lines were being drawn between habitats. The manager answered, however, by referring to the way that the production of plans led to conflicts:

Andrew: in the UK process ... there’s habitat action plans for fens, yeah. And then there’s a habitat action plan for floodplain and grazing marsh, which one applies to Insh?

Interviewee: probably both, but definitely we are a fen and we are definitely a floodplain, so I think we just collect these [laughs]. But again I mean you would come in to, that’s where you come into problems. I’m not saying that because we’ve got that there about lapwing [pointing to the biodiversity documents I had brought with me] that we’re going to do that throughout the whole of the reserve. Sometimes there’s some conflicts, but it’s compromises. You know our scrub, if we are there solely for lapwing, you shouldn’t see a willow bush on the site, but we are not going down that line. I could tweak my management in other parts of the reserve where we are not going to retain scrub and get more

lapwing. You know if we went down there with a plough and some fertiliser and really improved the structure of the sward ... we could improve our density of breeding lapwing. If we went down and you know did more predator control possibly, again, we could improve our lapwing, but to me the prime objective is, you know, is the naturalness of the site, so that's what we're, that's our prime aim. ... we are not there for lapwing and nothing else; we've not got blinkers on (Interview C, 16<sup>th</sup> January 2002).

The manager indicates that action planning has to be negotiated in specific circumstances. Site managers do not go out and do everything a plan suggests; they have to find a balance between the competing species and habitats viewed as important. As he said later in the interview: 'it's a juggling act. I feel I'm a bit like God juggling those things erm and that these balls are all the different species and habitats. Some are a bit heavier and have higher priority than others but I've tried to keep them all up in the air'. In this case, intensive management for one species is put forward as a possibility but rejected as inappropriate. Species work is constructed, in a similar way to the interviewees in the last section, as intensive and interventionist, involving a lot of management by people and based on an objective that is solely defined by the desire of the conservationist as opposed to what might be there 'naturally'. In this way, species work is inappropriate because it is set in opposition to the prime objective of protecting the naturalness of the site. This construction was continued when he contrasted other wetland sites with Insh:

if you went to Ouse Washes or Nene Washes, you know, theirs is so much more artificial. Er most of the land is improved, all the water level is controlled, all the ditches are managed in a very, you know, very strict programme. Erm... you know, we could do that at Insh, we don't because we feel the landscape value is far far more important and we've got this mosaic of habitats that we don't fully understand. Whereas when you've got an improved bit of ground, say at Nene washes, your priority species are perhaps black tailed godwit or lapwing. You know that you need a sward like this and you need the water table to be this far underneath through their breeding season and you know when that is, so lets go all the hell out to produce that. There's no botanical interest there. There's probably no invert interest. That's why we're here: we're a godwit-lapwing farm. It's not that simple here [i.e. at Insh] (Interview C, 16<sup>th</sup> January 2002).

Whether or not the management of Ouse or Nene Washes is in fact this intensive is not at issue. The crucial point is that this interviewee frames his understanding of his own site in terms of a contrast between specific intervention for species and broader management for the habitat and between naturalness and artificiality. In a way that is reminiscent of the prior reference to 'eagle farming', a site that is intensively managed for a few species is described as a 'godwit-lapwing farm'. It is an artificial landscape geared towards the production of a particular 'crop'. In the case of the nature reserve the crop is an endangered species. It might

be able to deliver the desired outcome in terms of boosting species numbers, but it would (according to this interviewee) have very little wider conservation interest. Intensive management again becomes the antithesis of naturalness. As such, this site manager calls upon the same sorts of discursive resources as the above interviewees. But instead of claiming that nowhere is natural and thus everywhere is to some extent artificial and therefore needs to be managed, this site is constructed as being relatively natural and therefore in need of protection from forms of management that are too artificial.

If we look more closely, we can see that when the manager refers to the naturalness of the site he does not mean that the site is untouched: he refers to the site's characteristics. The fact that the site has been managed has been made evident by the consequences of the early management of the reserve. In the early years, a non-interventionist approach was favoured because it was thought that 'grazing by sheep and cattle would damage the near-natural features of the marsh' (RSPB 2000: 56). Working with the assumption that the site had been relatively untouched and was 'near-natural', it was left alone, but what happened as a consequence is precisely what Godwin and Tansley (1923; also see Duffey 1971) had suggested would happen to wetland sites if they were left in their 'natural state': the marsh gradually became more and more overgrown with scrub. Learning the lesson of this early management, 'it is now generally accepted that the marshes have traditionally been free of tree cover due to the presence of grazing animals' (RSPB 2000: 56), which means that fens like Insh are still fens precisely because they have been managed and are not untouched. They are 'artificially' kept as a fen (as opposed to being allowed to develop 'naturally' into a scrub woodland). The naturalness that the manager refers to is the natural variation and mosaic of ecological communities and the unrestricted flooding regime. The character of the site approximates a natural fen (in the untouched sense) where it would have been grazed by wild animals.

The balancing act that the site manager attempts to perform is thus a case of finding ways to manage that perpetuate the natural character but which do not become too artificial. There is a need for management to keep the marsh as a marsh, but it has to be a sort of management that complements the understanding of naturalness. As such, the manager has to find forms of management that negotiate this dilemma, which is ultimately a dilemma of meaning.

Once it was recognised that a non-interventionist policy would eventually lead to the loss of fen – and so also very little breeding and wintering habitat for birds – it was recognised that the marsh needed to be reclaimed from the encroaching scrub. Scrub needed to be felled and the continuing process of encroachment also needed to be hindered.

Management shifted towards a more interventionist three-pronged approach of scrub removal, the introduction of grazing animals to hold back scrub development and 'topping' or mowing. Each of these forms of management has to negotiate the dilemmas of species conservation/habitat conservation, artificiality/naturalness and intervention/non-intervention and is argued for in different ways.

Scrub removal would appear to be problematic in the context of the importance of the site's naturalness because it involves quite intensive forms of management. But 'scrub bashing' is pursued because of the way that different arguments are balanced. One argument that can be made in criticism of scrub removal is that it involves the conservationist choosing which bits to chop down and which bits to retain. In answering a question about how the choices of which areas of willow scrub to cut were made, the site manager acknowledged as much by saying that when he was out on the marsh with a chainsaw he was aware that he was 'playing god' and that he was in some ways 'gardening' (a term that recalls the notion of interventionist conservation as farming). But qualms about the degree of human intervention and the artificiality of the resultant landscape can be challenged by the argument that the marshes are not somehow natural, but the result of hundreds of years of human activity. If the site is already artificial then further management will not harm it. Indeed, it can be argued that the expansion of scrub that is now thought to be a problem, occurred as a result of the early non-interventionist management. That expansion can, therefore, be portrayed as the result of a false understanding of what is natural. As such, leaving the marsh untouched would be irresponsible because it would perpetuate an unnatural situation. Further management is required, so the argument goes, to undo the damage of past management. Scrub removal (interventionist management) can paradoxically, therefore, be understood to be restoring the marsh to a more natural condition, whilst, at the same time, safeguarding breeding and wintering habitats for birds. The argument for scrub bashing wins out because it shifts the concept of naturalness away from untouched nature towards naturalness as a set of ecological attributes. Human intervention does not necessarily result in artificiality and contradict naturalness if naturalness is conceptualised in terms of what a more natural fen would be like; that is, in terms of its natural character. The fen has lost its natural character because of the way it has been managed in the past and human intervention is required to re-achieve it.

But if it is acceptable to undertake scrub bashing as a means of managing the fen, why is grazing also undertaken? Why does the site manager not keep undertaking scrub management so as to retain the site in the desired state? The answer is that grazing constitutes a compromise between ideological positions and competing forms of

management. If the conservationist were to continue to undertake intensive forms of scrub management they might be accused of verging towards the creation of an artificial site similar to Ouse Washes. Such management would involve repeatedly restricting willow scrub development and might be undertaken by mowing or more specific cutting of individual trees. Grazing provides an alternative because sheep and cattle will eat deciduous tree leaves when feeding and thus effectively control the development of scrub. But grazing is not only attractive because it represents a labour saving form of management. It is also attractive because it means that the management being undertaken does not develop into species farming. When I asked the site manager whether grazing was undertaken for the breeding waders or for the habitat more generally, he indicated that while it was a way of ensuring the right sorts of conditions for breeding birds, it was also important because it was a more sympathetic management tool:

Andrew: Is the whole point of that [grazing management] for the habitat or for the breeding waders?

Interviewee: yeah initially its breeding waders, but I think more and more its being seen that grazing is much more, it has less of an impact, it's a much more sympathetic erm management tool, much more natural tool (Interview C, 16<sup>th</sup> January 2002).

Sheep or cattle become natural management tools. Grazing becomes valued for its naturalness. It is, for example, much less artificial than the conservationist mowing the same area, even if the end result is similar. As the manager went on to say, grazing is a natural process:

As far as the grazing is concerned, again that is as natural as possible because what we try not to do, is to say right, you know, fifty cattle graze here next month, fifty here. We open out this open ranching policy, so the cattle decide where to go and you know there must [emphasis] have been some grazing animals down there, you know, a few thousand years ago and that's how they would have behaved. So our open...under grazing of the site with the cattle deciding and the sheep deciding is, you know, is as near natural as possible (Interview C, 16<sup>th</sup> January 2002).

As such, an open ranching policy is constructed as replicating the natural processes in a period prior to major human influence and even the low intensity grazing associated with agricultural development in the area. In being allowed to roam, moreover, the animals select some areas over others and thus introduce a spatial variation to the habitat that might not be re-creatable by mowing; grazing is a means of ensuring *natural character*. Grazing therefore allows the conservationist to find a balance between species and habitat management and

between management that is very intensive and leaving it to nature. By grazing animals on the marsh, the conservationist can prevent scrub encroachment in a way that is not too artificial, potentially create the right conditions for breeding waders and still retain an element of control on the numbers of animals and the period of grazing. Grazing is a form of management that is also a form of compromise in the negotiation of meaning.

Finally, at the same time, mowing is also carried out in some areas of the reserve because, so the argument goes, it is needed to gradually improve the sward to make it more attractive to potential graziers:

The topping is different erm ... we would argue that the site the site was over-grazed or under-grazed for many many years, you know probably tens of years, so some of the bits we've been topping below the village were very very tall coarse rank *Deschampsia*. You know, sheep and cattle aren't going to go in there, so our topping, until we can get the management right, is required (Interview C, 16<sup>th</sup> January 2002).

In this case, even though grazing is the preferred form of management, the more direct management of mowing is still undertaken because it is justified by suggesting that, as the sward changes (as a result of mowing), so the area will become more attractive to grazing animals with the result that less direct human intervention will be needed. It is one step on the road to further grazing and more natural management.

Ultimately, then, when we look at a specific example of conservation practice, we can see that similar repertoires to those used by my interviewees in the last section – of naturalness and artificiality and intervention – are called upon, and an accommodation between them is found. Repertoires are not simply abstract entities above the social fray: they are used in working out how to act. The manager of Insh Marshes, for example, mobilises repertoires to make arguments with respect to different sorts of management that are being undertaken at the same time. Once non-intervention was recognised to be producing changes that were viewed negatively, scrub bashing, as a highly interventionist form of management, is undertaken because of the need to undo past mistakes. Scrub bashing can be justified by calling upon the idea that the present state of the marsh is not natural and needs our intervention. But this sort of intervention is not fully accepted, or is at least counter-balanced, as the manager is also concerned with natural character. A compromise is reached by finding a more sympathetic form of management that can accommodate concerns over naturalness. Grazing, understood to be a more natural form of management because it was not so precisely controlled, provided that compromise. Management could be undertaken in ways that did not contradict the reasons for valuing the site. Since Insh is valued for both the species that breed there and its natural qualities,

grazing allowed management to be directed at both creating conditions for breeding birds, and, at the same time, managing the habitat in ways that preserved the site's natural character. Species management could be undertaken but in a less intensively controlled way, and in a way that that allowed a balance to be found with habitat management. In this way, repertoires of naturalness and intervention are not only put to use in arguments, they are bound up in particular forms of practice. Appropriate forms of management are arrived at through the negotiation of meaning.

### **Towards an analytical synthesis**

The main aim of focusing on language in use here has been to emphasise that conservation is not just about the tactics and strategies involved in developing a more coherent nature conservation as set out in the last chapter; it is, at the same time, also negotiated in language and the struggle over meaning. The approach that nature conservation takes, the shape it assumes, the degree to which it intervenes and is managerial, is worked out, at least in part, in discourse. The biodiversity process should not be seen as an immovable system of power within which people are subjugated. People are 'active, selecting and adapting thoughts, mutating and creating them, in the continued struggle for argumentative victory against rival thinkers' (Billig cited in Hajer 1995: 54). People are active in shaping the biodiversity process in the way they argue over it, not simply subject to the workings of the strategies and tactics by which the process works. More specifically, individuals take up positions on the biodiversity process through employing discursive strategies in a rhetorical world of continuing argument. And in the way that they 'are part of, and are continuing, the ideological history of the discursive themes which they are using' (Billig 1997: 49), the biodiversity process was debated and argued over through much broader and longer-running debates at the heart of conservation practice. Debates about species and habitat action planning were not centred on internal issues to the biodiversity process, but on issues of the human place in nature and the appropriate degree of intervention.

This focus on language has also been useful for other reasons. It extends those analyses that have examined the conflicts between competing cultures of nature, such as between nature conservation and estates (Toogood 1995), crofters (MacDonald 1998) or developers (Harrison and Burgess 1994). Such analyses tend to ascribe a broad discourse to each group and thereby refer to nature conservation as a relatively uniform whole. By paying close attention to language use within conservation itself, we can see that there is an internal cultural politics within which meanings are constructed and negotiated in specific situations and in relations of dominance and subordination, but which gets lost in generalisations about 'nature conservation'. As Marren says 'conservation in practice is to a large extent to do with



quarrelling' (2002: 28). As I found, arguments appear to be central to how conservation works. Interviewees would frequently talk about conservation by positioning themselves with respect to an argument, recount an argument between different sides on a particular issue or actually engage in argument by criticising certain forms of action and praising others.

The focus on language is also useful because it highlights that whilst the common dichotomous portrayals of environmentalism and conservation (such as when conservation is represented as split between ecocentrics and technocentrics or arcadians and imperialists) do resonate within conservation, people cannot be classified by adherence to a camp or side of the debate. Rather, as was illustrated by the variability of their talk, my interviewees took complex positions and creatively used discursive resources to continually reconstruct forms of action and re-position themselves on any particular issue. As Holland and Rawles (1993: 15) note, it is a mistake to suppose 'that values are always things that we reason from...the fact is we often do not know what we think, what our values are; and we may be engaging in debate precisely in order to discover what we think...As often as not, values are what we reason towards – things that we work out or discover through a process of critical discussion'. People do not speak *from* 'camps', they creatively utilise the rhetorical resources of historical positions in novel ways in new situations and in the process arrive at their positions. In this way, it is possible to see that the ecocentric/arcadian and technocentric/imperialist positions are continually being renegotiated in discourse.

Similarly, if these positions are aligned with the idea that conservation is both part of, and a reaction to, processes of rationalisation (Adams 1997), then we can see that just as these two discursive positions are negotiated in discourse so the place of conservation with respect to rationalisation is negotiated. Whilst conservation in the UK is characterised by an interventionist form of managerialism (Henderson 1992) and appears to be focused on governing and rationalising nature, what lies behind this generalisation is a field of negotiation and argument within which the rationalising aspect of conservation does not go unchallenged. Rather, its status as part of rationalisation – characterised by the governmentalisation of conservation itself – is the result of political struggles over representation and meaning that continue to be fought behind the scenes, through which this characteristic is attained and reproduced.

Finally the focus on language has been useful in highlighting the fact that while abstract positions and repertoires provided resources for talk, it was only in specific instances of conservation practice that these abstract positions had to be accommodated. The example of Insh Marshes emphasises that if we want to understand conservation, then we

have to examine specific examples in detail. Conservation can be extremely 'situated' because it is only in specific situations that particular species and habitats, which are valued in different ways and which have different requirements, have to be balanced. By focusing on detailed instances of conservation practice we can more clearly see that while the species-habitat dilemma may appear quite inconsequential because both approaches are needed, the different approaches are connected with different forms of action, valued in different ways and balanced in practice. It is with reference to specific examples that we can see how the construction of meaning is bound up in particular forms of conservation action.

Yet while this focus on language in conservation is useful, what I have ended up with is two separate studies: one, in the last chapter, of institutional practices and one, in this chapter, of language and the negotiation of meaning. Whilst this illustrates that different forms of discourse analysis can usefully complement each other, it also separates out two sets of practices that are, in reality, interwoven. The sorts of action undertaken in nature conservation are only undertaken because of the way that they are bound up with the continuing construction of nature and the re-negotiation of ways that we invest it with meaning. Action for a species only makes sense in the context of the way that knowledge of that species is constructed and the way that it is valued. Moreover, different sorts of action may seem appropriate at different times because of the way that knowledge and our valuation of species change. Consequently, in order to understand why some forms of conservation are acceptable and others not and why acceptability changes over time, I need a form of analysis that weaves a concern with strategies and tactics and institutional practice together with a concern for language in use and meaning. As such, in the next chapter, I focus on the changing management of pinewoods at the RSPB's Abernethy Forest Reserve and seek to examine how changing management practice was and is bound up with developing institutional arrangements and interwoven with shifting processes of meaning making.

# 6

## Managing Abernethy: Minimal Intervention

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### Towards an analysis of discursive change

In examining the institutional development of the biodiversity process and the way that it was argued over in discourse, I came to recognise, as the case of Insh in the last chapter suggested, that focusing on specific examples was analytically fruitful. If I wanted to examine the detail of why conservation did what it did and how certain constructions of nature underpinned ideas of appropriate conservation practice, I needed to focus. Since I had already spent time as a volunteer on a pinewood reserve (Abernethy) and spoken with several people involved in planning biodiversity action for pinewoods or pinewood species, I chose to focus by concentrating on the native pinewoods and the capercaillie. My intention was to explore, in detail, the ways that the species and habitat were constructed and incorporated in the biodiversity process.

As I went on to examine the construction of capercaillie and pinewoods in a second set of interviews (Appendix II), however, two things became apparent. The first was that the focus on a species and habitat – which I had initially thought was very focused – was too broad. I still needed to get to an even more detailed level of analysis. The second was that specific sites were crucial and that since particular constructions of the capercaillie and pinewoods underpinned what was taken to be appropriate management, those constructions became inscribed in the history of the sites where management was undertaken. One avenue that potentially offered a route by which I could examine the construction of nature and the changing practice of conservation was, then, to address the changing management of a pinewood site. It was for this reason that I returned to Abernethy. While I recognised that this sort of examination would take me away from a focus on the biodiversity process *per se*, the example of Abernethy was interesting because it allowed an analysis of a specific example of changing management over the same period as the institutionalisation of the concept of biodiversity. In this, and the following chapter, then, I move on to examine the management of pinewoods at Abernethy between 1988 and 2001.

There are, and have been for a long time, ambiguities about what a pinewood is and what the most appropriate form of management should be. At the first major conference to address the ecology and management of the pinewoods (Bunce and Jeffers 1977), for example, two strikingly different views were put forward. On the one hand, Forster and Morris (1977: 116-117) suggested that:

The native pinewoods in the Cairngorms area are among the largest areas of semi-natural forest in Britain...There is good historical evidence from some of the forests in the Cairngorms area that they stand on sites that have been continuously occupied by forest cover since the end of the last glaciation...In some respects, therefore, these forests approximate more closely than any other in Britain to the climax condition. Despite man's undoubtedly heavy influence, they still may be regarded as relatively less disturbed than any other extensive area of forest in the UK...For nature conservation purposes, the objective should be to encourage the forest to develop with a minimum of interference.

Gimingham (1977: 3-4), on the other hand, argued that:

We should not be too fearful of human intervention, or management to the end of maintaining or expanding the native pinewoods. Already, as I have argued, they have departed in a number of significant ways from their former ecosystem organisation. It may be that they can struggle on in approximately their present form for a long time, unaided. But there may be no special virtue in that, when we have the chance of returning, at least in part, to an ecosystem which might function properly.

Such an ecosystem would show a greater variety of trees, and my hope would be that we could actively encourage the greater participation of birch...The forest would also show a greater variety and patchiness in the dwarf shrub and ground flora. This variety would not be easy to recreate where it has been lost, but it is worth considering the use, under careful control, of some localised prescribed burning.

These quotes represent two positions with respect to the degree of appropriate intervention. Each position involves different ways of representing, valuing and conserving the pinewoods. Forster and Morris construct a narrative of the forest as near natural. While they recognise the influence of people, they play this down saying that the forests have managed to retain their natural character. Consequently, to protect that naturalness we should abstract ourselves as much as possible from the equation. For Gimingham, the pinewoods are constructed through a narrative of past intervention. The forests are not near natural; they are devastated remnants. People have modified them by reducing the forest area, changing the proportion of major tree species and changing the tree density and age structure. They therefore depart from the idealised notion of what constitutes a climax community and are not untouched; they are human artefacts and should continue to be managed.

There is a degree of caricature in my portrayal of these two positions – Forster and Morris, for example, are closer to Gimingham in accepting the need for intervention in the form of deer control and consider simulating forest fires by burning small areas of heather moorland adjacent to forest stands. What is important, though, is that pinewoods are one more example through which we can explore the politics involved in one construction of nature and appropriate conservation practice gaining a dominant position over another. But rather than examine this politics as an abstract clash of representations, it is possible to address how these forms of representation are interwoven in conservation practice by turning to Abernethy, where these different positions have been played out. This is to turn an analysis of competing constructions of nature into a historical, or genealogical, study.

There has been an RSPB presence at Abernethy since 1959 when a seasonal centre was opened with the co-operation of the then owners close to the famous Loch Garten osprey site. It was in 1975 that the first 615 ha of woodland around the site were bought, and since then, as it came up for sale, more land has been acquired (figure 6.1). A crucial moment was the acquisition of the Forest Lodge Estate in 1988, which together with North Abernethy in 1990, joined the Upper Glen A'an Reserve in the Cairngorms with the Loch Garten Reserve in Strathspey to form the contiguous Abernethy Forest Reserve covering close to 15, 000 ha (nearly 50 square miles).

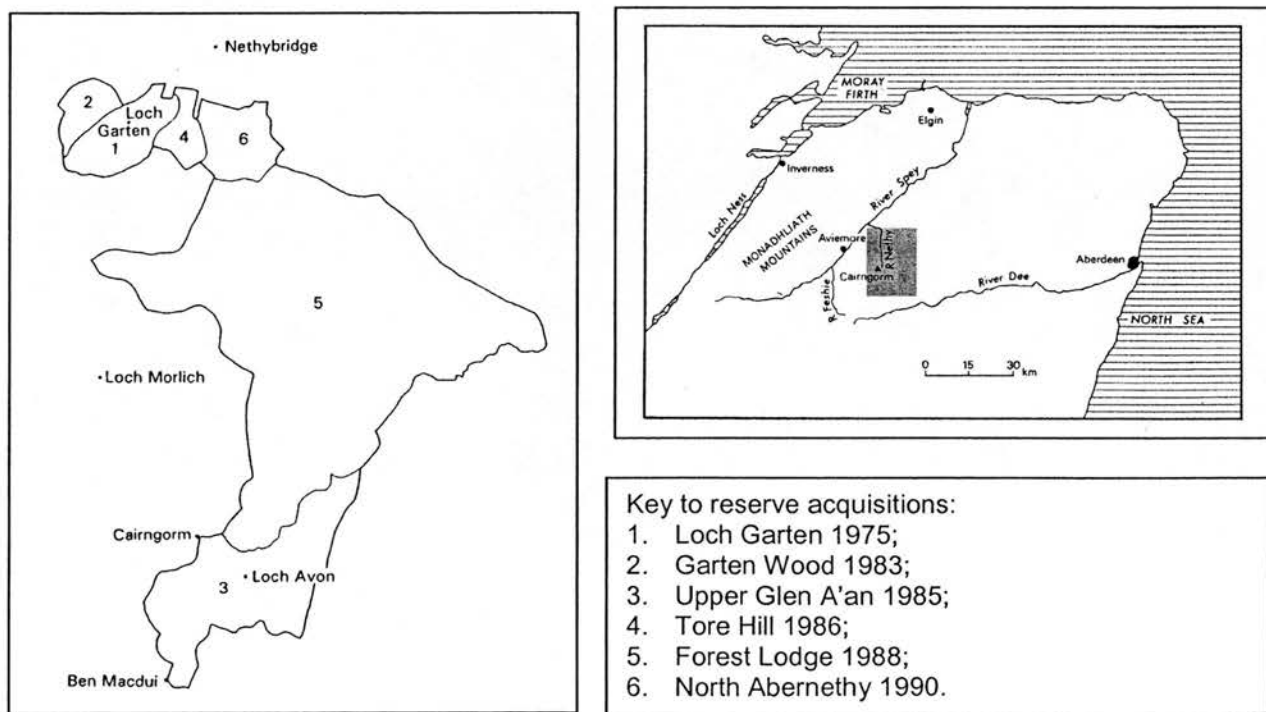


Figure 6.1. Map of the RSPB Abernethy Forest Reserve. More recent acquisitions include woods at Mondhuie and Craigmore near Nethy Bridge. Source: Taylor (1995: 146).

With the acquisition of the Forest Lodge estate, the RSPB acquired the largest fragment of pinewood in Scotland and although other pinewoods such as Coille na Glas Leitir at Beinn Eighe had been managed towards conservation ends, managers were faced with the old question: 'what was the best way to conserve pinewoods'? The early answer to this question is set out in the 1991 management plan for the Forest Lodge section of the reserve, which said that the management policy was:

4.3 To conserve and extend the native pinewood ecosystems for their nationally important assemblages of breeding birds, especially Scottish crossbill, crested tit and capercaillie; for their nationally important plant communities including a number of rare species; and for their important invertebrate populations.

4.4 To reduce grazing pressures on the pinewood by ... lowering the deer population to levels where conditions will be suitable for natural regeneration within the next 5 to 10 years...

4.5 To leave the native pinewood, including native broadleaf species, as well as the regenerating forest, silviculturally unmanaged

4.6 To leave the pine plantations unmanaged except for the removal of exotic species and for management experiments or projects which have clear conservation objectives (RSPB 1991: 36).

In 1991 minimal intervention was the goal. With the exception of culling deer to achieve woodland expansion and some management in plantations, the pinewoods, especially the 'native pinewood', would be left alone to regenerate 'naturally'. By the 2001 management plan, however, there was a slight, but nevertheless important, change in orientation. For whilst it essentially reproduces the broad policy of woodland expansion, there are significant alterations. The woodland objective was stated thus:

4.2 To conserve and extend the internationally important pinewood ecosystem through the development of a self-sustaining native forest of natural character over the potential woodland area, including existing plantations, particularly to benefit capercaillie, crossbill and crested tit and intrinsic biodiversity interest. To maintain as a minimum, a steady and viable population of woodland grouse (capercaillie and black grouse) and to increase their population if possible to a level to allow emigration of birds to neighbouring forests. Ideally this will be achieved by minimum intervention (deer control and putting out fires) in existing semi-natural woodland; by the retention and creation of deadwood; by the removal of all non-native tree species – excluding those of cultural significance to local people, and by investigating potential tree establishment techniques (RSPB 2001: 66).

There are significant additions and subtle changes to policy. Where the 1991 objective was to conserve and extend the forest for its important species, here the objective is still oriented

to a few species but also for the ‘intrinsic biodiversity interest’: the concept of biodiversity has crept in. This objective is also supplemented by the additional goal, which was not present in the 1991 plan, of developing a self-sustaining forest of ‘natural character’. In the ten years between plans, there had evidently been a development of thinking on management and what they are trying to achieve. But perhaps most significant because of the potential conflicts it introduces is the inclusion of an aspiration to maintain populations of woodland grouse. In the context of a declining population of capercaillie in particular, this introduces a tension since, whilst the policy suggests that maintaining the population will ideally be achieved through a policy of minimum intervention, it is difficult to see how a declining population can be maintained by doing very little. The same plan notes only a few sentences later that there is a policy:

4.7 To research the requirements of key biodiversity particularly capercaillie and Scottish crossbill, and where necessary and practicable, to maintain viable populations by management intervention. The research results may modify the degree of intervention and timescale required to achieve the objectives in 4.2 (RSPB 2001: 67).

Whilst the main thrust of the 2001 management plan is the same as the 1991 plan – and indeed the 1995 plan – there is a shift from minimal towards greater intervention. Although, technically, the management practices have not changed and become more interventionist – because research is being undertaken in order to decide whether or not this route should be followed – the trend is towards greater intervention. As such, changes have taken and are taking place at Abernethy that offer an opportunity to examine how and why, over the period from 1988 to 2001, this discursive change took place. By addressing the move towards greater intervention I can examine the changing representation of pinewoods and the way that these representations are interwoven with changing practices. In this chapter, I sketch out the approach to management in the early years of RSPB ownership (1988-1995) and thus provide a basis for the next chapter, which examines how the management changed and ultimately how the concept of biodiversity and the practices of action planning began to impinge on management.

### **Abernethy, naturalness and minimal intervention**

Native pinewoods have iconic status in representations of Highland nature. The majestic Scots pine is contrasted with the monoculture of introduced conifers in plantations and claimed as the native and natural forest cover. At the same time, the lone pine on the misty mountain recalls the scale of the degradation of these once vast forests at the hands of

people. Such contrasting representations of the pinewoods as natural and degraded have a long history (see Ritchie 1920), but I will begin with the representation of pinewoods in Steven and Carlisle's (1959) classic text, *The Native Pinewoods of Scotland*. In this, an ambiguity that underpins these contrasting representations of pinewoods is established when pinewoods are constructed as both natural and unnatural. On the one hand, pinewoods are held to be special because they are links with past naturalness, they are remnants of the original pinewoods that covered Scotland before the impact of people. Steven and Carlisle say that '[e]ven to walk through the larger of them gives one a better idea of what a primeval forest was like than can be got from any other woodland scene in Britain. The trees range in age up to 300 years in some instances, and there are thus not very many generations between their earliest predecessors about 9000 years ago and those growing today; to stand in them is to feel the past' (Steven and Carlisle 1959: v). On the other hand, in their general discussion of the pinewoods and assessment of each individual pinewood, they detail the way that these remnants have been, and are being, altered by the actions of people. They refer to how '[m]ost of the native pinewoods have been at one time or another part of a sporting estate in which the deer were encouraged and protected for shooting, and this has often given rise to abnormally high populations within the woodlands' (Steven and Carlisle 1959: 79). Further, 'there has been relatively little natural regeneration during the past century, most of the pine being over 100 years old. During this period the woodlands, with few exceptions, have been open to intensive grazing by red deer and sheep' (Steven and Carlisle 1959: 83). The pinewoods, whilst being remnants of natural woodland, are thus subject to excessive levels of grazing, which prevent their regeneration and compromise their naturalness. Whilst derived from a natural origin, the pinewoods are also the result of 'unnatural' influences such as the high numbers of deer or forestry practices.

This sort of dual construction of the pinewoods as natural and unnatural is often represented visually through reference to a map produced by O'Sullivan (1977) and subsequently reproduced in documents like the RSPB's *Time for Pine* (1993). This map (Figure 6.2.), itself another source of discursive resources for representing pinewoods, suggests an original extent of the pinewood and contrasts it with the present extent of the woodlands. Commonly accompanied by the claim that only 1% of the original pinewoods are left, the visual contrast of a suggested former distribution with the present extent reinforces the idea that they are remnants of the original and so links with past naturalness. Yet, at the same time, in the extent of their decline they are unnatural because the coherence of such a contiguous area is lost.





wildlife'. The pinewoods at Abernethy are natural to the extent that they have a connection with the original, but unnatural to the extent that they have been reduced to such a small fragment. This story of decline and the ambiguity of the concept of naturalness can be seen in the following extract from the 1991 management plan:

For thousands of years the montane section of the reserve has slowly evolved to create one of the most natural, least modified landscapes in Britain...On the extensive moorland areas between the lower forest and the montane habitat, the natural succession to forest and sub-alpine scrub has been lost or prevented, due to over-grazing and excessive burning. This process has been especially acute during the past 150 years, when high numbers of sheep and red deer have been maintained on the hills.

Below the tree line, there has also been substantial forest decline due to past land use practice. Within the forest many of the woods have been highly modified by thinning of stands, clear felling of timber and the bulldozing of tracks and extraction routes.

Despite this past exploitation, the main forest areas remain intact and retain considerable natural qualities. Due to inaccessibility, several locations have no recorded management and rank among the most natural woodlands in our land (RSPB 1991: 25).

The ambiguity of the concept of naturalness is evident because while some areas rank as the most natural in our land and many have retained considerable natural qualities, the natural succession has been lost, the forest area has declined and the forest structure has been modified by thinning and clear-felling. Thus not long after the Conservation Course say that the priority should be the *maintenance* of the naturalness of the forest, they say that 'it is well known that Abernethy forest is far from natural, having been burnt and cut over for centuries' (Conservation Course 1988: 1). The Conservation Course continues, '[t]he most distinctive feature of Abernethy Forest is its *potential* for naturalness' (Conservation Course 1988:57, my emphasis). The acquisition of Abernethy was thought to give 'the RSPB its best chance ever of returning an area to a near-natural condition' (Conservation Course 1988: 1). As such, John Hunt, then the Scottish Reserves Manager of the RSPB, relished the prospect of increasing the site's naturalness, saying, 'to me, as a conservationist, it is very exciting if, instead of just protecting a tiny fragment of rich habitat and doing nothing with it, we can take a sizeable area and return it to something natural. That's real conservation – not preservation, but conservation' (in Edwards 1988: 35; see also Hunt 1992). Similarly, an early report on a vegetation survey that related to management issues suggested that '[m]anagement should be geared to restoring as great a degree of naturalness as is possible, by retaining the existing natural features, whilst removing the past influences of man as far as possible' (Tickner 1989: 110).

It is this ambiguous construction of the pinewoods that underpins the early management. It was argued by many – including the Nature Conservancy Council, which had contributed £500,000 to help the RSPB purchase the Forest Lodge estate, and the Conservation Course led by Andrew Warren – that ‘[t]he preservation and enhancement of the natural character should dictate the strategy for management. It follows that a minimum-intervention policy should be the guideline for planning the management of the reserve’ (Conservation Course 1988: 57). This position was arrived at because, if we conceive of a spectrum of naturalness and artificiality, the pinewoods, constructed as remnants of naturalness, were positioned nearer the natural end of the spectrum with the negative influences of human impact pulling them towards artificiality, although not to the extent that they are irrevocably damaged (figure 6.3). ‘It followed’ that a minimum intervention policy should be pursued because this spectrum of naturalness was mapped onto a ‘management gradient’ (figure 6.4). Working directly from a nature-culture duality that constructs human influence as bad, the closer one is to the natural end of the gradient, the less intervention there should be. Conversely, the more intervention one pursues, the less natural the result. Abernethy, positioned towards the natural end, maps onto less interventionist management. The management adopted was *minimal* intervention and not *non-intervention* precisely because the pinewoods were not pristine and had been influenced by people; that is, because of the ambiguity of pinewoods being constructed as natural and unnatural at the same time.

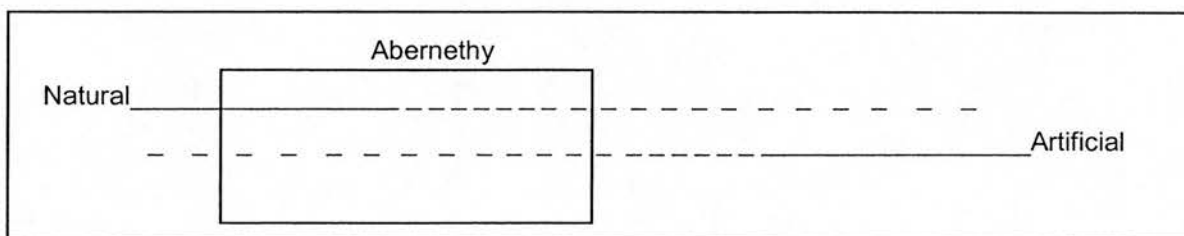


Figure 6.3. Positioning Abernethy on a scale of naturalness.

| <u>Management Gradient</u> |                   |   |   |  |  |
|----------------------------|-------------------|---|---|--|--|
| More Naturalness-----      |                   |   | -----More Intervention                            |  |  |
| Total non-intervention     | Culling deer only | Culling deer, Tuley tubes around some broadleaves | Culling deer and some ground preparation for seed | Culling deer, preparing ground and sowing seed | Culling deer, preparing ground and planting saplings |

Figure 6.4. Naturalness/Management Gradient. Source: Conservation Course (1988: 22).

Yet whilst a broad policy of minimal intervention was agreed upon as the most appropriate way of achieving the objective of woodland expansion, it was still an open question as to what form of intervention would best achieve that objective. Specific forms of management had to be decided upon. Even though minimal intervention appeared to accommodate the ambiguity of the natural/unnatural pinewoods, the ambiguity remained because constructions of the forest as both natural and unnatural ran through to approaches to management. Claims about the naturalness of the forest supported suggestions that the first priority should be the maintenance and protection of naturalness, and claims that the forest was far from natural supported suggestions that the naturalness should be enhanced. Thus in the way that the construction of the pinewoods as both natural and unnatural is connected with the notion of *protecting* and *enhancing* those pinewoods, there is a potential tension between forms of management. How is it possible to protect naturalness *and* enhance it? One implies abstracting human influence and the other implies applying human agency to achieve a specific end. Those deciding on specific forms of management therefore faced a dilemma, or at least a difficult balancing act: what sorts of management could be undertaken which would enable those aspects or parts of the site that had been damaged, to be restored, without compromising the site's naturalness? How were the dual imperatives of protecting and enhancing the pinewoods to be balanced?

The answers that the managers at the time found to these questions are captured succinctly by one of my interviewees who, reflecting on management at Abernethy, said that:

Interviewee: ...the ethos in the late 80s, early 90s...was, not hands off, we were doing a lot of deer stalking et cetera, but the ethos was doing broad-brush management; when you get the principles right, other things take care of themselves...

Andrew: can you clarify, your broad brush is...

Interviewee: Our broad brush management aims for the site are...erm aiming to expand the forest area, up to the potential natural treeline. To do that entirely or primarily through the reduction of grazing, which mainly means deer on this site. That the semi-natural woodland, the core of the old forest, will be sylvaculturally unmanaged, or near as damn it, you might do the odd thing but in terms of using timber, you know that's not going to happen. And that we have, getting towards the end of it, but we've managed and re-structured our less natural plantations erm to push them towards more semi-natural types of woodland. So big broad brush management aims (Interview H, 30<sup>th</sup> January 2002).

It is clear that in leaving the semi-natural forest alone, achieving woodland expansion by reducing the grazing pressure and physically altering the less natural plantations so that they more closely approximated natural woodland, the site managers found several ways of managing the dilemma about the appropriate degree of intervention. In the following sections, I examine these strategies in more detail in order to examine the concept of minimal intervention and show why some forms of action were considered acceptable and how they were positioned to negotiate the tightrope of naturalness/non-intervention and artificiality/intervention. Why were some areas left and others not? Why was a drastic reduction in the deer population acceptable as *minimal* intervention?

### **Minimal intervention in context: co-constructing pinewoods and plantations**

In the context of a large site covering a wide spectrum of possible positions on a scale of naturalness, one way of negotiating the ambiguity of naturalness and the question of whether or not to intervene was to discriminate between the more and the less natural parts of the site. It was this approach that was adopted when the managers at Abernethy stated (in the summary of the management plan) that ‘All ancient semi-natural woodland will be left unmanaged and only plantation areas will undergo restorative and habitat enhancement management’ (RSPB 1991: np). One way of negotiating the ambiguities of ‘minimal intervention’, then, was to employ classifications that cut across the continua of the spectrum of naturalness to allot different areas of Abernethy into different categories. The woodland classification that is employed here identifies which areas of woodland are ‘ancient’ and ‘semi-natural’ and which are not.

#### *Constructing ancient semi-natural pinewoods*

Tsouvalis-Gerber (1998; also see Watkins 1988) argues that for the first half of the twentieth century the focus on the efficient scientific management of forests with a view to their productive capacity, meant that woodland history was under-studied. The importance of an historical perspective, however, was brought back to the fore with the publication of Steven and Carlisle’s *The Native Pinewoods of Scotland* (1959). Although Ritchie (1920) and Fraser Darling (1947) provided historical narratives of forest decline, Steven and Carlisle (1959) marked a watershed in the way they brought together sources of evidence (pollen analysis, written and map records) to provide a new basis for management. Following this publication, the importance of ecological history gradually grew, with a similar approach being taken to the New Forest (Tubbs 1968) and the woods of East Anglia (Rackham 1976; 1980).

Tsouvalis-Gerber (1998) suggests that this re-framing of woodlands historically allowed the formation of a new sort of woodland: 'ancient woodland'. Until the early 1980s, woodlands were predominantly referred to as 'primary' or 'secondary'. Primary woods were those that had never been cleared of trees and were consequently seen as remnants of the original 'wildwood'. Secondary woods were those that had grown up on sites which had been cleared of woodland at some time in the past. It was, however, the gradual realisation that the distinction between the two was hard to substantiate (many old woods which had been considered primary because of their natural qualities were found to be secondary) that led Rackham (1980) to suggest the terms 'ancient' and 'recent'. Whilst the notion of primary woodland is a useful hypothetical concept, it is easier to show that a wood is ancient than it is to conclusively prove that a woodland is primary (Peterken 1993). Consequently, for practical purposes of classification, 'ancient' was more useful because it was more easily applicable. The term was subsequently disseminated through its central place in prominent texts (Peterken 1981; 1993) and gradually replaced 'primary' and 'secondary' as a means of identifying conservation value. In the process, this new form of woodland became an object of knowledge with programmes for recording the position and extent of these valuable 'ancient' woodlands undertaken (Walker and Kirby 1989; Callander 1986). Ultimately, ancient woods have come to be defined as 'those occupying sites which have been wooded continuously for several hundred years at least since the time when the first reliable maps were made. ...In Scotland ancient woods are those which were present before 1750 when the first national survey was made by General Roy' (Forestry Commission 1994: 33). In this way, retrospective mapping brings a new conservation object in to existence.

Adopting the term 'ancient', however, changed what was valued about woodlands. 'Primary' and 'secondary' had the advantage of discriminating between those woods that had, it was thought, been continuously wooded and those that had not. A primary wood, if it had survived the effects of human agency, was a link with past naturalness. Ancient woods, on the other hand, could include both primary and secondary woods because what was important was that they had been on the site since 1600 (or 1750 in Scotland). Discriminating between origins was not possible because what had become important was simply the length of time woodland was thought to have been wooded. It is possible that a wood *planted* prior to 1750 in Scotland would be valued in the same way as a wood that was a remnant of some sort of original forest cover. As such, whilst ancientness is in many cases a useful indicator of conservation value (because the longer a site has been wooded the higher its diversity and conservation interest), in other cases, ancientness is insufficient as a means of discriminating between woodlands because it is not concerned with origins. It is

thus common, today, to couple the concept of 'ancient' woodland with the concept of 'semi-natural' woodland.

The notion of a semi-natural woodland was introduced by Tansley in 1939. For Tansley semi-natural vegetation was that vegetation that existed between the two extremes of nature: 'virgin', 'untouched' forests and wheat crops or plantations of exotic conifers. For Tansley, much extant vegetation was positioned between those two categorical extremes. Consequently, what he took to be semi-natural included permanent grass, rough grazing and so on. He suggested that there were two categories of semi-natural vegetation; 'one began as entirely natural and has been modified by man's activities, as in an exploited natural forest which is allowed to regenerate by itself ... the second consists of communities deliberately initiated by man for his own purposes, but consisting of native plants, and often behaving very much as they would if they had come into existence spontaneously' (Tansley 1949: 195). From this, Tansley concluded that 'between one half and two thirds of England, and something like three quarters of Wales, Scotland and Ireland are occupied by natural and semi-natural vegetation' (Tansley 1949: 195).

While this broad definition of semi-naturalness was useful to Tansley (it allowed him to challenge Clements' climax theory by illustrating that it was not applicable to the UK), its meaning has changed. Peterken (1993: 42) recognises that under Tansley's original definition 'all woodland is semi-natural...for no completely natural woodland survives in Britain and even the most intensively managed plantation of exotic species contains some wildlife'. For Peterken 'a distinction has to be made between relatively natural and relatively artificial woodland: it would be pointless to describe both the native pinewood at Beinn Eighe and a nearby sitka spruce plantation as 'semi-natural'. Therefore the term semi-natural is reserved for those woods or features of woods which have a relatively high degree of naturalness' (Peterken 1993: 42). Semi-naturalness has thus been re-articulated from its reference to the broad ambiguity between the poles of the natural and artificial to its being applicable to those communities that are near-natural. In the Forestry Commission Practice Guides, semi-natural woods come to be those that 'are composed predominantly of native trees and shrub species which have not been planted' (Forestry Commission 1994a: 34). Semi-naturalness has thus come to refer to those stands which are of natural (non-human) origin but which have been influenced or altered by people in the past.

As with the concept of 'ancient' woodlands, however, semi-naturalness is not, alone, sufficient to discriminate between woods of differing conservation value. Technically, this definition of semi-naturalness means that very young trees that are naturally spreading on to moorland would be classed as semi-natural in the same way as a wood deemed to be a

remnant of the original 'wildwood' (i.e. because the growth had not been planted). Taking things to an extreme, willow scrub spreading onto a fen (which is seen as damaging to the fen communities because successional change will mean that the area will not be fen for long) is equally semi-natural. But whilst 'ancient' and 'semi-natural' might be insufficient descriptors on their own, when they are joined together they provide axes of valuation with respect to which individual woods can be positioned. The Forestry Commission Practice Guides (1994) offer a diagrammatic representation of this coupled classification (figure 6.5).

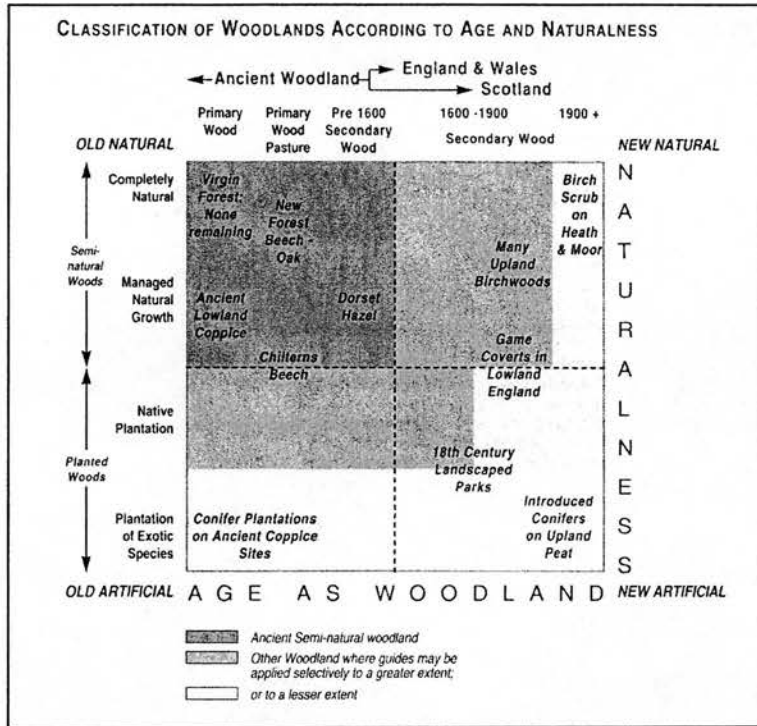


Figure 6.5. A diagrammatic representation of the connections between woodland age and naturalness. Source: Forestry Commission (1994: 34).

The Practice Guide says that although “Ancient” and “Semi-natural” have sometimes been used as synonyms, this is quite wrong. Ancientness refers to the site as woodland, whereas naturalness refers to what is growing on that site’ (Forestry Commission 1994: 35). The two gradients are associated but not equivalent. The axes represent continuous variables against which individual woods can be plotted. In general, the older a woodland (in terms of the length of time it has been a wood, rather than the age of the trees) and the more natural it is, the greater the value that is put on it. Yet across this continuum, lines are drawn which quarter the diagram to distinguish different sorts of woodland. In Scotland, ancient woods are those that fall in the left two-thirds of the diagram, whilst semi-natural woods are those which fall in the top half (note the distinction on the left between planted and semi-natural



woods). Thus the top left sector, where ancient and semi-natural woods coincide, represents a new category that can be used to classify woodlands and structure action. It is a relatively broad category that can contain many types of woodland – the New Forest, for example, is more natural and older than the Dorset Hazel – but nevertheless, lines are drawn which separate types of woodland and create a new object: ancient semi-natural woodland.

### *Applying the classification in practice*

It is possible to understand the early management at Abernethy with reference to figure 6.5. There were, in the early 1990s, three broad types of woodland at Abernethy: the ancient semi-natural woodland, native pine plantations and exotic plantations. If plotted on the diagram, the ancient semi-natural woodland would be near the top left, the native plantations would be in the upper left of the bottom right quarter and the exotic plantations would be near the bottom right. If Abernethy were taken as a whole, then these constituent parts would mean that the forest would fall somewhere near the centre. Since, in general terms, the old and the natural were more highly valued, the aim for management was to attempt to move the forest, as a whole, towards the top left of the diagram. Management thus had to discriminate between the constituent parts because the ancient semi-natural woodland was already there: plantations were not. As such, the ancient semi-natural woodland would be left unmanaged, the pine plantations would be managed and the exotic plantations would be felled. If the forest is taken as a whole, the exotic plantations, which are situated in the bottom right, were depressing the average: felling them would mean that the naturalness of the whole increased.

Once exotic species have been felled, the managers are left with ancient semi-natural woodland and native plantations. The distinction that is made by management to leave the former unmanaged and to restore the latter is connected to the distinction on the left-hand side of the diagram: woods are semi-natural if they have not been planted, that is, if they are not of human origin. Just as the management gradient mapped on to the naturalness gradient meant that naturalness translated into little intervention, if the woods are of natural origin then they are left unmanaged. If of human origin they can undergo restorative management. At a general level, then, the line that cuts across the middle of the diagram separating cultural and natural origins of woodland is translated on to the ground in the form of the boundary between managed and unmanaged areas. The idea that the ancient semi-natural is closer to the left hand corner implies that it is closer to the natural state, and, as such, human intervention would potentially move the forest away from that ideal. On the other hand, plantations, as woodlands made by people, exhibit the characteristics of their planting and management. Further management will not damage them in the sense of damaging pristine

nature; management could be undertaken with the intention of restoring and enhancing their natural qualities (attempting, that is, to make them more natural).

This general distinction (between ancient semi-natural/unmanaged and plantation/managed) is, however, problematic in practice. It is problematic because, as Taylor (1995) makes clear, areas of semi-natural pine woodland were under-planted with exotic species and different areas of plantation could have very different characteristics, including different age structures and different degrees of canopy closure. The question of *where* to intervene or not becomes more complicated. It is, perhaps, symbolic that the line bisecting cultural and natural origin and consequently managed and unmanaged woodland is dashed, because the distinction between the ancient semi-natural woodland and the native plantation is not hard and fast. The line separating semi-natural and planted on the diagram translates into a much more negotiated distinction between unmanaged and managed on the ground. This blurred boundary is evident in the 1991 management plan because whilst it stated that 'All ancient semi-natural woodland will be left unmanaged and only plantation areas will undergo restorative and habitat enhancement management' (RSPB 1991: np), it also states that some areas of plantation would be left unmanaged too. Some of the older plantations were to be 'left unmanaged to undergo a process of self-thinning/natural selection which [would] ensure continuity of deadwood' (RSPB 1991: 41). Indeed the plan states that over extensive areas of Rynettin plantation, a mixture of planted and regenerated woodland had developed and that these had a 'natural feel' (RSPB 1991: 41). Thus whilst both the diagram and those at Abernethy draw a distinction between semi-natural and planted, there was, at the same time, ambiguity that allowed room for local negotiation of the boundary.

The objective of restoring plantations and making them more natural is, therefore, directed at the younger plantations. It was expected that if intervention could take place early enough, the form of the mature stand could be changed by shifting the starting position of subsequent development. The intention was that once restoration work had shifted the starting point of succession, then they would 'fall into a non-intervention category and will go on to complete a cycle of maturity, death and decay' (RSPB 1991: 39). The long-term intention was that gradually the level of management would reduce as the effects of human influence were gradually made less evident.

But if young pine plantations were relatively unnatural and their naturalness could be enhanced by more interventionist management, the crucial issue that remained was *how* they should be managed and towards what specific end. If the plantations were to be managed to push them nearer the top of the diagram – towards a more natural form – what, then, is that form and what is a natural pinewood like? In speaking with those involved in

this early restoration work, it quickly became apparent that it was the ancient semi-natural areas that became the ideal or referent of naturalness:

Andrew: at the same time as the sort of non-intervention thing there is the thinning of plantations

Interviewee: removal of, oh, there is both

Andrew: yeah, how was it decided to thin plantations then? There was a different logic going on there I think.

Interviewee: yeah we might do it differently now, I think we would do it differently now. ... What we were looking at is that we knew that these, because we did own some small patches of natural, semi-natural forest down in the low forest...there is a big chunk down by Mallachie...just over the esker. All these bits have an element of this remnant in it. We knew that that was where a lot of things were actually living, so what we started off doing was that we had all this plantation, and that is mainly what we had, was plantation rather than semi-natural and we thought we could mimic the semi-natural forest, and the very heavy thinning that took place in some of these plantations was to allow some trees to develop big crowns (Interview R, 15<sup>th</sup> August 2002).

The bits of forest that were considered 'natural, semi-natural' were identifiable. Through anecdote and survey, it was considered that many of the typically pinewood species preferred the semi-natural areas rather than the pine plantations. The objective of the early restoration was thus the mimicking of the semi-natural forest. It was considered that as the plantations grew to maturity they would attain a tall straight form similar to mature plantations elsewhere (because they are planted at a high density and subject to high degrees of competition for light) and that as the canopy closed so the ground flora would be shaded out. Re-structuring thus aimed to create 'an open woodland structure', 'prevent extensive understorey suppression', 'create a structure mosaic by creating a glade system' and 'encourage merger of natural with unnatural by landscaping hard plantation edges' (RSPB 1991: 38-39). To prevent the plantations developing into mature stands of tall straight trees that would limit light penetration and the ground flora, the plantations would be thinned in order to allow the trees more space to develop large crowns. As such, at least one of the identifiers of naturalness was the structure of the trees themselves and the stand more generally. Identifying appropriate management of plantations thus involved constructing the semi-natural forests as approximating naturalness, identifying the important structural qualities and establishing how those qualities could best be managed for.

Naturalness therefore became identifiable through the way the forest *looked* and a plantation would be more natural if it looked the same as the semi-natural stand. In this respect, identifying the less natural parts of the forest was a case of being able to see where

the trees had been planted in straight lines (planting was normally undertaken in straight lines and there was a presupposition that straight lines were not natural). The restorative management was consequently a case of making the forest look less regular by either felling the trees in straight lines if they were young and had been planted under mature trees or thinning heavily so that the linear arrangement was less obvious.

In this way, the managers managed to find a means of protecting *and* enhancing the naturalness of the forest. The ancient semi-natural woods would be left, as would some of the more natural plantations, the younger plantations that could have their developmental trajectory changed would be restructured and the exotic plantations would be felled. It was a spatial strategy for dealing with the ambiguity of the concept of naturalness. The naturalness of the ancient semi-natural areas would be *protected* by abstracting human influence, but in a different area – in the planted woods – management could be undertaken and the naturalness *enhanced* because that management was oriented towards increasing the *natural character* of the forest. Two different concepts of naturalness were employed with respect to different parts of Abernethy.

#### **Minimal intervention in context: co-constructing pinewoods, deer and fences**

An important policy developed in relation to the narrative of forest decline was to encourage the expansion of the woodland through natural regeneration. Whilst the semi-natural areas would be left unmanaged, it was hoped that they would expand up to the natural tree line and that the altitudinal gradation from pine forest through birch woods to sub-alpine scrub might develop. But whilst there was abundant regeneration, the full development of the regenerating trees was prevented by a high grazing pressure, predominantly from red deer (Conservation Course 1988; RSPB 1991). In order to achieve the objective of woodland expansion, therefore, the issue of how to deal with that high grazing pressure had to be addressed. In the context of a policy of minimal intervention, the policy that was adopted was to cull the deer and so reduce the grazing pressure. Thus whilst one way of dealing with the ambiguity of naturalness was to separate the natural and artificial and to allow intervention in the artificial, with regard to the problem of deer, the effects of intervention would be felt even in the semi-natural areas – those areas deemed to be close to natural and thus in need of protection from human intervention. Intervention by culling is therefore constructed in different ways.

But in order to understand why culling was adopted, it is important to understand how it was bound up in the broader political issue of deer management. In the 1970s and 1980s, woodland conservation had been achieved in the presence of large deer numbers with

the aid of fences. From the mid 1980s, the use of fences was being re-thought and the adoption of a culling policy at Abernethy was part of these debates.

### *Re-negotiating deer management*

The failure of many woodlands, and particularly native pinewoods, to regenerate because of the presence of deer has long been a concern (Ritchie 1920; Gordon 1925; Fraser Darling 1947; Steven and Carlisle 1959; Bunce and Jeffers 1977; Callander and MacKenzie 1991; Aldhous 1995). The deer population is estimated to have risen from approximately 150,000 in the 1960s to 300,000 today (Callander and MacKenzie 1991; Smith 1993). For the conservationist, identifying the cause of this increase has not been difficult: it is traditional estate management (SNH 1994). Estates managed for sport are primarily managed for the maintenance of large stag numbers. The emphasis in shooting for sport is on the stag as the trophy and it is this preoccupation that lies at the root of the problem (Clutton-Brock and Albon 1989; 1992). Hinds (female red deer) are very rarely shot for sport, but high hind numbers are encouraged in the belief that more hinds attract, and then produce, more stags. Estates have therefore been culling hinds below the rate of recruitment (meaning that reproduction exceeds losses due to culling and the population increases), in order to encourage high hind numbers and thus more stags.

It is against this context that before the 1980s if a conservationist wanted to try and protect a piece of woodland, it was commonly accepted that they had one option: build a fence around it. Fences were seen as the right tool for the job because there was a belief that it would be too difficult to control deer without them (Jonhston and Balharry 2001). On the one hand, it was thought that deer fertility was density dependent and that if the herd were culled heavily the deer would compensate with higher productivity. On the other, it was thought that even if deer could be controlled effectively in one area, the lower density in that controlled area would create space for immigration from outside. Fences would, therefore, be needed to keep them out (or, for estate's, fences would be needed to keep them in). As such, fences were a useful technology because they allowed different landowners to pursue different objectives in close proximity: estates could retain high deer numbers, conservationists could achieve regeneration. They were solutions to environmental problems and marked the boundaries between social actors in material and symbolic ways. They allowed the maintenance of the social status quo because while fences divided areas of land, different groups could represent and manage the land in different ways.

Because, however, there was no logical relation between the problem of over-grazing and the fence, there remained an openness to other sorts of solutions. For some

within nature conservation, the deer fence was precisely the *wrong* tool for the job. Referring to his experiences at Mar Lodge in 1974, Dick Balharry highlights how fences were not necessarily desirable in conservation terms. He said that when he arrived there he asked, 'why was it a nature reserve?'

It was a nature reserve because of the magnificent native woodland, and yet there were no young trees. It was like a city of 90 year-old people, with no youngsters. Why? Because the whole of the reserve was being managed as a sporting estate, which was the situation for much of it until quite recently. Of course it is possible to run sporting estates and grow trees. You can build fences, you can put up growth tubes, you can plant trees. But where the land use objective is nature conservation, fences can cause more problems than they solve (Balharry 1998: 35).

Similarly, when I asked an interviewee (who saw the Highlands as degraded because there were too many deer) about his attitude to fences, he reflected upon his experience of pinewood management and said:

well what happened was that erm...when I arrived there, there was one fence up ... and I had lots of concerns about it and while I was there we built another fence...and when those trees arrived at so big [indicating height – approx 1m] I didn't like this because erm...it was not reflecting what I would see as a natural woodland – deer were not in it. And I thought, you know, this is nonsense, we really need deer as part and parcel, they've been there, they've been an ingredient in what we see as a pine forest today...what we need to do is understand the role that red deer play in the making of those woods. And I would argue that you are not making a natural woodland if you put a fence up and deny deer access to it, that's not, that's gardening. So the only way that you can do that is having deer present in numbers that will allow that thing to grow, to expand, to be sustainable (Interview L, 6<sup>th</sup> June 2002).

Whilst fences allowed regeneration to be achieved they were not, for this interviewee, the answer. For him, the central concern was the naturalness of the woodland being created. Building fences to exclude deer misses the point. It does not tackle the issue that there are simply too many deer and it results in two equally unnatural conditions on either side of the fence. Putting up fences is 'gardening'. By his use of this term we get the sense that for this interviewee fences are indicative of a more interventionist approach to woodland, of which he disapproves. For him a natural woodland can only be achieved by taking a less interventionist approach: by culling the deer to levels that allow regeneration whilst keeping them as part of the system, and not interfering in other ways. Fences are the wrong tool for the job because the end result will always be a human artefact. The same interviewee suggested that 'if you are going to get regeneration and you put a fence up, then its not natural regeneration at all, its a very, you know it's going to finish up that shape or that

shape'. Arguments about fences are, therefore, also arguments about the degree of intervention and naturalness. Whilst the debate about deer management is commonly understood to be a debate between nature conservation and estates with conservation challenging the estate's version of the red deer and their management (Toogood 1995), it was also a debate that took place within nature conservation itself.

In order to make the argument to remove fences, those who were against them needed to support their assertions by reconstructing the red deer. Where red deer were understood to be a pest and impossible to control, conservationists wanting to argue against fences had to reframe them as more amenable to management and as an integral part of the system. There were various resources available to them in this regard. The research of Clutton-Brock and others (Clutton-Brock *et. al.* 1982; Clutton-Brock and Albon 1989; 1992), for example, that had been taking place on Rum since 1972, offered different narratives of deer biology than those offered by the traditional view of the estates. Clutton-Brock and Albon showed that high female density and low food availability depressed the growth and survival of males more than females. They also showed that as hind density increased so the weight of antlers decreased, as did the size and weight of the stags themselves. The implications were clear: high hind densities meant poor stag quality. The work on Rum suggested that estates managing deer for sport by encouraging high hind numbers were actually undermining their own interests. The best way to achieve quality sport was not by encouraging huge numbers of deer, but by suppressing their numbers. The Rum research provided an alternative construction of red deer that conservationists could utilise to argue for reductions in the deer population. It also suggested that deer, and especially hinds, were to a large extent hefted to particular areas. The idea that a heavy deer cull in one area would simply create space for deer from outwith that area to move in and fill the gap was challenged. This again allowed conservationists to argue that reductions in the population might be possible.

At the same time, parallel arguments were made which suggested that deer were an essential element in the ecosystem. It was argued that within many areas from which deer have been excluded, the structure of the vegetation had changed to become tall and rank and less diverse. It was further argued that the regeneration evident within exclosures was from already established trees that flourished once relieved of browsing pressure; new seedlings were not becoming established because a dense moss layer that develops due to a lack of disturbance, hindered establishment (Staines 1995; Staines *et. al.* 1995). In this way, the influence of deer at levels that were not too damaging was constructed as beneficial: it is a question of finding the appropriate level.

A crucial moment in this continuing debate about fences and deer management came in 1986 when the NCC bought Creag Meagaidh and set out to achieve natural regeneration without fences (Ramsay 1997). Although it was not the first such attempt – it being tried out in a much less high profile way at Inshriach between 1974 – 1980 (Balharry 1998) – it was at Creag Meagaidh that the NCC very publicly decided to cull deer as opposed to putting up fences. Thus Creag Meagaidh represents a negotiation of different approaches in conservation and plays an important role in the rise of the notion of minimal intervention. Whereas it used to be that a conservation manager would only have one option – the fence – now, with changing ideas of naturalness and the reconstruction of the red deer as too numerous but manageable, the fence was increasingly understood as the wrong tool for the job. The rifle took its place. It was in this context, then, that the early management of Abernethy was debated.

### *Culling and fences at Abernethy*

When the RSPB bought the Forest Lodge estate in 1988 and was pitched into this political arena there was a certain amount of pressure from the NCC to attempt to achieve regeneration without fences. The policy adopted followed this approach. It was to ‘reduce grazing pressures on the pinewood by ... lowering the deer population to levels where conditions will be suitable for natural regeneration within the next 5 to 10 years...’ (RSPB 1991: 36; Beaumont *et. al.* 1995; Taylor 1995). This policy, coming as it did in the early 1990s, was on the leading edge of changes in deer management and thus caught up in a broad reconstruction of the red deer, estate *and* conservation practice and appropriate technologies of management. Questions about appropriate management at Abernethy can, therefore, be understood as embedded in the negotiation of approaches to the level of intervention in conservation management and in arguments for changes in deer management. Yet in the context of a policy of minimal intervention, adopting a policy of heavy deer culling is something that still needs to be explained. As an interviewee framed it, ‘it is pretty interventionist reducing deer densities by two thirds’. Why, if preferring culling to fencing is to prefer one form of intervention over another, is culling preferable?

First, as has been noted, fences represent an unnatural interventionist approach. Fencing is unnatural not only because it does not actually tackle the problem and perpetuates two unnatural conditions on either side of a fence and results in woodlands shaped by the fences, but because it is *visibly* unnatural. As one of the managers involved at the time makes clear, if an objective is enhancing the naturalness of the site, then one way of enhancing that



naturalness is to remove the evidence of human involvement. Referring to the initial attempts to reduce the grazing pressure he said:

we felt that we were now beginning to reduce the deer population and if we were wanting to enhance the naturalness of the site, we felt that deer fences were not natural, far from natural, they were man-made artefacts. Within four years we took, from 1988 to 1993 or so, we took away most of our deer fences (Interview Q, 13<sup>th</sup> August 2002).

My interviewee says 'most' because it is not the case that Abernethy is now fence-free: some have had to be retained along the marches with neighbouring estates and surrounding vegetation monitoring plots. Despite this pragmatic retention of fences for the sake of accommodating neighbours wishes, the desire to remove them is clear. The fences were obviously 'man-made' and compromised the naturalness of the forest. They should, therefore, be removed if the aim is to enhance naturalness. Removing fences is, therefore, a case of removing the visible evidence of intervention. As an alternative, culling, which normally takes place in the quieter parts of the reserve and is carried out either early or late in the day, is a much less visible form of intervention. In relation to human influence, culling is the least bad option because it tackles the problem whilst leaving little evidence of human involvement.

Secondly, the Conservation Course suggested other reasons for preferring culling to fences when they said 'Of all the alternative ways of enhancing successful regeneration – fencing, burning, screefing and culling – we recommend culling. We justify this as part of a management strategy that stresses naturalness, by referring to the observation that, in the natural forest, deer would have to be regulated by wolves' (Conservation Course 1988: 57). In such thinking, deer numbers are unnaturally high, not only because of past management practice, but because of the lack of natural predators. The deer population is allowed to grow to numbers that are detrimental to the deer themselves, so the argument goes, because of the unnatural lack of predation. In a natural situation, the weak deer would be selected out by predators with the result that the population as a whole would be healthier. As such, culling is a necessary element of management. In becoming the surrogate wolf, the manager moves the system back towards a more natural arrangement. The important question is finding the level at which deer can be present whilst allowing natural regeneration of trees. The question of balance is, consequently, implicit in early culling policy.

Culling as a form of intervention that effects even the semi-natural areas of the forest is acceptable because it is arguably less interventionist than fencing, but most importantly, because it restores the balance and removes the grazing pressure that is stopping even the

semi-natural areas form regenerating naturally. Where the semi-natural areas' naturalness was going to be protected by leaving them unmanaged whilst work was carried out in the plantations, culling means that intervention will be undertaken in those areas. The 1991 management plan deals with this by making a subtle distinction when it says that one of the main policies is to 'leave the native pinewood, including native broadleaf species, as well as the regenerating forest, *sylviculturally* unmanaged' (RSPB 1991: 36, my emphasis). Saying that the native pinewoods (which is, here, synonymous with ancient and semi-natural) would be *sylviculturally* unmanaged is to suggest that the woods would not be utilised for their timber and would not be physically altered by direct intervention. This leaves open the possibility of the indirect intervention that culling deer represents. Culling is an acceptable form of intervention because it seeks to create a more natural situation rather than simply putting up fences. In the context of potential conflicts between protecting extant naturalness by abstracting human influence and enhancing damaged nature through human influence, the semi-natural areas are shifted from being understood as already near natural to being seen as themselves subject to the damaging influence of too many deer. Culling deer enhances the naturalness of the semi-natural areas and, as such, this form of intervention is acceptable because we are taking the place of a 'lost' element in the system (the wolf) rather than simply introducing a new one. One of the ironies of early management, then, is that if there is a balance which deer are currently upsetting, it is also a question of manipulation by the active manager to attempt to find that balance. Achieving naturalness – which was one of the reasons for taking down fences – still requires the active involvement of people. Naturalness, which should be understood in this case as natural character, depends on humanity.

Culling thus became the preferred means of managing the forest to achieve regeneration and woodland expansion. But questions about the naturalness of the forest and fencing were usurped when, in June 1989, a warden at Abernethy walked along a deer fence at the forest's edge and found five black grouse carcasses. Subsequent monitoring of deer fences for bird strikes, and work by capercaillie researchers elsewhere, found that deer fences were a considerable hazard to woodland grouse (Catt *et. al.* 1994; Moss and Picozzi 1994). Recognising that these human artefacts were potentially killing large numbers of already declining populations of birds provided straightforward justification for arguing against fences. Instead of having to argue that fences created unnatural habitats, fences could simply be shown to have a detrimental impact on certain species. In retrospect, one of my interviewees who had been against fences said that:

what helped me no end was the caper [capercaillie] argument, Bob Moss and Adam Watson. There is no question that this whole business of the caper...I

never like to admit it because I'm not very keen on that argument, that you use a single species like the caper ... There is a strong argument that these fences kill lots of birds, not just caper but erm. I'm not so keen on arguing for a single species, but it helped...if that was going to help the argument then fine (Interview L, 6<sup>th</sup> June 2002).

The construction of fences as 'a bad thing' was thus bolstered. Today culling has become established as the primary means of management. Another interviewee framed this change thus:

Certainly ten years ago...the widely held view among land managers and land practitioners was that if you want forest regeneration you did it with deer fences. And now deer fences are an ugly word and deer fences are no longer seen as being an acceptable way of dealing with the problem. ...It's interesting to see how quickly what was...a perfectly acceptable policy has been turned round. It is now...you know the government has been subsidising landowners to put up deer fences for many years and the Forestry Commission with WGS grants have paid for fences and now we spend seven hundred thousand pounds paying the very same landowners to take the bloody things down... (Interview B, 15<sup>th</sup> January 2002).

### **Balancing species and habitat management**

As reference to the capercaillie makes clear, considerations of naturalness and appropriate forms of management were complicated by concerns for particular species. Single species management could potentially contradict concerns with naturalness because it might require intensive intervention. The early management at Abernethy was, however, able to accommodate both species and habitat considerations without compromising the concerns about the naturalness of the site. Not only did the problems caused by fences for the capercaillie dovetail with a desire to remove fences, but research on the structure of capercaillie habitat re-enforced the importance of semi-natural woodland and provided resources for those wishing to restructure plantations (Picozzi *et. al.* 1992; Moss and Picozzi 1994).

I highlight this research here not because the management at Abernethy was initially directed by it – although it did subsequently feed into and support that management and was used to describe Abernethy by Summers *et. al.* (1995) – but because it points toward both a specific idea of what constitutes a semi-natural pinewood and highlights the fact that constructing the pinewoods and plantations is linked with the construction of the capercaillie as a particular sort of species. Semi-natural pinewoods, plantations and capercaillie were co-constructed.

The capercaillie is a localised breeding bird largely restricted to the pinewoods and was one of the major reasons why the RSPB bought the Forest Lodge estate. It had become

extinct in Scotland in the second half of the eighteenth century, but was successfully re-introduced in 1837 (Sharrock 1976), reaching a peak in numbers in the 1920s and 1930s, but subsequently declined. Despite an expansion of numbers in the 1960s and 1970s, the future looked bleak. It was in this context that Picozzi *et. al.* (1992) and Moss and Picozzi (1994) sought to address the question of how best to manage a forest for capercaillie. The preferred foods and the problems created by wet breeding seasons were already understood (Moss 1986), but less was known about the role of 'old' 'natural' forest. Some maintained that capercaillie preferred mature forests while others suggested that it was not the fact of maturity, but the set of characteristics – in terms of structure and key food elements – that a mature forest exhibited, that was important. This suggestion raised the possibility of young forests being managed for capercaillie. Could forests that were not, at present, thought to be suitable for capercaillie, be managed in a way that would make them more attractive to the species and thus provide more habitat and potentially halt the decline? Picozzi *et. al.* (1992) sought to establish whether, in fact, it was the structural qualities that were important by developing a method of measuring forest structure and assessing these qualities in relation to the behaviour and numbers of capercaillie.

Focusing on the forests around lek sites (where male birds gather and display in the breeding season and so where numbers can be counted), Picozzi *et. al.* (1992) divided the forest into age-classes (pre-thicket, thicket, pole, high canopy forest, semi-natural forest - the last, not technically an age-class, is a category used by Picozzi *et. al.*) and measured fourteen structural components. By performing principal component analysis on their data they were able to plot their different sites on a graph illustrating, by the way that they were clustered, that each class of forest around the lek sites had broadly similar structural properties (figure 6.6).

This graph allows Picozzi *et. al.* (1992: 756) to say that 'A high PRIN1 score represented well-spaced trees with thick trunks and branches, which tended to be clumped, and had an open canopy and a good field layer of dwarf shrubs. This occurred in native pine forest with spreading, old 'granny' trees ['granny pine' refers to the old, gnarled, broad-crown trees that are commonly found in the relatively open remnant pinewoods]...The PRIN2 score increased as trees became taller, high values corresponding to much canopy closure above 5m and no ground vegetation. A big PRIN2 score described tall closely spaced, mature plantation trees, especially spruces, with a carpet of dead needles'.

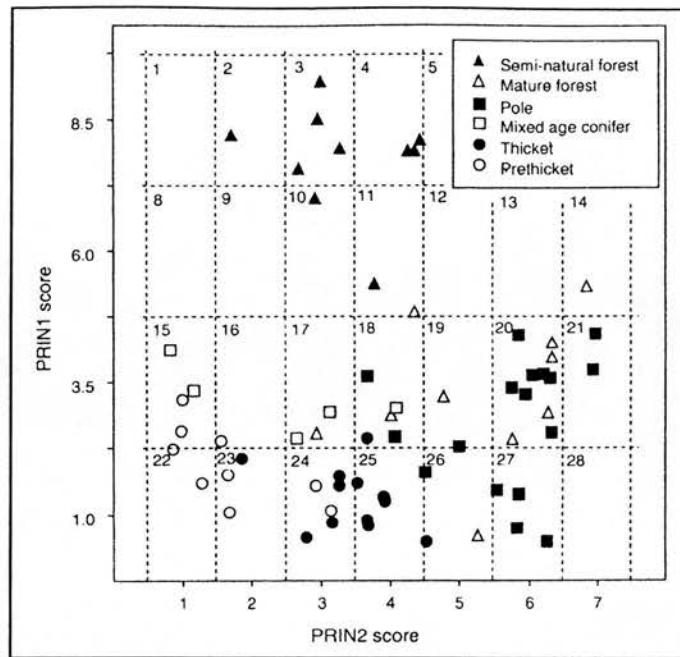


Figure 6.6. A plot of principle component scores for 64 plots in four forests assigned to 'age class', with a grid of 28 numbered boxes overlain. Source: Moss and Picozzi (1994: 19).

Once the PRIN1 and PRIN2 scores of the various classes of forest around a lek site had been averaged and weighted according to the areas of each class, the forest as a whole around a lek site could be given two structural scores, which Picozzi *et. al.* refer to as GRANNY and PLANTATION scores. The GRANNY score is derived from PRIN1 and the PLANTATION score is derived from PRIN2. Because 'a high PRIN1 score...occurred in native pine forest with spreading, old 'granny' trees', the GRANNY score 'was essentially a measure of how closely a forest resembled a typical, semi-natural old forest' (Picozzi *et. al.* 1992: 758). These scores were then plotted against the density of cock capercaillie at the lek sites and after excluding two outliers the correlation between bird density and GRANNY score was significant and positive (increasing GRANNY score is associated with increasing bird density) and the correlation between density and PLANTATION score was weakly negative. The positive correlation between GRANNY score and capercaillie density meant that the more a forest resembled a semi-natural forest the more capercaillie would be expected. Consequently, Moss and Picozzi (1994: 8) argued that 'In general, the findings suggest that forest management for capercaillie should aim to produce a forest structure with features resembling those of a semi-natural pinewood'. Forests that already had a semi-natural structure could be left alone because capercaillie were thought to prefer them, but forests that did not, could potentially be managed to shift them towards the structure of the semi-natural. That is, towards an open character with scattered, spreading trees with thick

sweeping branches, rounded crowns and a good field layer of dwarf shrubs (because blaeberry is recognised as a key food plant).

Ultimately, then, the objective of thinning young plantations is twofold. On the one hand, managers negotiated the ambiguity of minimal intervention and the competing imperatives of protecting and enhancing the naturalness of the site by separating the semi-natural forest from the plantations and leaving the former unmanaged whilst restoring the latter. Intervening in plantations was aimed at enhancing their natural character. On the other hand, it was thought that since capercaillie preferred the semi-natural forest, if the plantations could be thinned so as to take on the character of a more open forest as they matured so more capercaillie habitat would be produced. As such, the concern with naturalness coincides with a concern for the capercaillie. In fact, the work on capercaillie reinforces the distinction between the natural and unnatural by helping construct the semi-natural as the most suitable for capercaillie and plantations as less suitable. More specifically, the work on capercaillie and forest structure actually constructs an image of what constitutes a semi-natural structure.

By superimposing a grid of boxes on figure 6.6, a set of ideal types is effectively produced. Although these boxes were established to develop a key that could be used by forest managers to identify the structural qualities of their forests, it effectively reinforced a particular image of semi-natural forest structure (figure 6.7).

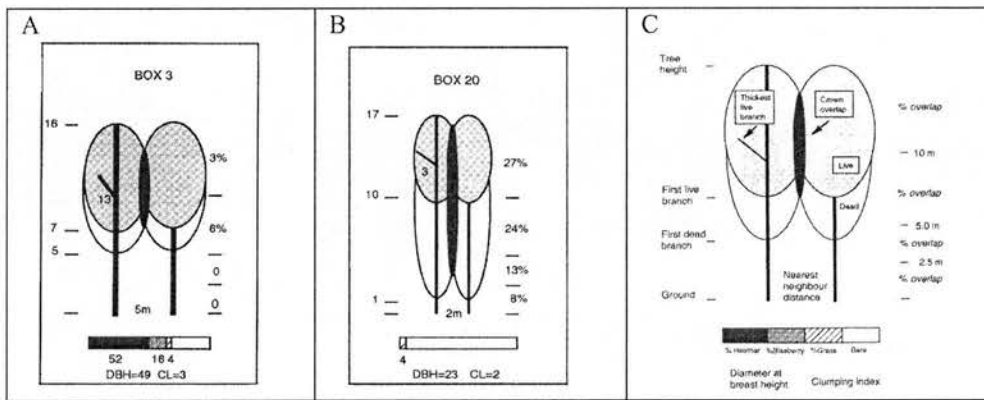


Figure 6.7. Diagrammatic representations of (A) semi-natural stand structure; (B) forests with high PRIN2 scores; and (C) a key for the interpretation of A and B. Source: Moss and Picozzi (1994: 19).

Taking box three (figure 6.7 A), the box which contains the most semi-natural plots, the forest averages 16m in height, the trees are well spaced being approximately 5m apart, they have broad crowns and the ground flora is dominated by heather but with blaeberry present. (Note that this image of semi-natural pinewoods ignores the fact that under recent

definitions semi-natural woodland could also refer to young, dense natural regeneration that appears to be very much like a plantation). By contrast, box twenty (figure 6.7 B) represents a stand with trees much closer together, with great amounts of dead material in the lower canopy and virtually no ground flora because of a lack of light. Thus managers are provided with an image of what they should be aiming at and thus a kind of manual for what practical action they should carry out.

### **The early management of Abernethy**

This chapter has explored the early approach to management at Abernethy. Operating from a concern with the naturalness of the site, the management centred on a strategy of minimal intervention which involved leaving the ancient semi-natural forest sylviculturally unmanaged; enhancing the naturalness of the less natural bits of the forest by restoring plantations and in the process also undertaking work to benefit the capercaillie; encouraging regeneration by culling deer; and felling the plantations of exotic conifers. Crucially, what is revealed by asking ‘why minimal intervention?’ and ‘why those specific forms of intervention?’ is a complex field of negotiation. Concerns with naturalness were balanced against intervention. Concerns for species were balanced against the habitat and naturalness. What happened is that specific strategies were employed and justified by using different discursive resources with respect to different issues. The policy of thinning plantations, for example, was an appropriate form of minimal intervention – even if it involved quite drastic thinning – because a spatial strategy of separating areas by degree of naturalness allowed plantations to be constructed as less natural and amenable to enhancement. Separating natural from unnatural areas and intervening in the less natural ones was a strategy for achieving the dual aim of *protecting* and *enhancing* the pinewoods and was achieved by putting different concepts of naturalness to work in different contexts. Where the naturalness of the already highly natural areas was protected by abstracting human agency, the *natural character* of the plantations could be enhanced by human agency. At the same time, a policy of culling was adopted, even in the near natural areas that were to be left alone, because of the construction of red deer and appropriate management. Culling was the best option – in contrast to fencing – precisely because the forest’s naturalness would be least harmed by the indirect effects of culling, and because a case could be made that culling replicated natural processes and so was not necessarily analogous to direct manipulative intervention. In this way, intervention can be appropriate in one context but inappropriate in another depending on how the issue is constructed and how competing considerations are balanced.

The management strategies set out in the 1991 and 1995 management plans, then, mark the *achievement* of minimal intervention. Minimal intervention does not come pre-packaged, but is worked out in situated practice. Viewed with the concept of rationalisation in mind, minimal intervention can be understood as a compromise where the ambiguity of the position of conservation with respect to rationalisation is reached. On the one hand, it is an attempt to protect nature from the rationalising and controlling tendencies of human impact. On the other, some of those controlling tendencies are evident in the sorts of intervention that are undertaken. It is a resolution of the ambiguity of conservation being both part of and reaction to rationalisation, and it is reached in a very specific way because of the particular circumstances of this one site.

This achievement, however, was not final. As the fortunes of different species and habitats changed and as policies began to have what were seen as negative effects, the ideas that under-pinned early management were challenged. In chapter seven, I examine why and how minimum intervention was questioned; how pinewoods and pinewood species were re-constructed in attempts to achieve new forms of management; and thus how conservation's position with respect to rationalisation was re-negotiated.



# 7

## Managing Abernethy: Re-negotiating Pinewood Management

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### Questioning minimal intervention

The mid 1990s were a period of relative stability at Abernethy. After the policies of minimal intervention were established, their implementation was necessary. As such, the 1995 management plan (RSPB 1995), the first plan produced for the whole Abernethy Forest Reserve, reproduced the policy of 1991. For those managing the site, it was too soon to assess whether the adopted policies were producing the desired results. It was not too soon, however, for others to express their doubts about the appropriateness of the management being undertaken.

Roy Dennis (1995), who was for many years the RSPB's Highland Officer and involved in the purchase of several parts of Abernethy (but who is no longer directly involved with the RSPB), voiced his thoughts on pinewood management in *ECOS*. Drawing upon his experience of forests around the world, Dennis, who is a widely respected and influential figure in Scottish conservation circles, contrasted the forest fragments in Scotland with the larger, richer and implicitly more natural forests of Poland or Sweden and made suggestions concerning how Scottish forests should be restored to become ecologically sustainable. While the proposal to connect the fragments of forest in the Spey and Mar catchments into more contiguous units was welcome, Dennis was concerned that the forests should be managed in ways that encouraged their long-term sustainability. He was 'alarmed that there is too much gardening and over-manipulation in reserves' and goes on to suggest that 'In the end they [i.e. nature reserves] should manage themselves and we should hold the tiller more lightly' (Dennis 1995: 19). Living, as he does, on the edge of the reserve at Abernethy, these comments were no doubt aimed at the RSPB's management of the forest and specifically the policy of thinning plantations to produce open, spreading pine trees similar to the semi-natural woodland. This policy was, for Dennis, misguided because

today's open parkland structure of the semi-natural woodland is itself unnatural: 'the leggy growth of heather in the forest is unnatural, the choking of forest ponds by aquatic vegetation is unnatural and the tall straggly stems of willow are unnatural' (Dennis 1995: 19). The policy of minimum intervention was problematic because, on the one hand, the heavy deer cull, which reduced the grazing pressure, allowed the heather and field layer to grow up in a way that would not occur in a natural forest. On the other hand, thinning plantations to produce what was understood to be a more natural situation when the policy was decided upon, now appeared to be reproducing another unnatural situation because allowing more space between trees and thus allowing more light means that long 'leggy' heather will develop here too and create a relatively uniform field layer across the reserve.

Working from the idea of the semi-natural areas as remnants of naturalness subject to overgrazing – and from the idea that natural systems were relatively stable (cf. Adams 2003a) – it was presumed that if the deer were culled the forests would flourish and that naturalness would be protected/enhanced. But in reducing the grazing pressure, what Dennis saw, was a forest developing characteristics that could inhibit forest processes such as regeneration and that are bad for species such as black grouse and capercaillie. Dennis was, in effect, challenging the minimal intervention management at Abernethy. He was suggesting that the policy being pursued would not actually achieve its own objectives of protecting naturalness and ensuring the conservation of pinewood species, because the increasingly long field layer was unnatural and detrimental to many highly valued species.

Although these thoughts were made public in 1995, it was not until 1997 that these issues came to be central to discussions at Abernethy itself, when further prompting from Dennis effectively began the management planning process scheduled for the winter of 1998/99. There followed a prolonged debate over the appropriateness of the management thus far and the long-term vision and how to achieve it. The result was the 2001 management plan and the apparent shift towards greater levels of intervention. In this chapter, I examine the processes by which that shift occurred.

### **Re-assessing management**

Once criticisms of minimum intervention had been raised, managers were forced to ask whether or not their management policy was actually achieving the desired objectives. To answer this, the managers turned to the gradually accumulating data on regeneration and deer numbers, available as a result of the monitoring undertaken since the culling policy was put in place. On reflection, one of my interviewees thought that 1997 was a crucial moment

in appraising prior management and in appreciating that managing pinewoods was more complicated than just reducing deer numbers, he said:

What we are now learning, really, from about...in terms of date, '97 was quite important because that was...we established the baseline monitoring of tree regeneration in 1988 no 89 time. Looked at it again in '92, looked at it in '97...It was quite obvious that a lot happened in the first few years but we are pretty certain that now, the rate of recruitment of new regeneration, which is a primary aim of the site, has slowed down. Deer are still in quite low numbers, probably even gone down a bit further. But we are not actually getting, rather simplistic, you know, the delivery of new trees. So that was one of the first things that alerted to us that there may be a bit more to managing...pinewoods than reducing deer (Interview H, 30<sup>th</sup> January 2002).

At a presentation in 2002 explaining the changing approaches to management, this realisation was represented in a series of graphs. We must recognise that discussions over the questioning of minimal intervention were taking place in 1997, which means that the data evident in these graphs was less certain. Even so, trends were emerging. The first trend was encouraging and supported the policy of culling deer because as the deer were reduced in numbers so the height of seedlings was allowed to increase (figure 7.1). There was evidence that a reduction in deer numbers was having a real effect on allowing tree growth.

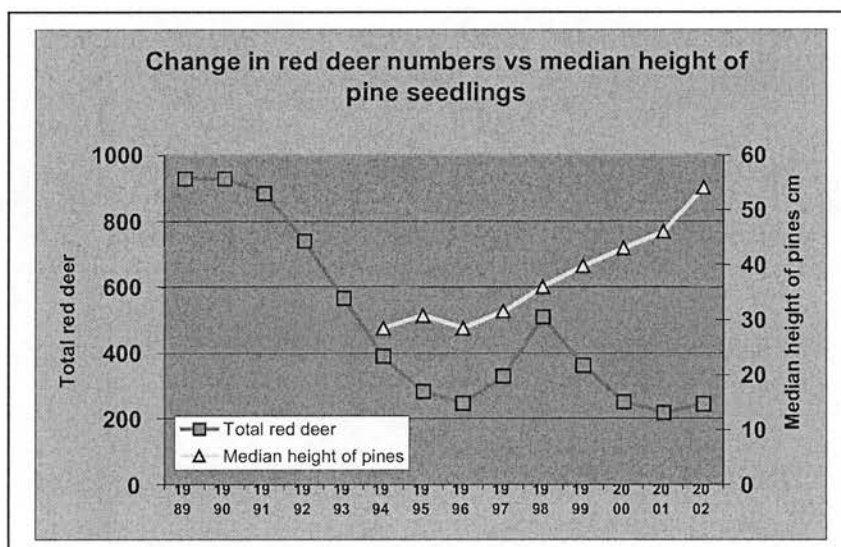


Figure 7.1. Change in red deer numbers vs median height of pine seedlings at Abernethy (Source: Amphlett 2002).

A second trend was, however, less encouraging. The reduction in deer numbers was accompanied by a reduction in the establishment of new seedlings (figure 7.2). The

assumption implicit in the policy of minimum intervention – that if the grazing pressure was reduced the woodland would be given chance to expand – was apparently misplaced because as the numbers were reduced, the rate of the expansion of the pinewood by regeneration was slowing down. Other factors must be working to inhibit seedling establishment.

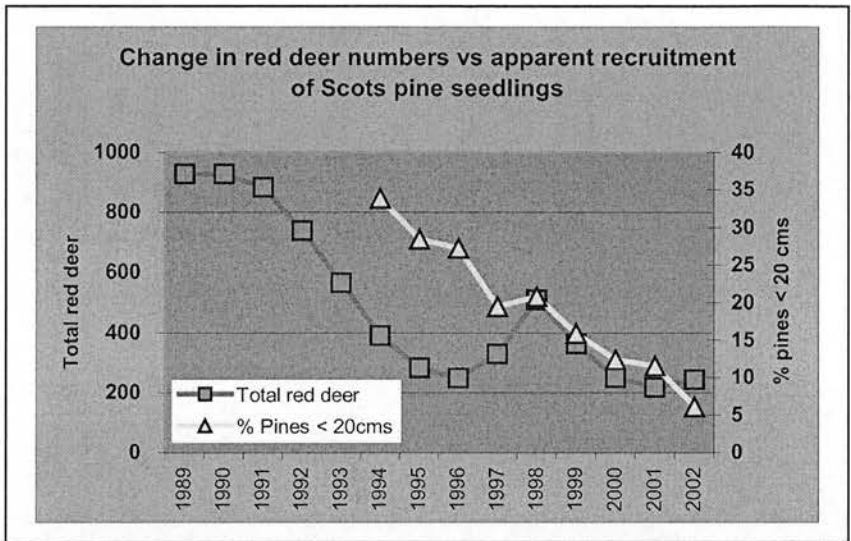


Figure 7.2. Change in red deer numbers vs apparent recruitment of Scots pine seedlings at Abernethy (Source: Amphlett 2002).

A third trend only added to concerns about regeneration. At the same time as deer numbers were being reduced with the resultant effects on vegetation, the black grouse, which did well at Abernethy in the early 1990s, gradually declined (figure 7.3).

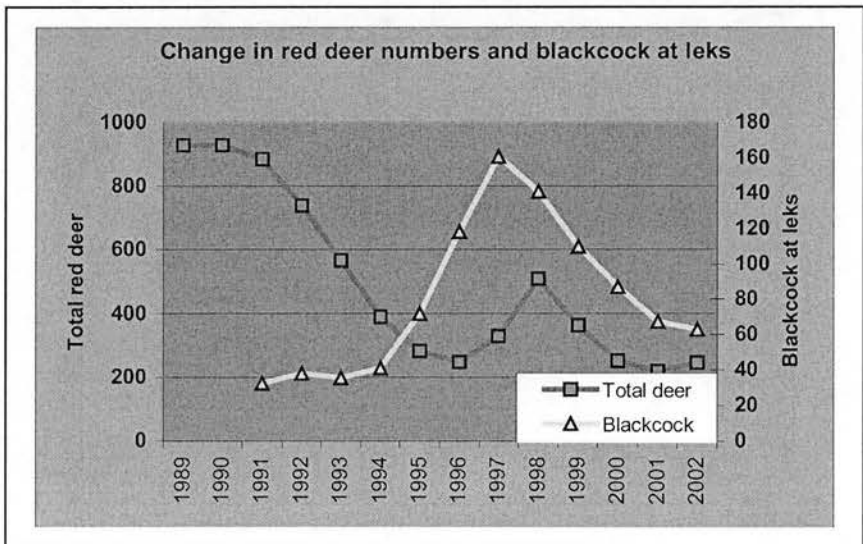


Figure 7.3. Change in red deer numbers and blackcock at leks (Source: Amphlett 2002).

This initial appraisal of management thus appeared to confirm the worries of Roy Dennis and to suggest that the policy of minimal intervention might not actually be the best way of achieving their objectives. To the site managers these data suggested the heavy deer cull was having disadvantageous effects that had to be connected with changes in the field layer:

the general view was that if you prevented the deer from browsing the forest and browsing the regeneration then you would get into the cycle where natural regeneration occurred and everything would be fine. Low levels of mammal intervention and the forest regeneration would occur. I think people have been finding that if you exclose the deer, and Glen Tanar is probably a better example than Abernethy, you get to the point where the dwarf shrub layer gets so long it prevents natural regeneration itself (Interview N, 25<sup>th</sup> June 2002).

Equally, it was thought that a relatively long and uniform field layer was bad for woodland grouse. Research on capercaillie suggested that areas of long heather were important because they provided cover to nest in, but at the same time, it was known that capercaillie exhibit particularly bad productivity in years with a lot of rain in June, when the chicks are young. One interpretation of declining woodland grouse was that the combination of wet weather and increasingly long vegetation was a detrimental one. Moreover, it was thought that since the main food source for capercaillie and black grouse chicks is invertebrates that live predominantly in the dwarf shrub canopy, as the heather and blaeberry grows, so the main food source grows out of reach of the young chicks.

It appeared to the managers, therefore, that the policy of minimum intervention was potentially acting *against* their broad objectives of woodland expansion and ‘conserving the native pinewood ecosystems for their nationally important habitats and assemblages of flora and fauna’ (RSPB 1995). The policy of minimal intervention represented a negotiated achievement where constructions of the pinewoods as relatively natural and subject to overgrazing were connected with certain forms of practice, but as the practice of minimal intervention had unexpected effects so the idea of pinewoods was questioned. Consequently, the changes that were taking place at Abernethy prompted a renegotiation of ideas and policies. The changes prompted new questions. Should minimal intervention continue to be pursued? Should another sort of management be pursued? Should there be more intervention? Should work be undertaken specifically to encourage regeneration or woodland grouse? Thus the original question that was asked when the Forest Lodge section of the site was acquired in 1988 – what is best way to conserve the pinewoods? – was asked again, but, crucially, in a different context.

## **Re-negotiating the nature of pinewoods**

In the early days, the naturalness of the site was one of the prime concerns. Minimal intervention as a broad policy and complex set of practices was put in place to protect and enhance that naturalness. That is, the policy was based upon the idea of the forests being relatively natural but subject to damage from too many deer. It was thought that if the deer were removed, the forests would be returned to a more natural condition. But as a relatively uniform field layer developed and had apparently detrimental results, so that uniform growth was understood as 'unnatural'. Consequently, if the result of the policy was 'unnatural', the idea of the forest upon which the policy was based must have been wrong. This in turn meant that the idea that the semi-natural areas were closest to natural and that their qualities could provide the model for thinning plantations and enhancing naturalness, was also potentially flawed. Accordingly, in order to be able to decide on a new direction for management, the managers had to re-ask an old question: what is natural? They needed to have a relatively clear idea of what it was they were aiming at. As such, the question – what is a natural pinewood? – ran through the management planning process that took place between 1997 and 2000.

This management planning process took place through a series of meetings involving managers, ecologists and specialist researchers. At these meetings, managers attempted to keep their discussions as factually based as possible and avoid the simple expression of personal opinion by pre-circulating briefing documents, academic papers and internal reports in order that they would provide a focus for discussion. Examination of these texts, and reference to interviewee's comments, allows an understanding of the discursive resources called upon in reconstructing the natural pinewood and thus management.

### *The 'New' Ecology*

When Dennis (1995, also see Dennis 1998) challenged the management of pinewoods and of Abernethy, he did so by suggesting that the policy of minimal intervention in the early 1990s was inappropriate because it was based on a false idea of the forest. In making this claim he called upon developing ideas in ecology. Through what Botkin (1990) calls the 'new ecology' and what Worster (1990) refers to as the 'ecology of chaos', ecology as a discipline was undergoing significant change. Until the 1970s, ecology had been dominated by the 'equilibrium paradigm' (Steward *et. al.* 1992; McIntosh 1985). Clements' ideas of succession, for example, although termed 'dynamic ecology', implied that natural systems tended towards order (Worster 1993). Similarly, as E.P. Odum sought to boost ecology's scientific credentials by transforming it into an experimental science based around the

concept of 'systems', the idea of equilibrium was retained. Ecosystems were seen as exhibiting stability and it was thought that if a system was disturbed it would, as a self-regulating system, return to its position of stability. Understood in this way, ecosystems were relatively predictable and could be manipulated by the ecologist or manager. But since the 1970s, the ideas of equilibrium, stability and the 'balance of nature' have been challenged. The new ecology has emphasised the non-linearity of ecological processes and the role of disturbance in ecological systems (Pickett and White 1985; Pahl-Wostl 1995; Zimmerer 1994, 2000). Stability, it is now argued, is rare; ecosystems are in a continual state of upheaval.

It was with reference to these ideas that Dennis argued that instead of simply setting out to protect naturalness as if it already existed and attempting to check any negative influences on that naturalness 'we should recognise that natural events, such as fires, droughts, storms, floods and changes in the numbers of individual species create the mosaic of ecotones within these places. Death, destruction and renewal are part of nature and we should not strive for equilibrium' (Dennis 1995: 19). The policy of minimal intervention at Abernethy was, for Dennis, misguided because it was assumed that the forest would tend towards stability. It was assumed that all that was wrong was that there were too many deer (on the importance of the notion of equilibrium and stability in conservation management see Adams 2003a). Once the numbers had been reduced, intervention should be minimal to protect that stability. But, for Dennis, protecting the forest from fire or from high levels of grazing in uniform ways meant that the forest would take on a relatively uniform structure. Such uniformity was unnatural because the forest would not, under the new ecology, tend toward stability. Rather, forests are in a continual state of upheaval. For Dennis the disturbance caused by fire, storms and large mammals (Dennis 1998) is natural, indeed it is crucial because disturbance processes are fundamental in perpetuating the forest. Fire may burn the forest and the field layer but it creates a seedbed and provides a pulse of nutrients suitable for regeneration and whilst grazing can keep the vegetation in check, hooves churn the soil and dung provides nutrients. So in protecting the forest from upheaval, management was stopping the forest achieve its 'natural' condition.

This rationale was also shared by some of the staff at Abernethy. Calling upon the same developments in ecology – and, I suspect, simply constructing the opposite of minimal intervention – a key point of discussion in management planning meetings was the need for disturbance. In an internal report that reviewed the literature on the role of fire in forest systems, for example, the author, an advocate of the role of fire management, adopts an explicitly argumentative tone:

Fire cannot be ignored in long-term planning as the management of forest ecosystems must take into account disturbance processes as these are an integral part of the ecosystem. The continuation and preservation of natural forests is clearly not being accomplished through the policy of total fire exclusion because fire is part of the natural ecosystem (Proctor 1998: 2).

While fire has long been regarded as an essential element of pine forests (Carlisle 1977; Gimingham 1977), Proctor takes his inspiration from developments in the US. There, fire was suppressed under a policy of minimal intervention because it was constructed as an agent of damage. This policy was reversed, however, after the wildfires in Yellowstone in 1988, which were understood to be caused by the suppression of fire and the resultant build-up of fuel. If fire suppression had resulted in an unnatural build up of fuel, it followed that the normal occurrence of fire acted as a natural means of fuel removal. As such, fire was reconstructed and understood as part of the forest system. Here, Proctor explicitly seeks to reposition fire as an integral part of the natural forest and does so by connecting the lessons from the US with the idea of the importance of disturbance derived from the new ecology. He continued:

Climax communities were once considered to be the most stable in terms of structure, species diversity, fertility and in nutrient production, retention and recycling. Any large-scale disturbance was seen as a 'backward step' as it stopped the forest reaching the climax stage or returned it to the first successional stage. The reverse is now seen to be true. Climax communities are not stable because fire and windthrow initiate successional changes in the community...climax forests are probably rare as any fires in this type of habitat are generally stand replacing (Proctor 1998: 11).

Ecological theories are themselves claims to define the nature of natural woodland and Proctor utilises the 'new ecology' to challenge ideas of stability bound up with notions of climax communities, which are themselves arguably bound up with policies of minimal intervention. Thus debates in academic ecology are called upon and used as argumentative resources by those in Abernethy that wish to argue for different management. In the process, the idea of the natural forest that had underpinned minimal intervention is contested.

This emphasis on disturbance was reinforced by a study of how the current management was effecting invertebrates (Edwards 1999). With reference to the areas of grassland within the forest, the report says that:

The loss of continuity of flowers through agricultural intensification as a major reason for the loss of many insect species has long been well recognised. A similar effect due to over and under grazing of unimproved grasslands has been concerning entomologists for a number of years. 'Leaving it to nature' where



there is no established balance of grazing animals, predators and disturbance agents and, equally, the uniform reintroduction of grazing management have been responsible for the loss of many insect populations on reserve areas (Edwards 1999: 16).

In effect, Edwards is saying that too little grazing can be just as harmful as too much and that the policy of minimal intervention potentially reduced the diverse habitats that a diverse range of species need. What is needed is a diversity of management with disturbance and upheaval. As an interviewee interpreted the report, Edwards

didn't say, oh yeah everything is rosy. He said well yeah, you've got your big objectives, but within that, you know, this species, actually they don't like this lack of grazing, actually they rather like grazing, they like disturbance. These areas where, you've still got lots of deer, they may be eating all the trees but they are maintaining the short grassland that these species like, they are maintaining more open flowery areas for nectar, pollen sources. So it adds complexity. And I suppose one of the watchwords of colleagues in the last few years is 'it's getting more complicated' and of course it is (Interview H, 30<sup>th</sup> January 2002).

The implication was that minimal intervention had created an unnatural situation. A more natural situation would be where some areas were disturbed, some not, and as some areas of bare ground were colonised by regenerating pine, others would be created elsewhere and so on. Reconstructed with the help of the new ecology, natural woodlands contain change and fluctuation, not uniformity.

### *Environmental History*

A second set of discursive resources called upon to re-establish what a natural pinewood would look like were historical. When the RSPB took on the Forest Lodge estate in 1988 the history of the forest was well known (Steven and Carlisle 1959; O'Sullivan 1973; Munro 1988; Grant 1994). Indeed this history, which was derived from documentary and pollen evidence, was referred to in management plans and other documents (RSPB 1991; Conservation Course 1988). But in the first management plan, whilst this past was recognised, it was played down. The semi-natural forest was understood to have remained relatively intact and retained considerable natural qualities despite past exploitation. It was this emphasis on their relative naturalness that led to the policy of leaving these areas silviculturally unmanaged and to their position as the model of a natural pinewood.

This policy and the downplaying of history did not, however, go uncontested. There were some that did not agree with elements of the policy of minimal intervention and in contesting the appropriateness of the policy, they used the forest's history as an

argumentative resource. They brought the history to the foreground. A sense of how the forest's history was mobilised is apparent in conversations recorded in my fieldnotes. As I worked with a member of staff, attaching black barrier netting to a fence around a vegetation monitoring plot, we spoke about his job and how he loved his work but how he hated doing the work he thought was pointless:

He hated the work restructuring plantations in such a way as to produce a structure similar to the broad crown semi-natural woodland we were standing in. For him this broad crown stuff is not natural at all because over a hundred years ago people came in and took out all the straight stuff and left all the knotty, gnarly looking stuff which was not worth as much. So the broad canopy is an artefact of past intervention and restructuring plantations to fit this broad crown idea is gardening; it moves plantations as a human artefact towards a different structure, which is equally the result of human action. The forest as it is, he said, is completely unnatural in the sense that the trees are too sparse. If you go to Poland or Russia the pine forests are much more dense...

This member of staff was of the view that this was a nature reserve and that we should simply cull the deer and leave the rest to develop as it will. So even with a minimal intervention policy for the semi-natural areas, intervention in plantations was too much intervention. Whilst he criticises the set of practices involved in the broad policy of minimal intervention, he is actually in favour of the broad policy; it is just the specifics that he dislikes. Here he refers to past intervention in order to claim the present structure of even the bits of the forest that were taken to be special, as not 'natural' in the pristine sense. They take on a form that has been assumed to be natural precisely because of the past intervention. He does so to undermine the rationale behind restructuring plantations that he would prefer were just left to self-thin.

Similar sorts of argumentative strategies were employed in interviews with others that were uneasy at the policy as it was being carried out. In the following quote my interviewee questions the perception of the old semi-natural areas as the appropriate form for the forest. Comparing the widely spaced trees of the upper forest with the trees that regenerated naturally around Forest Lodge (the old estate house, now the office, where the interview was conducted) he noted:

Some of the Reserve staff's perception of what the reserve should look like will determine their management...but is that the right interpretation. And that is what we were saying last week about looking at the historical side, taking all the historical evidence and then from there combining it with what you see as natural regeneration and saying well, how come natural regeneration doesn't look like the stuff that we have got now...

Andrew: what do you mean by the stuff we have got now?

Interviewee: er well these kind of big broad Granny pines ... those big trees is what I class as the stuff they have got now and looking at the historical evidence ... those big trees are the result of what humans did 200, 300 years ago. The natural regen doesn't look like that, they are tall, straight, quite a small canopy, erm more branches have dropped off naturally, so the form is not the same. That is not to say that you won't get Granny type pines, these big broad canopy pines in a natural forest, you will get them, but probably rarer (Interview S, 15<sup>th</sup> August 2002).

By bringing the history of the forest to the foreground a different idea of the natural forest begins to emerge. Since the past management of taking trees for ships' masts has resulted in the spaced character of the forest, a forest that has not had such selective human management would be naturally more dense. Equally, the actual form of the trees is an artefact of management. On the one hand, as the straight trees were removed so only the gnarled, less valuable ones, were left. On the other hand, as space was created, young trees had a chance to develop in a way that allowed the retention of lower limbs and the development of broad crowns. A more natural forest, therefore, would be more dense and made up of relatively straight, tall trees.

This alternative interpretation of the naturalness of the current semi-natural areas was captured when I asked another interviewee about how a manager knew what a forest should be like (because management has to aim at something). I framed my question in terms of the debates about whether broadly spaced trees are natural, he said:

Andrew: ...some of the remnants that are there are very spaced broad crown trees, and there's a debate about whether or not it should actually be quite dense

Interviewee: umhum, more natural in fact. Because the broad crown grannies are an artefact of previous man and they are really prevalent in Scottish semi-natural woods are they not, because they are an artefact of previous management. If you go to, you know, pristine boreal forest, you get very few of these, only in the odd clearing you get the odd granny, generally the trees are quite dense. More like plantations in many ways I'm told (Interview D, 17<sup>th</sup> January 2002).

Peterken (1993) offers an interpretation of this changing importance of history. He suggests that as recently as the 1980s woodland conservationists and foresters 'still considered that most ancient woods were relatively unmodified remnants of the original 'wildwood', preserved as oases of stability in a changing landscape' (1993: 314). But goes on to suggest that the recognition of human impact on woodland composition means that 'a simplistic view of ancient woodlands is...being replaced by a long history of complex interaction and co-evolution of woodland and local human communities' (1993: 315). This sort of simplistic

reading of accumulating knowledge and changing practice is, however, contradicted by the recognition that the history of the pinewoods was well known in 1988. Whilst it might be true to say that the forest was viewed as a 'relatively unmodified remnant of the original 'wildwood', preserved as an oasis of stability in a changing landscape', it would be wrong to say that increasing historical knowledge simply leads to changing ideas because those managing the site were already aware of the long history of human involvement. The forest's history was mobilised in a political context, for particular ends.

This mobilisation of history by people who did not really agree with the policy as it was practiced was important when it came to the management planning process within which the policy was being re-examined. As both the general policy, and the construction of the pinewoods upon which the policy rested, were being questioned, the history of the forest was brought back to the foreground. The original management plan had acknowledged the site's history in terms of numbers of deer and timber extraction but had retained the notion that the semi-natural areas retained natural qualities and that they represented a continuous link with past naturalness. But by 1999, a report entitled '*The History and Ecology of Abernethy Forest, Strathspey*' (Summers 1999) retold the history of Abernethy with reference to maps reproduced from O'Sullivan (1973) and concluded that 'much of Abernethy Forest has been cut during the last 250 years so the idea that there had been continuous tree cover since the last glaciation can be dismissed' (Summers 1999: 10). The history of the forest is brought back to the fore and the semi-natural areas are reconstructed.

Quite how this worked to reconstruct the natural pinewood can be seen in other documents. One such document, circulated prior to meetings in 1997, discussed the 'Future Structure of Abernethy Forest' (Anon. 1997). In it, the objective of management was restated in terms developed by Peterken (1996: 13), as the development of an 'original-natural' forest. (One year later this objective had changed to the development of a 'present-natural' (Peterken 1996: 13) forest because it was thought that recreating an original-natural forest was probably impossible because of changes in climate.) Defined as 'the state which existed before people became a significant ecological factor', 'original naturalness' was constructed by detailing past intervention and what effect that intervention had in altering the characteristics of the woodland. In this way, natural woodland was constructed as exhibiting the opposite characteristics to those that were anthropogenically derived. If people had removed trees and created a stand structure that is characterised by widely spaced trees, a more natural forest would be more dense. Since certain owners in the past disliked birch and had it removed, it is likely that there was a greater proportion of birch. And since people had kept deer numbers high and deer prefer to eat broadleaves before conifers, it is likely that a

more natural pinewood would contain more broadleaf trees. It was, therefore, presumed that if the effects of intervention could be reversed, the forest would move towards a more natural condition. In thus reconstructing the present forest as relatively unnatural – as one of my interviewee’s remarked ‘it is not near natural, untouched, you know, these woods have been in a way devastated by heavy felling’ – a new picture emerged of what a natural woodland should look like. There would be species which are now extinct from Scotland that would have been ‘important members of the natural pine forest in that they influence the structure of the forest (moose), rivers and riverside vegetation (beaver) and impact on large herbivores (wolf)’ (Anon. 1998). There would be a higher density of pines and there would be a higher proportion of broadleaf species. There would be large amounts of deadwood, a diversity of forest cover with some areas not forested at all and there would be natural processes associated with the effects of fire, wind, snow, drought and disease.

### *The Natural Analogue*

A third discursive resource called upon in the questioning of minimal intervention and in attempts to re-define the nature of a natural pinewood, comes from studies and experience of natural forests elsewhere. One of my interviewees made this clear in speaking about creating a woodland of natural character. These more natural forests are in Scandinavia or further east:

we wanted to try and develop a woodland of natural character. You know, what’s natural? A glib question, it’s a very important question but its an easy one to ask but um. That’s quite crucial and I had a bit of time ... to put together our thoughts and what we knew about the situation abroad and what we’d read ... you know, characterising the sort of attributes and the processes in a more natural boreal forest which is our sort of analogy for Abernethy. So looking to Scandinavia and then further East. So we have a picture of – not going back, you know not putting the clock back or anything like that but erm, time marches on – the sort of features that we would like to see more of at Abernethy and those we would argue we would like to see less of, the sorts of processes that support that, which often revolve around disturbance, so things like fire are very much in people’s minds (Interview H, 30<sup>th</sup> January 2002).

The more natural forests of other places thus become models for Abernethy. Nearly every interviewee made reference to the forests of other countries not being exploited as much as the forests in Scotland and that they were, thus, closer to their ‘natural’ condition. This is environmental history as the geographical present. Looking to forests in other countries is to look back in time within Scotland. Other countries are less advanced in their exploitation, yet, as time progresses those natural forests seem to recede into the east. In speaking about

the possibility of simply letting natural processes, such as fire, free reign, an interviewee said:

We basically say that the native pinewood is simply too small to manage in that way. It was OK when it stretched halfway from here to Aberdeen...As it does in some parts, not many parts of Scandinavia now, but once you get into Russia and things (Interview H, 30<sup>th</sup> January 2002).

To get a better idea of what a natural woodland is like one had to go east to places where there are tracts of forest big enough to have retained large mammals and their natural processes. It was with this purpose in mind that in 1998 a party of RSPB staff, along with some from the Forestry Commission, visited Norway to 'obtain information about the structure and conservation of near-natural pine forests' (Campbell *et. al.* 1999: 3). Similarly, in 2002 a field visit was organised to Bialowieza, Poland. When I asked how important such visits were to the work at Abernethy, one interviewee suggested that they helped raise the eyes from the immediacy of day-to-day management:

What I took from Poland in particular in terms of a specific issue was the importance of deadwood because the ratio, I mean we are quite well off for deadwood in Abernethy but the ratio of deadwood to live wood over in the Polish forests is far higher than here and it creates so many niches in terms of birds, there are several woodpecker species there and you see them all over the place, ...and there is so much biodiversity associated with that, that that was a real eye-opener for me. And you almost wanted to come back and kill the whole forest [laughs] because it just created so much life. It was great, a real real eye-opener (Interview P, 8<sup>th</sup> August 2002).

The attributes of this more natural forest were contrasted with Abernethy in order to provide goals for management. But more than this, as the managers were also working with ideas of disturbance emphasised in the new ecology, so these more natural forests exhibited all the processes that they might expect:

you could see all the processes going on. You could see acorns lying on the ground, you could see young oaks coming through, you could see oaks that were 500 years, 10 percent dead and you could see woodpeckers all over them so I suppose that is what we are aiming for...and it helps if you have got big mammals running about, they make a huge difference to the forest (Interview P, 8<sup>th</sup> August 2002).

### **Negotiating new directions**

The discussion that the questioning of minimum intervention fostered, concerning what constituted a natural woodland, resulted in a new image of the natural pinewood, or at least

the ascendancy of one image over another. Interwoven with this new image was a set of attributes and processes which would be expected to be present. Consequently, this new image opened up for debate questions of whether or not management should work towards restoring those attributes and processes. Should broadleaf species be encouraged? Should fires be left to burn? Should plantations be left to self-thin because a natural pine forest would have a higher density anyway? Should a few of the big old trees be killed to increase the amount of deadwood? How can lost processes of disturbance be replicated? Should the deer culling programme develop in a much more complicated way?

These questions returned the managers to issues of naturalness and intervention. Even if the new idea of a natural pinewood suggested new forms of management involving fire or grazing, should they be undertaken? Could human manipulation make the forest more natural? Or should a policy of minimal intervention be continued? There were, on these issues, different positions that reveal the extent to which finding a way forward was a process of negotiation. For some, even though they recognised that minimal intervention had negative effects (at least in the short term) and that the forest had a long history of human influence, minimal intervention was still the way forward:

Andrew: Last week you said, well we talked about several things, one was like the only natural thing you had seen in the forest was when the Nethy changed course – I went and had a look and it was impressive, and other things like sometimes you sit back and say ‘Nooo, just let it go’... and I just wondered where you stood on naturalness and intervention in the forest. How far should we be intervening?

Interviewee: I would probably put myself in the non-intervention camp. So maybe not pure sort of non-intervention as such, probably minimalist. So we obviously, we are keeping tracks open, so I would say if a tree falls across a track you would maybe cut the centre out of the tree, take that centre up and throw it to the side. So you are not taking anything off the site but with the tracks are still usable or for health and safety reasons you might have to cut something down, but other than that I would say .....very very little human intervention (Interview S, 15<sup>th</sup> August 2002).

This interviewee went on to contextualise this self-positioning in a non-interventionist camp by indicating that for him, naturalness, in the sense of a lack of human involvement, rather than whether the forest conforms to our ideas of what a natural woodland ‘should’ be like, was crucial:

Andrew: so if the forest is the result of human impact, why leave it alone all of a sudden?

Interviewee: I...yeah...erm ...well the way I think about it is that the trees that we have got now, rather than trying to correct the mistakes which would then leave gaps that may not have occurred there naturally, that we should just say well OK what we have now is the result of three hundred years worth of human impact, but rather than say well we are going to continue that, by managing and cutting out some of the trees that we don't think look the right shape, then we should stop all management, let these trees get to their old age and eventually die and then what will be replacing them will be these newer type trees, the plantation type trees that folk consider aren't natural [but which are considered to be more natural under the new image of a natural pinewood] (Interview S, 15<sup>th</sup> August 2002).

Where others might suggest that management could be undertaken to make the forest take on a more natural character, this interviewee would argue that if the forest is left alone and given sufficient time, it would take on the more natural form. Even though the forest is the result of human influence, leaving it alone will allow it to become more natural in both the sense that it takes on a natural form and in the sense that it exists outwith the control of people. Moreover, if the forest is left alone, the processes that are now understood to be so important will be perpetuated. One interviewee – who positioned himself with the non-/minimal interventionist camp by saying ‘I would still overall push that this site should be left to manage itself as much as possible apart from the deer control’ – made precisely this point. He did so in a way that illustrated the flexibility of argumentative positions and the way that speakers can utilise new argumentative resources. In this case, the speaker calls upon the concept of biodiversity and thus illustrates the way that arguments about practice at Abernethy are situated in a wider context. Minimal intervention is preferable because:

you will get your maximum biodiversity by leaving these trees to become old naturally and die. Whatever you look at, whether it is beetles, fungi, lichen, there are quite often more things associated with a dead tree than there are with a live tree and what we don't want is a forest of dead trees. But if you let nature take its course, if we go in to thin there we don't know that that tree is not the next one to die. So if you started thinning what you interfere with is this natural process a long-term supply of deadwood. You know freshly dead, long-term dead, collapsed dead, so all this cycle of deadwood, that's where the richness comes in (Interview R, 15<sup>th</sup> August 2002).

Interventionist management to make the forest conform to the new idea of the natural pinewood would, according to this interviewee, risk interfering in processes that are best left to nature. A richer, more biodiverse forest results from letting nature take its course. The alternative of trying to manipulate the forest so that it conforms to our idea of a natural forest raises the spectre of always chasing the ideal: intervention would never stop.



For others, though, since minimal intervention had negative effects, continuing with that policy was clearly not an option. Abstracting human influence after a long history of such influence did not, for many, make sense:

Andrew: I was just reading the paper by Edwards on invertebrates saying that grasslands needed to be grazed, heather needed to be shorter in certain areas and longer in others, that verges towards suggesting that you need to have management in different areas for different things in different ways...is it verging that way?

Interviewee: I think it is moving, it's not there yet, certainly not in terms of the semi-natural remnants, but it is moving in that direction, but it might not get there, but I suspect it will in ten, fifteen years time we might be doing quite a bit more of that, perhaps soon. In terms of the burning, perhaps sooner. Personally, I'm a.....I suppose I would be in the interventionist camp, but I can appreciate the caution involved in the arguments...

Andrew: why would you put yourself in the interventionist camp?

Interviewee: because I'm not convinced that any part of the United Kingdom, British Isles is not heavily influenced by man and er...if we are going to achieve any particular objective in the future, human intervention will play a part in achieving that objective. The only, where it might not is perhaps the high tops of the Cairngorms where we don't do anything and I've never had any reason to do anything...but down in the woodland...people think of Abernethy as a place which has not been managed but the reality is that it has been hugely intensively managed for four or five hundred years. I don't see why...all the plants and animals that exist here have evolved through that management, I don't see why we should stop intervening now...to some extent (Interview P, 8<sup>th</sup> August 2002).

This interviewee broke off from talking about the trend towards more manipulative management to position himself in continuing debates about that trend. For him, and others that position themselves in the interventionist camp, human intervention plays an important part in achieving the goals of nature conservation. As such, there is less of a problem with manipulating the forest so as to conform with the new idea of the natural pinewood. Another interviewee put his argument more forcefully and extended the emphasis away from re-creating a natural pinewood to managing for species:

I think on some sites people want to, have still got this idea of you know you leave it alone and lets see what happens. Or there are other people wanting to manage it actively. So I think there are still differing opinions in nature conservation circles about how to do things and in fact what we are trying to do. I'm definitely in the camp: what we've got is not natural, we should be managing it and we should for...we can't manage it for everything I don't think, we need to manage it for what we want to manage it for and we shouldn't be ashamed of saying that. ... I think generally speaking it's a cultural landscape and if we want to have lots of capercaillie I think we know how to do that,

notwithstanding weather problems etcetera. We shouldn't be ashamed of saying we are managing this reserve for these birds and creating a natural forest as a secondary aim because its almost an impossible thing to do isn't re-creating a native woodland (Interview D, 17<sup>th</sup> January 2002).

For these interviewees, minimum intervention, as others advocated it, was not acceptable because it would mean accepting whatever happened. If the forests were left to become more natural over time, for example, it might be the case that particular species would be negatively affected in the short-term. Such an approach was unacceptable because there were specific stated objectives, such as protecting pinewood species, which should be worked towards. For some that advocated intervention, people have the ability to intervene in ways that allow balances to be reached. A pinewood of natural character could be developed, whilst at the same time protecting species. For others, because they draw a sharp line between the natural and the cultural and see any human action as corrupting nature and see human influence everywhere, the concept of naturalness should be ignored. We should simply decide what we want and set out to achieve it.

The reassessment of the policy of minimal intervention in management planning meetings through the late 1990s opened up, therefore, a complex arena of negotiation. As the constitution of a natural pinewood was discussed, questions of objectives were raised, and as objectives verged into issues of intervention and naturalness so broad argumentative positions on appropriate management developed. As one interviewee put it, if I sat in on the next management planning meetings, he thought I would witness:

a real tussle between the broad brush approach – and the broad brush approach ultimately produces the naturalness, or some components of it – and the...gardening's a little unkind, but the maintenance of individual features or, which may support some species, or the actual species themselves (Interview H, 30<sup>th</sup> January 2002).

### **Complicating the negotiations: the importance of species**

There were, however, broader developments that impinged upon these negotiations. It was not the case that different people simply argued the case for different approaches with the outcome influenced by the strength of the argument or the power of the speaker. Rather, these arguments were influenced by such things as the development of the biodiversity process and objective-led planning. Those that were more inclined towards intervention, for example, found resources in the development of objective-led approaches to conservation. For them, minimal intervention was problematic because it meant accepting some of the negative effects of the policy in the short term. But, as an interviewee noted:

that slightly relaxed attitude to the waxing and waning in the fortunes of different species is...is less easy under the whole Biodiversity Action Plan, species action plan-type world in which we live. And that's probably a good thing because it can be slightly sloppy, you sort of end up with a ... whatever you end up with is OK, and that's not the best way of site management (Interview H, 30<sup>th</sup> January 2002).

If minimal intervention was a means of developing a more natural pinewood in the untouched sense, it potentially meant standing by as some species, that had prospered under a more manipulative regime, fared less well. But in the context of a very focused approach to conservation, such broad-brush management can appear 'sloppy'. The development of action planning thus influenced the arguments between the interventionist and minimal interventionist camps at Abernethy.

This is perhaps most evident with regard to the capercaillie. Reflecting on some of the subtle changes in emphasis at Abernethy, one of the members of staff suggested that 'all along, consistently for all the management plans, the primary objective was the expansion of the woodlands by regeneration...there is no debate on that'. But he went on to say that:

In more recent years probably from about 95, 96 you will see that individual species requirements particularly key birds like capercaillie and black grouse have a far higher profile. They were perhaps not mentioned in the early plans except for being mentioned as key species in the forest...they weren't getting specific mention in the policies or specific mention in the prescriptions to meet their needs. But they are far higher up the profile now because they have declined. You know since the last national survey there has been a 50% decline of capercaillie in the last 8 or 10 years you know. So the requirements of these key species is higher up on our agenda than it was ten years ago (Interview Q, 13<sup>th</sup> August 2002).

As the capercaillie became incorporated in the biodiversity action planning process – and, importantly, was understood to have *declined* – it became more central to questions of appropriate management. As such, questions of species management began to impinge on questions of how to manage Abernethy with regard to the concept of naturalness and the changing idea of the natural pinewood.

More specifically, it was understood from research on the capercaillie that blaeberry was one of the key plants because of its associated invertebrates and because its foliage, stems and berries provide important foods for adults and older chicks. Yet as Petty pointed out:

In open, semi-natural pinewoods there appear to be two problems. In woodlands with heavy grazing pressure there is often quite a lot of blaeberry, but in common with the rest of the vegetation it is short and offers little shelter for

broods, and arthropods are scarce. In contrast, excluding deer by fencing or by reducing densities through culling results in the vegetation becoming increasingly long and dominated by heather. In addition to the loss of blaeberry, young chicks appear to find it difficult to manoeuvre in such tall vegetation (Petty 2000 n.p).

The situation in Abernethy, with its long 'leggy' heather, resulting from high rates of culling, was potentially causing problems for the capercaillie. With this sort of situation in mind, Petty suggests that,

it may be undesirable to just 'let nature take its course', as heather is likely to become more dominant as the nutrient status of sites decline and stands become more open. Consideration needs to be given to how the ground vegetation can be better managed in these stands, including management options that will increase nutrient cycling and in so doing lead to a revival of blaeberry and provide better access and foraging for broods (Petty 2000 n.p.).

Minimal intervention was again challenged. If nature is left to take its course, the pinewood field layer could develop in ways detrimental to the capercaillie. Consequently, another strand of the debate at Abernethy centred on what could be done for the capercaillie. Since fences had been removed or marked and predators were being controlled and the species was *still* declining, consideration began to be given to the potential ways that brood habitats could be improved. But all of the options of encouraging blaeberry and a diversity of field layer habitats – which included controlled burning, tractor mounted swiping and cattle grazing – were highly manipulative and potentially contradicted any notion of naturalness. In this way, specific management for one species could be seen as contradicting the broad objective of managing the pinewood and achieving a woodland of natural character. For some, direct management for the capercaillie would mean that the broader picture of the whole suite of pinewood species that constitute the habitat would be ignored and that the pinewood would become a 'capercaillie farm'. As such, the managers had to negotiate a dilemma that was indicated by one of the managers:

One of the dilemmas for us is that we have got to continue with our primary objective but we have got to fit the secondary objectives into that primary objective, and that has caused a wee bit of concern for some of our colleagues. Because there is no question that we we're capercaillie farming here, we could do a lot more for capercaillie but would that be jeopardising the key principles of biodiversity and forest expansion. That's up for grabs and some people argue that it does compromise your primary objective, other people argue that it shouldn't do (Interview Q, 13<sup>th</sup> August 2002).

With the concept of naturalness in mind, there was clear consensus that there should not be large-scale intervention to attempt to boost the numbers of capercaillie, but there was still

discussion about the degree to which work could be undertaken for the capercaillie whilst not compromising the broader objectives and naturalness.

### **Achieving a resolution: towards 'natural' management tools**

Those that preferred a policy of minimal intervention were fighting a losing battle. A more clearly objective-led conservation brought with it the imperative of action and intervention and the plight of the capercaillie suggested the need for some form of immediate management. Everybody in conservation – even those that would prefer minimal intervention – would see the world as a poorer place without the capercaillie and say that we should do all we can to save it. The argument that the site should be left to manage itself, apart from deer control, was thus seriously undermined. Consequently, as the planning meetings continued, the discussion centred less on abstract arguments about intervention and more on what could be done. But whilst it looked like those in favour of intervention had won out, it is not the case that the concept of naturalness was thrown out and rampant intervention pursued. The particular forms of management that were proposed represented a compromise that attempted to balance intervention with naturalness and management for the capercaillie with management for regeneration and the pinewood more generally.

As discussions about what to do continued, they were increasingly informed by the reconstructed idea of what a natural pinewood would be like. In contrast to the idea of the pinewood that underpinned the initial policy of minimal intervention, managers were now influenced by the new ecology and recognised the importance of disturbance in forest systems. Natural forests would experience the effects of fire, storms, disease and grazing animals. They therefore asked whether these processes could be encouraged at Abernethy. The answer was no. Concern with natural processes and natural forests had to be negotiated with reference to the specific situation at Abernethy and the fact that the site was recognised to be far from the natural ideal. The circulated document entitled '*Attributes of a present-natural pine forest in Scotland*' (Anon. 1998 n.p.), for example, said that '[g]iven the small size of Abernethy Forest, it is perhaps unwise to allow fire to engulf a large proportion of the forest, even though there may be long-term benefits'. It was argued that fires could easily destroy the majority of the forest that was valued the most. Whilst disturbance was needed for the perpetuation of the woods, too much disturbance would potentially 'be detrimental to the site and resource of this habitat in Scotland' (Anon. 1998 n.p.). Thus if a natural fire started, it would still be put out because of the risk to the forest. The managers were left in a position of accepting the need for disturbance but not being able to allow it if it occurred because of the potential harm that it would do to the forest. Similar problems existed with

grazing. Because there were no natural predators left for deer or sheep, they had to be controlled.

The apparent impasse between wanting to see disturbance but also wanting to protect the 'resource', was overcome by developing the notion of 'controlled disturbance'. Since the principle means of disturbance in forest systems were understood and effectively being limited under the policy of minimal intervention, managers began to consider the possibility of controlling the means of disturbance to achieve specific ends. That is, they began to consider being able to not only control unwanted disturbance, but also to be in control of where, when and to what end disturbance occurred.

This line of thinking was influenced by wider developments. In the US, for example, fire had been understood as an agent of damage but was reconstructed into an essential element of forest systems and then reconstructed again to be an effective means of preventing wildfires. Relatively small fires that burn the forest understorey but leave the forest standing are now employed to remove the fuel that would feed extremely large and devastating fires. Prescribed burning has become accepted practice. Likewise, moorland in the UK has been comprehensively managed for grouse by burning areas to provide a mosaic of feeding and breeding habitats. In these ways, fire is controlled and used as a management tool to achieve specific results. With these sorts of management in mind the managers at Abernethy considered the possibility of replicating disturbance by fire, which would occur in a natural pinewood, in a controlled way. The long, 'leggy' field layer could potentially be removed, providing a pulse of nutrients and areas for pine regeneration and blaeberry.

Similarly, if one of the agents of disturbance in more natural pine woodlands would be grazing animals, then broader developments in conservation practice provided impetus for consideration of the re-introduction of large mammals to graze the forest. Since at least the use of cattle to halt successional change on Woodwalton Fen in the late 1960s (Duffey 1971), cattle have been used as a management tool to achieve specific ends. Cattle could be used to prevent the spread of scrub woodland or to achieve a specific sward height before the breeding season for wading birds, or, as the managers saw it, to check the growth of heather and to churn up the mossy ground in the pinewood so as to provide niches for pine seedling establishment. When I asked why cattle were being considered for re-introduction in the context of a heavy deer cull to reduce grazing, one manager put it in straightforward pragmatic terms:

well basically deer are rather less manageable ... wild cattle certainly occurred within woodland and erm the archaeological record is a bit ropy, I don't know exactly where it used to be ... although it's probably more biased towards lowlands and broadleaves and richer woodlands, so it may or may not have

been at Abernethy, they were probably in some pinewoods. That's a bit of a dead end sort of argument. So there was quite a debate as to whether it is actually a good idea to put in, effectively substitutes for extinct mammals which would have had a different role within the ecosystem and then we don't actually have a properly functioning ecosystem because we don't have all the keystone mammals, we don't have some big predators, we don't have wolves, we don't have wildcat, we don't have wild boar. ... So we've rather put that to one side because we can't answer it. It's a good one for debating but you can't really decide erm so what ... so how we really look at it now is as a tool, management tool, it's a chainsaw, it's cows hooves. So we are approaching it in a less romantic view as simply a management tool. And one can manage, you can have twelve animals in five hectares for three weeks or whatever (Interview H, 30<sup>th</sup> January 2002).

Putting questions of naturalness to one side, cattle were viewed in instrumental terms. The cow is, like a chainsaw, a tool. By utilising these tools, the heather could be browsed back and the soil churned up or small patches burned in ways that did not pose a threat to the forest.

In this way, managers sought to find and discuss new forms of management based upon the new idea of the natural pinewood. In the process, disturbance processes were added to the conservationist's armoury of management practices and the 'new ecology' was brought within the compass of managerial and manipulative nature conservation. While this developing field of ecological knowledge emphasised the chaotic nature of natural systems, and thus posed difficulties for the technocratic manager, by emphasising particular parts of that field of knowledge and ignoring others, it was translated into a model of conservation managerialism based on order and predictability. In this way, the new ecology was translated into an argument for yet more sophisticated and elaborate forms of manipulation. Far from undermining the technocratic manager, the new, more complex ideas of natural systems were incorporated within the technocratic discourse: the belief in the ability of the manager to comprehensively manipulate only deepens (this is what Murphy (1994) and Adams (1997) refer to as 're-rationalisation'). Thus where Dennis (1995) brought the notion of disturbance to the foreground in order to argue for the introduction of cattle so that the system could gradually be left alone, the resultant focus on disturbance was translated into the interventionist and manipulative nature conservation model. Disturbance came to be understood as a natural process that could be replicated by the controlled use of new 'management tools' and thus a new means of actively developing a pinewood of 'natural character'.

This was not, however, an unfettered interventionism. Questions of quite how they should intervene were still being balanced against issues of naturalness. The sorts of management that were being considered were not simply instrumental responses to a

problem. They represented, rather, a balance between trying to find ways of rectifying a problem (the lack of disturbance and the long uniform field layer) and the desire to acknowledge the site's naturalness. Whilst it would appear that as those that were happier with intervention gained ground, the concept of naturalness as natural character became more important than naturalness as the absence of people – thus allowing intervention to make the forest more 'natural' – the use of discursive resources is more flexible than that. In arguments about intervention, the history of the forest was brought to the foreground in order to emphasise the presence of people and their influence, and thus argue that the abstraction of human influence did not necessarily make sense and that people could continue to manage. But this did not mean that the concept of naturalness as the absence of people was then ignored because the same people that argued for intervention then called upon that concept of naturalness when they discussed specific forms of intervention. This is most obvious in the way that fire and grazing were being considered and not more artificial forms of intervention. Forms of management which distance the results of management from people were preferred:

I don't have a problem with intervention, provided we always have this in our mind that you know we intervene using as near natural prescriptions as possible. For example, we get the cattle in perhaps to do a job as a surrogate for the reindeer or the elk or whatever would have done that job in the past. Provided we don't, we manipulate the forest, but we don't do lasting damage. We might create a seed bed by burning or having cattle in but we probably wouldn't dream of having a JCB in to create a seed bed because that is certainly not natural whereas the burning and the cattle are mimicking natural processes (Interview Q, 13<sup>th</sup> August 2002).

Whilst people are responsible for the sort of disturbance that could be employed and thus the end result, the physical change is at least once removed from the actions of people themselves. In this way, the result is more 'natural'. The manager might be able to control the general area that cattle are in, but will allow them relative freedom to roam and thus disturb certain areas more than others depending on their own preferences. Equally the manager might be able to control the area of a fire but the pattern of heavily burnt and less burnt areas and long term effect is less under their control. The fire and grazing involved in controlled disturbance are therefore framed as 'managed natural processes' and Abernethy comes to be understood as a 'managed natural site'.

The sorts of management being considered thus represented a compromise that was acceptable to both those that would prefer less intervention and those that were relatively happy with intervention. Management by fire or controlled grazing was acceptable to those that were sceptical about the need for human intervention because it was more 'natural'. This



positioning is obvious in the words of an already quoted interviewee. Whilst he positioned himself in the 'non-intervention camp', he went on to say that managing with cattle and fire were still things that he would consider:

I would probably put myself in the non-intervention camp. So maybe not pure sort of non-intervention as such, probably minimalist. So we obviously, we are keeping tracks open, so I would say if a tree falls across a track you would maybe cut the centre out of the tree, take that centre up and throw it to the side. So you are not taking anything off the site but with the tracks are still usable or for health and safety reasons you might have to cut something down, but other than that I would say .....very very little human intervention. Erm still thinking about cattle and fire because they are more natural if you know what I mean. I feel that they are more natural in the sense that they are doing something which would have occurred in nature, whereas chainsaws...well chainsaws don't exist in nature (Interview S, 15<sup>th</sup> August 2002).

While classifying himself as a non-interventionist, this speaker was happy with forms of intervention that were more natural because they represented the restoration of processes that were missing from the present unnatural pinewood. In this way, we can see that discursive resources are called upon in flexible ways in different contexts in order to achieve acceptable outcomes. Those that positioned themselves in the interventionist camp and emphasised the achievement of natural character and thus could be understood as opposed to the view of naturalness as the absence of people, actually called upon the discursive resources of the concept of naturalness as absence of people. Similarly, those that positioned themselves as non- or minimal interventionists and wanted to see the achievement of natural character through the abstraction of people, also called upon the notion of achieving natural character by intervention. Arriving at a route forward is, in this way, a negotiated achievement.

But more than this, the achievement of an interest in controlled disturbance and 'natural management tools' was attractive because it also potentially offered forms of management that could be employed specifically for the benefit of the capercaillie. Capercaillie were not doing well for many reasons but it was thought that changes in the field layer due to the heavy deer cull, were significant. The field layer was becoming uniformly taller and dominated by heather, but capercaillie were thought to require a mosaic of habitats and to prefer blaeberry over heather. Since these changes in the field layer were brought about by the lack of disturbance, the re-introduction of controlled disturbance could potentially be targeted at achieving the optimal conditions for the struggling capercaillie. Managers began to wonder whether burning, for example, could be used as a means of reducing the dominance of heather and increasing nutrient cycling and so encouraging blaeberry.

Instead of coming into conflict, species management coincides with habitat management. The worries of some that managing for the capercaillie would result in the pinewood turning into an artificial capercaillie factory were potentially allayed because the sorts of management that could be undertaken could at the same time be understood as replicating natural process and thus working towards natural character. While such management is still manipulative and oriented around actively working to achieve natural character instead of letting it develop without human influence, it is not entirely artificial.

The importance of the coincidence of management for the capercaillie with that for the habitat and regeneration can be emphasised with reference to how work for rare dragonflies was probably not going to be undertaken:

the dragonfly people got quite annoyed with us because we wouldn't...down in Garten wood we recreated the wet woods by blocking up the drains, way ahead of the European funded ones and we created this large areas of initially open water because they had drained then. So what we had is open water which isn't really what the wet woods is about. Usually it is a sphagnum or peat covered site, but of course the dragonflies on one or two of these sites went through the roof, red data book DB3 I think [scientific name] there were a hundred on one pool one day. The dragonfly people come and say well 'it is getting all sphagnummed over, are you going to go in there and break it all up' and I say 'well I don't think we will be'. And so the population probably has started to go down again, they are still there, but what we have probably done is we have optimised it by what we did and you have probably got to come to some level of agreement (Interview R, 15<sup>th</sup> August 2002).

Decisions about the level of appropriate intervention are made in the context of complex interconnected concerns. Intervention for the capercaillie is perhaps appropriate because of the imperative of decline, but also because of the way that it coincides with work for the habitat in terms of regeneration and woodland processes. Intervention for a dragonfly on the other hand raises the prospect of intervening for individual species alone. The level of intervention is negotiated with reference to specific instances of practice, species and habitats. Thus achieving appropriate management is continually being worked out in practice.

### **Moving towards a change in management**

While it appears that much of the discursive work of reconstructing the idea of a natural pinewood, and thus reconstructing possible management options, has been accomplished, it is not the case that new forms of management are simply undertaken. Rather, debates about appropriate action have been channelled into the 'regime of practice' of planning and are (if we recall the move, detailed in chapter four, towards a more coherent nature conservation as

action and management planning became connected with the scientist in a position of power) brought within the ambit of the scientist. Since Abernethy is an important site in terms of its position in understanding pinewoods and pinewood species and informs management elsewhere, managers do not feel able to simply change their management even though they may feel relatively comfortable with their reconstructed ideas of natural pinewoods. There must be a detailed assessment of the 'resource' and a clear justification for the sorts of management that are to be undertaken; there must be a clear, structured plan of action; and that action must be monitored. Changes in management must therefore be based on authoritative knowledge and set within a clear process. The present policy of minimal intervention therefore remains in place while a series of trials are conducted in order that a decision about appropriate practice can be made:

Andrew: can I ask you a bit more about these trials. What is actually happening? You have got these three trials one for grazing, burning and cutting...?

Interviewee: we have twenty plots on the edge of the forest and five plots at the moment within the forest and those five plots within the forest will increase to twenty five after this year's burning programme. The ones within the forest will consist of a burnt plot side by side with a swiped plot, side by side with an untouched control. We are looking at field layer effects within those three plots. So once the site has been burnt or swiped, what plant community colonises immediately? And in particular we are looking for an increase in blaeberry. That is the effect we would like to see, we will see what we do see. ... In conjunction with that, we are monitoring invertebrate use of the sites, game bird use of the sites and deer use of the sites. At the edge of the forest, the objective is to look at enhancing regeneration, so the burning there, post burning we will also look at the field layer, but we are particularly interested in the seedfall and germination success on the burnt plots as opposed to the unburnt controls. Grazing is looking at similar questions in that we have cattle at the edge of the forest now, which we are going to look at the effect on regeneration. Do they break up the field layer, do their hoof prints provide niches for seeds to germinate in and all that sort of stuff? We had cattle in the forest last year...and the cows have been removed and we are looking to see how their trampling damage influences the field layer in terms of blaeberry...just the same way as with the burnt plots within the forest, invertebrates blaeberry, capercaillie and black grouse use and what we would ideally like to find is that burning and grazing increases blaeberry within the forest, increases invertebrate abundance, ...may well increase capercaillie brood size, effectively, and on the edge increases regeneration (Interview P, 8<sup>th</sup> August 2002).

As such, the renegotiation of management at Abernethy is still in the auditing phase of the planning cycle. Research is being conducted to enable the managers to plan their management and to rigorously justify it in the wider social world where others might look to Abernethy as an exemplar of how to manage pinewoods. These trials are oriented towards

testing the management techniques of grazing, burning and cutting to see which produces the most favourable results in terms of manipulating the field layer for capercaillie and for regeneration. They are designed to examine which forms of controlled disturbance could be employed with the most effective results. Thus while fire and grazing might be acceptable to both those that are happy with intervention and those that are not, and represent a negotiated achievement of appropriate practice, such a discursive achievement is not enough. For clear, planned management to be undertaken, the managers need to know which form of management achieves the best results and what the results will be from a particular form of management. They are working towards a situation where they will be able to say that in any given set of atmospheric conditions, a controlled burn will produce a certain set of predictable results. Or a situation where they know how long they need to keep a given number of cows in a known area to achieve their desired outcome.

In this way, changes in the management of pinewoods, which have been influenced by ideas from the new ecology and involved the negotiation of ecocentric and technocentric positions, have been translated into the dominant governmental discourse of interventionist management. If, as I suggested in chapter two, we should consider the changing position of conservation with respect to rationalisation rather than simply use the concept of rationalisation as a means of explaining conservation practice, then what we see with the renegotiation of the position of conservation with respect to rationalisation is the emergence of rationalisation itself. As minimal intervention was questioned due to the changes in the field layer that came about as a consequence of the policy, so the concept of the pinewood itself was reworked. Ecological knowledge of forest processes was selectively utilised, as was the forest's history. A new ideal of what is natural was constructed and then argued over. Questions of intervention and naturalness were negotiated as different actors argued for certain forms of action and put different notions of naturalness to use in different contexts. Idealistic arguments about intervention were, however, somewhat usurped by the imperative of action introduced by the plight of the declining population of capercaillie and the action planning process. While discursive compromises were found that allowed concerns with naturalness and intervention to be balanced – by developing natural management tools – in the end, the move towards greater levels of intervention was translated into the bureaucratic regime of planning. If this is interpreted as an instance of conservation becoming more rationalistic – moving towards greater levels of control – we can see that this process of rationalisation involves a complex process involving the selective use of ecological knowledge, rhetorical strategies and arguments over the meaning of 'naturalness', the re-interpretation of history and the development of new institutional practices.

# 8

## Conclusion

### New Directions for Nature Conservation?

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#### **Deconstructing nature conservation**

At the start of this thesis, I stated that I was interested in understanding why nature conservation acts in the ways that it does and that I wanted to investigate the processes and practices through which appropriate conservation action is achieved and renegotiated. Influenced by the work of Foucault and by constructivist approaches to nature and to knowledge, the conclusion that I have reached is that specific forms of action only become appropriate through complex cultural and political negotiations. What is considered appropriate practice is the result of the specific configuration and interconnection of ideas of nature, ecological knowledge and institutional practice. But these ideas, forms of knowledge and practice do not come together automatically, as if one form of practice is necessarily connected to an idea of nature. At any particular moment, specific types of action are justified and understood to be most appropriate because of the way that forms of knowledge and understandings of nature are mobilised by individuals in continuing cultural and political struggles over the meaning of nature, the proper means of knowing nature and the most useful way of acting on its behalf. The broad institutional frameworks that are put in place to achieve conservation's ends, and the management policies in specific places made with respect to individual species and habitats, are complex cultural and political achievements.

These can be illustrated by reflecting upon the sorts of analysis I have offered here. In chapter four, I examined the development of the new ways of doing nature conservation that were ushered in by the accommodation of the concept of biodiversity and the establishment of the 'biodiversity process'. In particular, I examined the development of a new regime of practice associated with action and management planning and suggested that this regime was bound up in attempts to make conservation action more rigorous and coherent. By setting out clear reasons why a species or habitat should be conserved and clear steps to achieve its conservation, the scientists (or strongly science-oriented organisations

like the RSPB) were attempting to make nature conservation more 'objective' and to reclaim their central position within the nature conservation scene. In the process, habitats were classified and species prioritised in novel ways, which meant that new 'objects' – such as particular types of habitat or the declining population – were constructed. These new objects, which were brought within the compass of the planner, subsequently became the focus for the generation of new sorts of ecological knowledge and thus further bolstered the scientist's position. The development of new forms of practice associated with the biodiversity process was worked out as conservationists attempted to reshape conservation itself for an outside audience and particular sorts of conservationist positioned themselves within conservation as a whole.

In chapter five, I extended this analysis to show how appropriate forms of practice were negotiated as individuals debated the development of the biodiversity process. Since that process had centred on species and habitat action plans, some considered that it moved conservation too far in the direction of intervention, even suggesting that it could lead to over-management. For them, the biodiversity process did not necessarily represent appropriate practice. They challenged the process by calling upon alternative constructions of naturalness and artificiality. Chapter five thus illustrated the politics of argument and the rhetorical strategies that were utilised in debates over appropriate action. Ultimately, through the example of Insh Marshes, I emphasised that these debates reached a negotiated conclusion in the context of specific sites or issues. Different arguments and ideas of nature and naturalness could be mobilised with respect to different sorts of practice. What this emphasised was that whilst nature conservation did take shape through arguments between the 'big names' in conservation and ecology, it also takes its shape through a much more ingrained set of arguments over the meaning of nature – arguments that take place on a day-to-day basis between practitioners and in policy-making and with reference to very specific examples.

In chapters six and seven, I sought to extend this examination of the development and negotiation of a regime of practice by looking at how a (different) regime of practice changed. In chapter six, I explored the way that a minimal interventionist regime of practice was understood to be appropriate in the pinewoods at Abernethy. To understand the policy of minimal intervention and the specific management practices that it entailed, I suggested that one needed to address the ways that pinewoods were represented and how different parts of the forest were constructed. In particular I emphasised the ambiguous construction of pinewoods as both natural and unnatural. Non-intervention was not an option precisely because of the way that the pinewoods had been influenced by people: they were no longer

natural. Yet at the same time, they represented a connection with an original naturalness and should be protected from further harm. The specific forms of management that were adopted under the rubric of 'minimal intervention' were strategies for negotiating this ambiguous construction of the pinewoods. Some areas were constructed as more natural than others and thus suggested as areas to be left alone. Others were constructed as less than natural and thus less susceptible to harm from intervention: they could be altered to move them onto a trajectory towards achieving a 'natural character'. At the same time, the problem of high deer numbers, which affected even those areas thought to be more natural than others, was dealt with by constructing the form of intervention (culling) as indirect and relatively natural (because of the way it replicated natural processes). By teasing apart the arguments for minimal intervention as they were put forward in the management plans, reports and letters, it was possible to appreciate that the policy represented an achievement resting upon a specific configuration of ideas and knowledge of the natural pinewood. There were ideas of what a natural pinewood was like, what the preferred habitat of the capercaillie was and what needed to be done to plantations to make them more natural. Individual forms of management thus rested upon the way that cultural and scientific constructions of naturalness were balanced with intervention.

In chapter seven, I went on to look at how this achievement of appropriate conservation practice was reworked. The practices involved in minimal intervention were based upon ideas of the pinewoods as relatively natural and subject to overgrazing and it was thought that once the grazing pressure had been reduced, the pinewoods would recover and take on a more natural character. But as the policy of minimal intervention began to have what were understood as negative effects (in terms of allowing the field layer within the pinewoods to become too long), the policy was questioned. It was thought that the ideas upon which the policy was based must be flawed (a more natural situation would surely not be detrimental to breeding birds). The idea of the natural pinewood was consequently reworked. By calling upon new theoretical developments in ecology and by re-emphasising the history of the woodlands, a different understanding of the natural pinewoods developed. The new idea was oriented around a much more complex understanding of pinewoods as in a continual process of change and upheaval. The translation of that complexity into suggestions for different forms of management based on controlled disturbance was, however, mitigated by further debates over the appropriate degree of intervention. In what could be interpreted as a clash between techno- and ecocentrics, between those that wanted to restrict, and those that were happy to pursue intervention, different argumentative strategies and resources were adopted to advocate alternative ways forward. Ultimately, a

resolution was found by finding compromise policies that allowed each 'side' to interpret the action that would be undertaken as generally conforming to its point of view. The proposed use of 'natural management tools' provided those that wanted to manipulate the forest to achieve better conditions for the capercaillie with tools to achieve their ends, whilst also providing those that were less happy with intervention a compromise because the means of intervention were more 'natural'. The change in approach to managing pinewoods that took place at Abernethy thus allowed an insight into how appropriate conservation practice is achieved. The configuration of ideas, knowledge and practice was reworked in the context of arguments over intervention, naturalness and artificiality. In those arguments, new forms of knowledge were mobilised and extant histories re-emphasised by individuals seeking to see their version of appropriate management made real. In the process, the very idea of the pinewood that should be conserved was reworked.

In contrast to the majority of work that engages with the development of nature conservation, I have sought to emphasise that conservation is a cultural arena and that nature conservation practice is not only culturally negotiated, but based upon culturally constructed ideas and knowledge of 'nature'. This thesis is, therefore, a contribution to the literature that both takes a constructivist approach to nature and the environment seriously and puts it to use (Hajer 1995; Takacs 1996; Toogood 1996b; Macnaghten and Urry 1998; Braun 2002). The fact that 'nature' is not an unproblematic, self-evident 'thing' over which politics happens was most evident in chapters six and seven. As the minimal interventionist policy of culling deer and allowing the forest to recover from excessive grazing pressure began to have what were thought to be negative consequences, so the very idea of the 'natural' pinewood was questioned. New discursive resources were called upon to reconstruct the natural pinewood in order to rework management options. The pinewoods that were understood as being relatively stable and simply subject to damage (if the damage was removed, the woodlands would recover), came to be understood as actually subject to instability and disturbance. Thus the very idea of a natural pinewood was revised. What was natural had changed. The natural pinewood was not simply the object over which people argued; it emerged in the development of attempts to conserve it. 'Nature' is embedded in, and emerges through, cultural politics. This is not, however, to make the idealist claim that nature is *entirely* a cultural artefact because, as we saw with the growth of the field layer at Abernethy, material changes in reality had consequences in terms of how people understood pinewoods.

The fact that scientific knowledge is not simply utilised in conservation (as if it is produced in an asocial realm only to be brought into the social arena of conservation), was



most evident in chapter four. As the biodiversity process developed and as habitats, for example, were classified, new ecological objects were created. These new objects took their shape from the imperatives of the practicalities of planning. Where the lines between classes were drawn was not determined by the obviousness of differences in reality – as my interviewees made plain, classifying involved drawing lines across continua – but by the imperative of having a manageable number of classes. Subsequently, new ecological knowledge about the extent and characteristics of these objects was developed. Ecological knowledge was intimately interwoven with the practice of conserving those objects. Similarly, as conservationists sought a more ‘objective’ means of prioritising species for action by developing trends information, new sorts of ecological knowledge were developed. In this way, we can see that science is not simply related to conservation in a one-way relationship where it is imported from outwith conservation to inform practice. Indeed, we can see that such practice is not simply based on the progressive development of scientific knowledge as if it is moving towards the best way of conserving the natural world based on the truth about nature. Rather, scientific knowledge is embedded in the messy world of conservation practice.

The analysis presented in this thesis adds, therefore, to the work of Hajer (1995), Bocking (1993, 1997), Toogood (1996b) and Takacs (1996) and challenges and extends those analyses that have examined nature conservation but bracketed off the scientific realm as if it does not involve social interaction. The social, political and institutional histories of nature conservation cannot be comprehensively told if there are areas of conservation that are privileged or understood as off limits to the sociologist or historian. Changes in conservation that are the result of changing scientific knowledge are not simply the result of the development of ‘better’ knowledge because that knowledge is produced by social actors in a social context, a context that influences the sorts of knowledge that is produced and embedded in conservation practice.

Understanding nature, science and conservation in this way, allows us to appreciate the development of conservation differently. Instead of viewing shifts in site management or changes in broad policy instrumentally, I suggest that a constructivist approach allows us to see a much more messy and political process. The shifts in management at Abernethy, for example, could be understood as a straightforward response to the change in the field layer that resulted from a policy of minimum intervention. The policy was not working, so it was changed and based upon better ecological knowledge. Such a reading does not pay attention to the fact that the ability of managers to see one course of action as ‘wrong’ and another as ‘right’, involves a great deal of discursive and interpretative work and that the very idea of

what is being conserved, changes. A constructivist approach that pays attention to the processes by which ideas of nature are generated and incorporated in conservation practice thus allows more subtle renderings of the development of nature conservation. I suggest, therefore, that such an approach extends the conventional histories of the development and institutionalisation of conservation (Adams 1986, 1993, Evans 1992; Lowe 1983; Sheail 1976, 1981, 1998). While it is true that these studies have emphasised the politics involved in developing a home for nature conservation and the conflicts over nature that conservation has been involved in, the approach taken here goes further by recognising more explicitly that conservation is itself a flexible and contested arena of cultural politics.

### **Foucault, rationalisation and nature**

This emphasis on conservation as a form of cultural politics is important. Not only does it broaden out the stories that are told about nature conservation, it also adds to an understanding of the relationships between nature conservation and rationalisation. While Foucault is not the first theorist that comes to mind when addressing environmental issues – indeed, he made a great show, whenever presented with a magnificent landscape, of turning away and saying ‘my back is turned to it’ (Eribon cited in Darier 1999: 7) – this thesis would suggest that his work *is* useful in this respect.

On a general level, the philosophical position that Foucault advanced has had a huge influence on social science approaches to nature: nature came to be understood, like madness or sexuality, as produced in discourse. Nevertheless, although Matless (1992) suggested that Foucault’s work might be of use in studying ‘the place of nature’, it is only relatively recently that it has been more explicitly engaged with by researchers studying broadly environmental topics (Hajer 1995; Darier 1999; Demeritt 2001c; Bryant 2002; Braun 2000; 2002). I have sought to contribute to this developing literature in two ways. Firstly by employing Foucault’s ideas about discipline and governmentality to analyse the institutional arrangements by which nature conservationists are themselves disciplined. Secondly, I have sought to take Foucault’s interpretation of the processes by which people were rendered into objects by the human sciences and brought within a system of surveillance and control, and translate it into an interpretation of how we have rendered the natural world into objects and thus made it amenable to control. I have sought to examine the production of nature, biodiversity and the natural pinewood in discourse, in the ‘micro-physics of power’ through which conservation operates. That is, while Foucault’s focus was the *rationalisation of the body* and the *rationalisation of the population* in the emergence of the present scientifico-legal complex, I have, by utilising the tools that he provided and applying them to the natural

sciences and the scientifico-managerial discourse of contemporary nature conservation, examined the *rationalisation of nature*.

Following Dean's (1999) 'analytics of governmentality' as an investigation of the emergence of institutionally-stable regimes of practice, I examined in chapter four the different elements that constituted the biodiversity process, the dependence of these practices upon specific sorts of knowledge and the techniques involved. I examined how new 'objects' in the form of habitats or the declining population were constituted and how those objects were then drawn into a regime of planning which subsequently required new forms of knowledge and the establishment of intensive surveillance practices, which, in turn, provided more knowledge that could be fed into the planning cycle. Nature was classified and incorporated in a rational bureaucratic structure of plans and organised action. I also suggested that, through the introduction of the biodiversity process and new practices of government, nature conservation was, and is, taking on greater coherence and that this coherence has a distinctly spatial aspect. Coherent conservation action, which connects conservationists working in all parts of the country, is achieved by deploying devices such as new habitat classifications and action and management plans. These 'devices' travel and act at a distance. The activities of distant conservationists become controlled from the centre of conservation calculation (cf. Latour 1999b; Rose and Miller 1992).

In the process of conducting an analysis that concentrated on the practices through which the discourse operated, I recognised that this rendering of conservation could be criticised and extended. Whilst the analysis of the regime of institutional practice inspired by the work of Foucault was useful – because it threw into relief that regime's inherent politics – it was not alone sufficient. Focusing on the practices of classification, prioritisation and planning and the way that they became connected in a regime of practice, potentially either ignored the role of people or implicitly suggested that they were subsumed within that regime, powerless to resist or change the course of events. By paying attention, in chapter five, to how people spoke about biodiversity and by turning to a much more restricted understanding of discourse as language in use, I suggested that much of the work that has picked up and worked with the concept of rationalisation or governmentality in relation to environmental issues could be extended (Demeritt 2001; Enticott 2001). I argued that the rhetorical construction of nature in talk was important and that understanding these linguistic processes added to the analysis of the development of institutional practices. This was to follow Foucault by investigating empirically the workings of contemporary forms of rationality and then to expand on his approach, and on understandings of the process of rationalisation, by examining specific examples of language in use. In particular, I looked at

the way that individuals argued over appropriate practice and the importance of the construction of there being nowhere natural in the UK. The dominance of the technocratic approach to conserving nature can be seen – at least in part – to rest upon the use of language to construct nature as ‘other’. The construction of a pristine nature that is the antithesis of culture, combined with a narrative of a fall from its pristine state, produces a natural world that is always already interwoven with human action. The resultant fallen nature provides the basis for calls for further benevolent human action to restore it to a more natural situation; further human action will not, after all, harm it. The construction and representation of nature as other but subject to the corrupting influence of humanity allows people to construct themselves as having responsibility for nature, for protecting it and looking after it. Human action becomes necessary if we are to protect nature and we, therefore, intervene and control on nature’s behalf. Through the example of Insh Marshes, however, I highlighted how the multiple and competing constructions of nature in language are accommodated in a negotiated compromise with different arguments being made in support of different management strategies. Ultimately, in chapters six and seven, I sought to develop an analysis that, while inspired by Foucault’s work, provided a more rounded understanding of how institutional practices were bound up in cultural negotiations over the meaning of nature and the most appropriate form of action.

This analysis complements that of Adams’ (1997) – and his suggestion that conservation is not only a reaction to, but also very much part of rationalisation – by focusing on specific examples. The institutionalisation of the concept of biodiversity and the establishment of the biodiversity process, for example, took on a form that could be understood to be firmly embedded in processes of rationalisation. Action plans that included prescriptions for habitat manipulation were written for species and habitats, bureaucratic structures were developed to manage the process and new forms of knowledge were demanded and called upon with monitoring programmes established. These developments seem to take the technocratic approach to conservation to another level because there appears to be an extension of the manipulative approach to even the most obscure of species and habitats. While the objective of developing the biodiversity process was to save, protect and enhance individual species and habitats, the rationale was (and remains) one of control. Further, as the analysis of the move towards more complex and finely-tuned forms of intervention at Abernethy suggested, the rational control of nature is being extended into even those areas that were previously understood to be precious and in need of protection from human interference.

Where this study adds to that of Adams is, I believe, in its emphasis on cultural politics. Emphasising the construction of nature and knowledge in relations of power adds to the narrative that essentially argues that since conservation is based upon ecology and ecology as a science underpins rationalisation, conservation is part of rationalisation. While changes in ecological theory do work through into conservation practice, the analyses offered above suggest that this process is always locally negotiated and always complex. In the context of the identification by other commentators of two broad and flexible 'schools of thought' (technocentrics and ecocentrics or imperialists and arcadians), this thesis has pointed to the negotiation involved in one achieving dominance. More specifically, the fine-grained analysis of change at Abernethy, for example, allowed insight into the process by which the technocratic approach to conservation managed to attain ascendancy. The thesis has illustrated that this is not simply a battle between two *a priori* positions: these 'sides' take shape and are themselves reconstituted through the process of negotiation. While accommodation between those people that wanted to leave pinewoods alone and those that were happier with more intervention could be understood as one manifestation of a clash between the arcadians and imperialists, what we see is that the route forward involved the negotiation of a compromise where limited intervention was acceptable to both 'sides'. In this way, both arcadians and imperialists achieved new positions in the process of finding ways forward. Ultimately, the dominance of the rationalistic approach to conservation is something that is continually being negotiated and fought over. It is continually being re-established as a characteristic of conservation in the UK. Rationalisation is entwined in the developing culture of nature conservation.

### **Nature conservation, reflexivity and research**

This emphasis on cultural politics has profound implications for nature conservation. If there is no secure place of knowledge from which the truth about nature can be known once and for all, and if what counts as nature is unavoidably an effect of culture, then conservation can never be the same, it cannot return to the authority of nature or claim in any simple way to speak on nature's behalf. One implication of this is that we are forced to recognise just how important are the questions of power and positionality. We are forced to recognise that nature is constructed as it is represented and implicated in institutional contexts and that these constructions are never innocent; they are always political and always oriented towards a purpose. As those that were happy with intervention at Abernethy, for example, sought to persuade others that their approach was the most appropriate, they represented the forest in ways that necessarily rendered other forms of signification less visible. The representation of

the pinewoods in arguments over action was itself a political act: it involved what Braun (2002) calls 'cognitive failures' that have political consequences. As such, we have to recognise that nature only gets refashioned as 'biodiversity', and pinewoods only become 'ancient' and 'semi-natural', as a result of their representation from specific positions. Nature and knowledge are generated in specific relations of power as some seek to interpolate others into a specific way of seeing. As such, the stabilisation of nature or the native pinewood must be recognised as itself an effect of power and the political interplay of multiple actors with particular interests. Consequently, nature conservationists can no longer be complacent and assume that how they understand a habitat and management is the result of the gradual move towards better knowledge of it. How they understand and ultimately manage a habitat – and indeed how they come to see the need for management in the first place – is worked out in a field of power and social relations.

Recognising the importance of this politics forces us, and I would argue should force nature conservationists, to ask additional questions in any given context. Why is nature, or a particular species or habitat, being understood in the way it is? How is it being represented, by whom and with what interests? In short, recognising the importance of power and politics encourages a greater degree of critical reflection about conservation's concepts, and its discursive and knowledge-making practices.

Crucially, this critical reflection must, I suggest, start with the individual researcher's own concepts and discursive practices. Once one recognises this politics and the way that all claims to know are embedded in relations of power, one must also acknowledge that one's own claims are produced from a particular perspective and inevitably involve emphasising some things and not others. Thus, if one wants to avoid reproducing this politics, one must explicitly attempt to acknowledge one's own closures or 'cognitive failures'. One must attempt to render visible one's own acts of construction. It is for this reason, and because I wanted to bolster my message to nature conservationists by remaining consistent, that I explicitly sought to trace, in chapter three, the process of this research. By attempting to honestly portray the development of my research and to open it up to scrutiny so that the reader could understand how I arrived at the questions and analyses that I did, I sought to emphasise my position and my own knowledge construction as situated and partial.

This illustrated that method is about much more than a means to an end; it is about more than how one gets the data or analyses it. In the context of a constructivist project, method is itself worthy of scrutiny. Thus while I devoted most attention to the cultural politics of nature and the processes through which meanings were made in nature conservation, I turned my attention in chapter three to my own research as another example

of how meanings and knowledge are made. Through the narrative that I presented there of my research, it was possible to glimpse the process through which I developed my substantive foci, theoretical interests and methodological resources. These foci, interests and resources should, as the narrative sought to emphasise, be understood as the achievements of a long process of negotiation. Just as much as the development of appropriate conservation policy, my own research involved negotiating a social world of politics and power relations. It involved directly negotiating with organisations like the RSPB and dealing with their scepticism and protectiveness; negotiating with interviewees and the power relations that interpersonal contact entailed, especially when my interviewees were long established in the field; trying methodological approaches and judging their appropriateness; gradually refining a focus from a general interest in how conservationists constructed nature to how they constructed biodiversity and established institutional arrangements for it; and it involved focusing yet further from an interest in biodiversity and how it was argued over to an interest in particular species and habitats and sites. Furthermore, my research involved working with Foucault's ideas and recognising their limits and trying other approaches in ways that could extend my analyses; gradually shutting doors on possible interpretative avenues and thus imposing order by obscuring other issues; and developing my own rhetorical strategy for arguing that constructivist approaches to nature are useful. Ultimately, then, reflecting upon my research practice and its own on-going acts of construction allowed me to support my analyses of the construction of meaning in nature conservation.

In the process of recognising this politics and in seeking to bring my own acts of construction to the fore, however, I encountered a methodological problem not commonly addressed in methods texts, namely, how one represents one's own acts of construction. How does one write about a 'messy' complex process – a process that does not conform to the normative model of design, collect, analyse – without imposing an order that might not have been present in the doing of the research? In some ways this question is redundant from the outset because all acts of representation are acts of imposing order. But if questions of representation are also questions of ethics, we cannot simply hold up our hands and return to established ways of representing research. We have to experiment with other ways of writing; ways that at least attempt to portray the messiness and allow the reader to see how knowledge is 'really' constructed. Thus the narrative I offered in chapter three, while inevitably imposing an order or post-hoc rationalisation, was an attempt to contribute to other work, such as that by Davidson (2001), that has sought explicitly to open up the processual nature of research.

## **Beyond biodiversity and Abernethy: reconstructing nature conservation**

In addition to forcing conservationists, and researchers, to reflect on their habits of making meaning, I suggest that the emphasis on cultural politics opens up new possibilities for political engagement. In particular, it leaves us in a *relatively* optimistic position because, in contrast to Weber's pessimistic view of the iron cage of rationalisation, it is possible to see that if the technocratic approach to conserving nature is constantly being renegotiated and re-achieved, it is not set in stone. Whilst it is arguably a characteristic of conservation in the UK at present, it is not a characteristic that is achieved once and for all. There is always space for resistance. There is always the possibility that different ways of conserving nature could be argued for and developed. Thus the insights inspired by Foucault and constructivist approaches to nature are potentially useful because, as Castree and Braun point out, they have 'profound implications and embod[y] a liberatory potential, radically opening the field of debate and action surrounding what kinds of nature we seek' (Castree and Braun 1998: 5). It is important, therefore, to keep asking, like Mabey (1980) and Adams (2003b), what sort of nature conservation we want and to keep arguing for change. Here, then, I attempt to put some of the insights gained from a constructivist position to use by arguing for new directions in nature conservation.

This question – what sort of nature conservation do we want – is important, especially, I believe, when we consider current trends. Two examples of these trends will suffice. First, the direction that conservation is taking was apparent at a symposium held in September 2002 to review progress and set an agenda for plant conservation in Scotland. With the Botanical Society for Scotland, Scottish Wildlife Trust, National Trust for Scotland, Plantlife and the RSPB all represented, this was essentially a review of biodiversity action planning and an assessment of the gaps that the biodiversity process was highlighting. Reviewing the themes of the symposium, Crofts (2003) noted that:

increased knowledge and information about the diversity of Scotland's flora ... has been acquired; findings from scientific research are available...; more sophisticated approaches to monitoring and surveillance of plants and their habitats have been developed...; the use of scientific knowledge to tease out the causal factors of change, especially those factors which have a deleterious effect on conservation, is essential; more scientific knowledge to improve the success of habitat restoration and plant reintroduction is needed (Crofts 2003: 226-227).

As the engine of technocratic managerialism trundles on, and as scientific knowledge is deployed in particular contexts, what is needed is more knowledge, more resources, and more expertise. Current developments point to an increasing turn to science to provide the answers. As research is conducted more questions arise and more research is needed. In this



way, nature conservationists are developing increasingly sophisticated ways of mapping, modelling and storing knowledge about nature, knowledge that can be used in the evermore-sophisticated government of nature.

Secondly, since the initial development of biodiversity action planning, the process has continued. Since habitats were 'selected' and prioritised for action planning, action plan groups have been developed and have initiated strategies that should work towards achieving the targets for their respective habitats. But as the different groups have been attempting to achieve their aims for the part of the environment that they are focused on, however, things have become more complicated. The goals for different species and habitats can come into conflict and the management can become increasingly complex. Consequently, it has been recognised that related species and habitat groups have to communicate and that a broader view of change and large-scale land management is needed (Simonson and Thomas 1999). The result is the development of over-arching initiatives that encourage action plan groups to talk to each other. In other words, the bureaucratic structure develops problems that require more bureaucracy to fix and so on.

Both these examples, which are directly connected to the analyses presented in this thesis, suggest that conservation is becoming increasingly entrenched in processes of rationalisation. But is this the sort of nature conservation we want? The position that I have reached through conducting this research – consistent with the suggestion made in chapter five that people work towards their positions in debates rather than arguing from them – is that it is not. I am concerned that the contemporary culture of nature conservation may not provide the means by which conservation can fulfil its aims. To return to an issue raised at the start of this thesis, I am concerned that if conservation continues to develop increasingly sophisticated ways of controlling nature and continues to worship at the alter of rationalisation, it will not succeed in its aim of getting a concern for wildlife and an ecological ethos to pervade society.

While many practices and processes through which meanings are made have been analysed above, I worry that two key habits of making meanings about nature in nature conservation may in fact be part of the problem and a hindrance to progress. Supporting the claims of Adams (1997), the first of these is the continual return to science. Ecology and scientific knowledge more generally are crucial prisms through which nature is constructed and reconstructed. The second is the prevalence of the construction of nature as where people are not; nature is other; nature and culture are distinct. Although the characteristics of the natural pinewood were culturally negotiated and changed, the idealised pinewood was still a woodland uninfluenced by people.

These are not original claims, but the constructivist interest in cultural politics and relations of power throws into relief several important issues. First, the central place of science, while useful, is also problematic. As we classify, map and monitor with the aim of protecting species or habitats, we develop eminently useful knowledge that we can employ to save and protect species and habitats that we value. It is through the use of such knowledge that we have managed to achieve favourable outcomes for many species that might have become extinct without that technical intervention. But at the same time, as this knowledge is developed, our power to control those species and habitats is extended. Drawing upon Foucault's claim that knowledge is produced as an effect of power and that power operates through knowledge, our power to control is immanent in the kinds of knowledge we seek and produce about nature. It could be claimed, then, that even when we use our knowledge to achieve a favourable outcome for a species, the deployment of that knowledge has a wider effect:

Such knowledge, however benignly applied, must inevitably extend our control over nonhuman others. Thus even though our explanations of biological functioning may be employed to sustain the remnants of a fading species in reserves or outright captivity, and thereby provide us with the satisfaction of having 'saved' one kind of being, the knowledge employed entails the diminishment of that other. Success, therefore, also means failure – successful control over the life and death of the other requires the abrogation of its autonomy (Evernden 1992: 130).

The success of conservation in saving a species through the deployment of technical expertise and management has consequences. While a species might have been saved, human control over it will be extended.

Secondly, the key position of science and the desire to achieve a more 'objective' conservation is also involved in a politics of knowledge. As Minter and Toogood (1994) pointed out, 'policy and action exclusively based on certain forms of knowledge – which successive governments and agencies have trusted in relation to environmental protection – may marginalise and exclude other roots of environmental concern, including cultural ones' (Minter and Toogood 1994: 1). In short, the reliance on scientific and technical knowledge potentially marginalises other forms of knowledge. Evernden puts it slightly differently by saying that the importance of science and objectivity results in a denial of experience and subjectivity. The natural others can never be known 'as encountered in experience if we begin with a denial of experience. Indeed, we might say that it is through the dismissal of direct, 'subjective' experience that we are made vulnerable to the imposition of the social abstraction called nature and the conventions it entails' (Evernden 1992: 110). Always

approaching the nonhuman other through science involves distancing oneself from it so that the ideal of impartiality can be attained. In the process, the culture of objectivity captures nature and closes alternative windows on experience. Reacting to criticisms that they are Romantics seeing landscapes through 'rose-tinted spectacles', conservationists have compensated and sought to emphasise their technocratic, industrial, hard-nosed credentials, but in the process something else is lost.

Finally, if we listen to constructivist sociologists of science such as Wynne (1992, 1996), the centrality of science has consequences for how conservationists engage others. While science is crucially important for addressing specific issues, if problems and solutions are defined in technical and scientific terms alone, conservationists run the risk of losing public identification with conservation itself. In the context of broader developments in the relationship between science and society where the proclamations of science are frequently seen to be contradictory depending on who says what and with what interests (such as the different arguments marshalled in debates over GM technology), or where policies have been based on what was portrayed as objective science only later to be proved wanting, the 'public' are increasingly sceptical of claims to impartiality. Time and again the view from nowhere is shown to be a view from somewhere. As people are continually bombarded with the latest research results on the health benefits (or lack of them) of particular foods, and as people witness scientists trying to grapple with the increasingly globalised problems of risk society, the limitations of science are becoming more obvious. Thus if conservationists simply claim their scientific credentials or hide behind the façade of objectivity they will only widen the gulf between themselves and others. While it at first appears to strengthen conservation, increasing conservation's apparent objectivity, without giving people more insight in to the practice of conservation science, potentially weakens it.

My view, then, is that the current approaches to conservation, while achieving successes in the form of protecting endangered species or habitats, are also themselves part of the problem. Arguably, while conservation challenges developments that impinge upon nature and fights for its protection, it also implicitly subscribes to the approach to nature that underpinned those developments. That is, the exploitation of nature for its resources rests upon a construction of nature as other, as separate from culture and there to be used, but while conservation might challenge such exploitation, it too rests upon a similar construction of nature as other. I agree with Adams who suggested that there was 'a potential conflict in a conservation based on ideas of nature and practices of engagement with nature that are driven by the same rationalist project that has generated the damage that conservationists wish to oppose' (Adams 1997: 287). While it challenges the imposition of industrial

rationality, conservation also perpetuates it. It is for this reason that conservation only achieves small successes that are also at the same time failures.

If we really want to succeed, I would argue, along with Evernden, that we must first acknowledge that the 'environmental crisis' arose as a consequence of conceptual imprisonment and that the contemporary culture of nature conservation perpetuates that imprisonment. Evernden suggested that 'if we would save the world, we must set it free' (Evernden 1992: 130). 'While this might be a frightening prospect for many, because as members of twenty-first century industrial societies what we fear most is the loss of control', Evernden asks us to bear in mind that '*every* act of control, however well intentioned, constitutes a continuation and an amplification of the process that has been unfolding since the Renaissance' (Evernden 1992: 130). Therefore, while I am aware of the difficulty of generalising in nature conservation (because there will always be counter-examples), I want to suggest that we need to re-imagine – re-construct – nature so that it is not always pushed into the distance and the past and separated from culture. We need to re-imagine our approach to conservation science so that the myth of objectivity is acknowledged as myth. And we need to create space for other forms of knowledge about nature.

We need to do this because when we see nature as a distant place and say there is nowhere natural in the UK at all, we further entrench a way of seeing that makes it harder for us to see the nature all around us as natural: the trees in our gardens, the gull colonies on our rooftops and the plants that grow in the cracks in the pavement (cf. Cronon 1995b). It makes it harder to remember and acknowledge the autonomy of the wild others that live in our midst. A re-imagining of nature could potentially lead to a new way of relating to the world around us.

We also need to develop a much less idealistic view of objectivity. Conservationists could profitably accept that the knowledge they produce does actually come from somewhere; that it is situated. Instead of always seeking to make conservation more objective in the sense of impartial and neutral, they could set out much more clearly why they make the claims they do. The knowledge that scientists produce is not undermined if it is acknowledged to come from a specific position. It is only the currency of the idea of objectivity that gives this impression. Scientific knowledge has always been produced from a position: it is just the question of position has been pushed to the background because it was thought that accepting positionality meant that knowledge was somehow flawed. But even if it is produced from a specific position there are still very good reasons why we should trust scientists. They still produce the best knowledge we have. If they accept their positionality and allow others to see the processes of knowledge production, then others can judge why

they should be trusted. If conservationists hide behind the façade of objectivity they cannot. It is precisely because science is not a single-minded force, because it is pluralistic and riven with conflicts that it has been able to expand our understanding of the natural world. Objectivity is not what is continually pointed to – that epitome of impartiality – it is the plurality of perspectives on the same phenomenon openly debated.

Let me be clear. In suggesting that we need to develop new ways of constructing nature and ways of relating to nature that do not perpetuate the rationalist project of control, I am not arguing for a *laissez-faire* approach to conservation as if we should leave everything alone. Such an argument would be contradictory because it depends, just as much as present practice, on the separation of nature and culture. I concur with Mabey who said that '[n]othing seems less appropriate for the protection and maintenance of complex, sensitive and highly localised natural communities...than the ponderous processes of conventional planning. Yet leaving them to the mercy of an unbridled *laissez-faire* would be even worse' (Mabey 1980: 227). Nor am I arguing that the biodiversity process is bad and that conservation should return to its reactive (rather than proactive) ways. Nor am I arguing that science should be done away with: we have nowhere else to turn for reliable knowledge. I am arguing, rather, that how we construct nature matters and that we need new, less dualistic constructions in order to develop new ways forward. We need to develop a different ethic towards the nonhuman others with which we share our planet.

In the context of fifty years of institutional, legislative and practical conservation effort, this suggestion is radical. It effectively questions the last half-century of nature conservation practice and implicitly suggests that ideas that have guided conservationists have to be abandoned. Since the idea of nature-unsullied underpins conservation effort, suggesting that we need to rethink nature so that we do not continue to separate it from culture effectively argues for the dismantling of the present structures of conservation. What do we conserve and what do we aim our management at if the ultimate reference of nature unsullied is removed?

I do not have any easy answers to these questions. I do not pretend here to offer an alternative. But if the Foucauldian analyses of this thesis are reflected upon, questions of alternatives and how to completely reconstruct nature should perhaps be seen as too idealistic. Cultural change, quite simply, does not happen like that. While I might, on a general level, suggest that we need to re-imagine nature, I am pragmatic enough to recognise that such re-imagining is utopian. The lesson that I take from having undertaken this research is therefore that since the culture of nature conservation works through a 'micro-physics of power', through small practices in specific contexts, it is in specific contexts that

rationalisation and the dominant culture of nature conservation has to be resisted. We need to open up spaces of resistance within current institutional frameworks; we need to find space for different sorts of engagement with the natural world; we need to recognise that others know the world in different ways; we need to find space for art and emotion; and we need to reclaim wonder. It is only, I believe, by resisting the extension of rationalisation and striving to develop new understandings of nature and new ways of relating to the world around us that conservation will achieve its aims.

# Bibliography

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## Primary Sources

- Aldhous, J.R., 1995, (ed.) *Our Pinewood Heritage*, Conference Proceedings 20-22 October 1994, Inverness, Forestry Authority, Edinburgh.
- Amphlett, A., 2002, 'Contexts, Developing Ideas and Emerging issues in the Conservation Management of the RSPB Abernethy Forest Nature Reserve', A Presentation Given at a Botanical Society of Scotland Symposium on 'Plant Conservation in Scotland', 10th September 2002, University of Edinburgh.
- Amphlett, A., 2003, 'Contexts, Developing Ideas and Emerging issues in the Conservation Management of the RSPB Abernethy Forest Nature Reserve', *Botanical Journal of Scotland*, 55(1), 135-148.
- Anon., 1994, *Biodiversity: The UK Action Plan*, HMSO, London.
- Anon., 1995a, *Biodiversity: The UK Steering Group Report: Volume 1: Meeting the Rio Challenge*, HMSO, London.
- Anon., 1995b, *Biodiversity: The UK Steering Group Report: Volume 2: Action Plans*, HMSO, London.
- Anon., 1997, *Future Structure of Abernethy Forest*, Unpublished Internal Discussion Document, RSPB, Abernethy, Nethy Bridge.
- Anon., 1998, *Attributes of a Present-Natural Pine Forest in Scotland*, Unpublished Internal Discussion Document, RSPB, Abernethy, Nethy Bridge.
- Baines, D., Summers, R.W., 1997, 'Assessment of bird collisions with deer fences in Scottish Forests', *Journal of Applied Ecology*, 34, 941-948.
- Balharry, R., 1998, 'Creag Meagaidh' in Newton, A. C. and Ashmole, P. (eds.) *Native Woodland Restoration in Southern Scotland: Principles and Practice*, Occasional Paper No. 2, Borders Forest Trust, Ancrum, Jedburgh, Scotland, UK, 35-37.
- Barr, C.J., Bunce, R.G.H., Clarke, R.T., Fuller, R.M., Farse, M.T., Gillespie, M.K., Groom, G.B., Hallam, C.J., Hornung, M., Howard, D.C., Ness, M.J., 1993, *Countryside Survey 1990: Main Report*, DoE, London.
- Batten, L.A., Bibby, C.J., Clement, P., Elliot, G.D., Porter, R. (eds.), 1990, *Red Data Birds in Britain: Action for Rare, Threatened and Important Species*, T and AD Poyser, London.
- Batten, L.A., Bibby, C., Clement, P., Elliot, G.D., Porter, R.F., 1990, *Red Data Birds in Britain*, T & A D Poyser, London.
- Beaumont, D., Dugan, D., Evans, G., Taylor, S., 1995, 'Deer Management and Tree Regeneration in the RSPB Reserve at Abernethy Forest' in J.R. Aldhous (ed.) *Our Pinewood Heritage*, Conference Proceedings 20-22 October 1994, Inverness, Forestry Authority, Edinburgh, 186-195.
- Bennett, K.D., 1989, 'A provisional map of forest types for the British Isles 5000 years ago', *Journal of Quaternary Science*, 4, 141-144.
- Bibby, C., Housden, S., Porter, R., Thomas, G., 1989, 'Towards a Bird Conservation Strategy', *RSPB Conservation Review*, 3, 4-8.
- Boyd, J.M., 1999, *The Song of the Sandpiper: Memoir of a Scottish Naturalist*, Colin Baxter photography, Grantown-on-Spey, Scotland.
- Brasnett, N.V., 1953, *Planned Management of Forests*, Allen & Unwin, London.
- Bunce, R.G.H., Jeffers, J.N.R., (eds.), 1977, *Native Pinewoods of Scotland*, Institute for Terrestrial Ecology, Cambridge.

- Callander, R.F., 1986, 'The History of Native Woodlands in the Scottish Highlands' in D. Jenkins (ed.) *Trees and Wildlife in the Scottish Uplands*, Institute of Terrestrial Ecology, Abbots Ripton, 40-45.
- Callander, R.F., MacKenzie, N.A., 1991, *The Management of Wild Red Deer in Scotland*, Rural Forum Scotland, Perth.
- Cameron, E.J.F., 1995, 'The Regeneration of Existing Pinewoods' in J.R. Aldhous (ed.) *Our Pinewood Heritage*, Conference Proceedings 20-22 October 1994, Inverness, Forestry Authority, Edinburgh, 155-164.
- Campbell, G., Summers, R., Bryson, L., Sankey, S., 1999, *Joint Royal Society for the Protection of Birds and Forest Enterprise Field Study Visit to Norway*, June 1998, RSPB Scotland, Etive house, Beechwood Park, Inverness.
- Carlisle 1977, 'The Impact of Man on the Native Pinewoods of Scotland' in R.G.H. Bunce and J.N.R. Jeffers (eds.) *Native Pinewoods of Scotland*, Institute for Terrestrial Ecology, Cambridge, 70-77.
- Catt, D.C., Dugan, D., Green, R.E., Moncrieff, R., Moss, R., Picozzi, N., Summers, R.W., Tyler, G.A., 1994, 'Collisions Against Fences by Woodland Grouse in Scotland', *Forestry*, 67 (2), 105-118.
- Clifford, T., Forster, A., 1997, 'Beinn Eighe National Nature Reserve: Woodland Management Policy and Practice 1944-1994' in T.C. Smout (ed.) *Scottish Woodland History*, Scottish Cultural Press, Edinburgh, 190-206.
- Clutton-Brock, T.H., Guinness, F.E., Albon, S.D., 1982, *Red Deer: Behaviour and Ecology of Two Sexes*, University of Chicago Press, Chicago.
- Clutton-Brock, T.H., Albon, S.D., 1989, *Red Deer in the Highlands*, BSP Professional Books, Oxford.
- Clutton-Brock, T.H., Albon, S.D., 1992, 'Trial and Error in the Highlands', *Nature*, 358, 11-12.
- Commission of the European Communities, 1991, *CORINE Biotopes Manual*, Office for Official Publications of the European Communities, Belgium.
- Conservation Course, 1976, *A Handbook for the Preparation of Management Plans: Revision 1*, Discussion Papers in Conservation No. 14, University College London, London.
- Conservation Course, 1988, *Abernethy Forest – Naturalness in Management Planning*, Discussion Papers in Conservation No. 50, University College London, London.
- Darling, F.F., 1947, *Natural History in the Highlands and Islands*, Collins, London.
- Dennis, R., 1995, 'Scotland's Native Forest – Return of the Wild', *ECOS*, 16 (2), 17-21.
- Dennis, R., 1998, *The Importance of Traditional Cattle for Woodland Biodiversity in the Scottish Highlands: A Personal View*, Inchdryne, Nethybridge.
- Duffey, E., 1971, 'The Management of Woodwalton Fen: A Multidisciplinary Approach' in E. Duffey and A.S Watts (eds.) *The Scientific Management of Animal and Plant Communities for Conservation*, Blackwell, Oxford, 581-597.
- Edwards, A., 1988, 'Sylvan Sanctuary', *Landscape*, September, 33-37.
- Edwards, M., 1999, *An Entomological Survey of Abernethy Forest Reserve*, RSPB, Unpublished Report, Lea Side, Carron Lane, Midhurst, West Sussex.
- Eggeling, W.J., 1964, 'A Nature Reserve Management Plan for the Island of Rhum, Inner Hebrides', *Journal of Applied Ecology*, 1, 405-419.
- Eggeling, W.J., 1999 (1947), *Forestry Working Plan for the Budongo and Siba forests - 1945-1954*, Export and Development Division, Commonwealth Secretariat, London.
- Forestry Commission, 1994a, 'Native Pinewoods', *Forestry Practice Guide 7*, Forestry Commission, Edinburgh.
- Forrest, G.I., 1980, 'Genotypic Variation among Native Scots Pine Populations in Scotland based on Monoterpene Analysis', *Forestry*, 53 (2), 101-128.



- Forster, J.A., Morris, D., 1977, 'Native Pinewood Conservation in North East Scotland' in R.G.H. Bunce and J.N.R. Jeffers (eds.) *Native Pinewoods of Scotland*, Institute for Terrestrial Ecology, Cambridge 116-120.
- Gibbons, D., Avery, M., Baillie, S., Gregory, R., Kirby, J., Porter, R., Ticker, G., Williams, G., 1996, 'Bird Species of Conservation Concern in the United Kingdom, Channel Islands and Isle of Man: revising the Red Data List', *RSPB Conservation Review*, 10, 7-17.
- Gibbons, D., Avery, M., Brown, A.F., 1996b, 'Population Trends of breeding birds in the United Kingdom since 1800', *British Birds*, 89, 291-305.
- Gibbons, D., Reid, J.B., Chapman, R.A., 1993, *The New Atlas of Breeding Birds in Britain and Ireland 1988-1991*, T & AD Poyser, London.
- Gibson, C.W.D., 1998, Harmonisation of Habitat Classification, *JNCC Report No. 279*, JNCC, Peterborough.
- Gimingham, C., 1977, 'The Status of Pinewoods in British Ecosystems' in R.G.H. Bunce and J.N.R. Jeffers (eds.) *Native Pinewoods of Scotland*, Institute for Terrestrial Ecology, Cambridge, 2-9.
- Godwin, H., Tansley, A.G., 1923, 'The Vegetation of Wicken Fen' in J.S. Gardiner and A.G. Tansley (eds.) *The Natural History of Wicken Fen*, Volume 5, Bowes and Bowes, London, 385-446.
- Gordon, S.P., 1925, *The Cairngorm Hills of Scotland*, Cassell, London.
- Grant, E., 1994, *Abernethy Forest: Its People and its Past*, Arkleton Trust, Nethy Bridge.
- Green, M., 2000, 'Human Nature' *ECOS*, 21(2), 47-52.
- Haines-Young, R.H., Barr, C.J., Black, H.I.J., Briggs, D.J., Bunce, R.G.H., Clarke, R.T., Cooper, A., Dawson, F.H., Firbank, L.G., Fuller, R.M., Furse, M.T., Gillespie, M.K., Hill, R., Hornung, M., Howard, D.C., McCann, T., Morecroft, M.D., Petit, S., Sier, A.R.J., Smart, S.M., Smith, G.M., Stott, A.P., Stuart, R.C., Watkins, J.W., 2000, *Accounting for Nature: Assessing Habitats in the UK Countryside*, DETR/CEH, London.
- Hall, J.E., Kirby, K.J., Whitbread, A.M., 2001, *National Vegetation Classification: Field Guide to Woodlands*, JNCC, Peterborough.
- Heard, S., 1988, *Abernethy Forest. A Study of Past Land-Use and Present Forest Structure*, MSc Dissertation, University College London, London.
- Highland Birchwoods, undated, *Information Sheet 7: Planning Native Woodland Management*, Highland Birchwoods, Munlochy, Ross-shire.
- Hirons, G., Goldsmith, B., Thomas, G., 1995, 'Site Management Planning' in W.J. Sutherland and D.A Hill (eds.) *Managing Habitats for Conservation*, Cambridge University Press, Cambridge, 22-41.
- Housden, S., Thomas, G., Bibby, C., Porter, R., 1991, Towards a Habitat Conservation Strategy for Bird Habitats in Britain, *RSPB Conservation Review*, 5, 9-16.
- Hunt, J., 1992, 'Conservation Management of Abernethy Forest Reserve' in D. Mollison (ed.) *Wilderness With People: The Management of Wild Land*, John Muir Trust, Musselburgh, 56-62.
- Innes, R.A., Seal, D.T., 1971, 'Native Scottish Pinewoods', *Forestry*, 44, Supplement 66-73.
- Jackson, D.L., 2000, Guidance on the interpretation of the Biodiversity Broad Habitat Classification (terrestrial and freshwater types): Definitions and the relationship with other habitat classifications. *JNCC Report*, No. 307, JNCC, Peterborough.
- Kerr, A.J., Bain, C., 1997, 'Perspectives on Current Action for Biodiversity Conservation in Scotland' in L.V. Fleming, A.C. Newton, J.A. Vickery and M.B. Usher (eds.) *Biodiversity in Scotland: Status, Trends and Initiatives*, The Stationary Office Edinburgh, 273-285.
- Lance, AN., 1990, 'Foreword', *RSPB Conservation Review*, 4, 1.
- Marren, P., 2000, 'Did the Bittern Read the BAP?', *ECOS*, 21(2), 43-46.

- Marchant, J.H., Hudson, R., Carter, S.P., Whittington, P., 1990, *Population Trends in British Breeding Birds*, British Trust for Ornithology, Tring.
- McVean, D.N., Ratcliffe, D.A., 1962, *Plant Communities of the Scottish Highlands*, HMSO, London.
- Moss, R., 1986, 'Rain, Breeding Success and Distribution of Capercaillie *Tetrao urogallus* and black grouse *Tetrao tetrix* in Scotland', *Ibis*, 128, 65-72.
- Moss, R., Picozzi, N., 1994, 'Management of Forests for Capercaillie in Scotland', *Forestry Commission Bulletin 113*, HMSO, London.
- Moss, R., Picozzi, N., Summers., R.W., Baines, D., 2000, 'Capercaillie *Tetrao urugallus* in Scotland – Demography of a Declining Population' *Ibis*, 142, 259-267.
- Munro, J., 1988, 'The Golden Groves of Abernethy: The Cutting and Extraction of Timber Before the Union' in G. Cruickshank (ed.) *A Sense of place: Studies in Scottish Local History*, Scotland's Cultural Heritage Unit, Edinburgh, 152-162.
- NCC, 1983, *A Handbook for the Preparation of Management Plans*, Nature Conservancy Council, Peterborough.
- NCC, 1984, *Nature Conservation in Great Britain*, Nature Conservancy Council, Peterborough.
- NCC, 1988, *Site Management Plans for Nature Conservation: A Working Guide*, Nature Conservancy Council, Peterborough.
- NCC, 1990, *Handbook for Phase 1 Habitat Survey: A Technique for Environmental Audit*, Nature Conservancy Council, Peterborough.
- O'Sullivan, P.E., 1973, 'Land-use Changes in the Forest of Abernethy, Inverness-shire (1750-1900)', *Scottish Geographical Magazine*, 89, 95-106.
- O'Sullivan, P.E., 1977, 'Vegetation History and the Native Pinewoods' in R.G.H. Bunce and J.N.R. Jeffers (eds.) *Native Pinewoods of Scotland*, Institute for Terrestrial Ecology, Cambridge, 60-69.
- Petty, S.J., 2000, *Capercaillie: A Review of Research Needs*, A Report to the Scottish Executive, Forestry Commission and Scottish Natural Heritage, Scottish Executive, Edinburgh.
- Picozzi, N., Catt, D. C., Moss, R., 1992, 'Evaluation of Capercaillie Habitat', *Journal of Applied Ecology*, 29, 751-762.
- Porter, R., Bibby, C., Elliott, G., Housden, S., Thomas, G., Williams, G., 1990, 'Species Action plans for Birds', *RSPB Conservation Review*, 4, 10-14.
- Prestt, I., 1988, 'Comment', *Birds Magazine*, Summer, RSPB, Sandy, Bedfordshire.
- Proctor, R., 1998, *Fire in Boreal Pinewoods and its Suppression in Scotland: A Review of Selected Fire Literature*, Unpublished RSPB Report, RSPB Forest Lodge, Nethy Bridge.
- RSPB, 1991, *Forest Lodge Reserve Management Plan*, Abernethy, Nethy Bridge.
- RSPB, 1993, *Time for Pine: A Future for Caledonian Pinewoods*, RSPB, Sandy, Bedfordshire.
- RSPB, 1995, *Abernethy Forest Reserve Management Plan*, Abernethy, Nethy Bridge.
- RSPB, 1997, *Future Directions II: Saving the Birds, Saving the future: The RSPB's Corporate Strategy 1997-2002*, RSPB, Sandy, Bedfordshire.
- RSPB, 1999a, *Abernethy Forest Reserve Management Plan*, RSPB, Abernethy.
- RSPB, 1999b, *Management Plan Guidance Notes: Version 5*, unpublished.
- RSPB, 2000, *Insh Marshes Management Plan*, RSPB, Insh.
- RSPB, 2001, *Abernethy Forest Reserve Management Plan*, Abernethy, Nethy Bridge.
- RSPB, 2001, *The State of the UK's Birds 2000*, Royal Society for the Protection of Birds/ British Trust for Ornithology/Wildfowl and Wetlands Trust, Sandy, Bedfordshire.
- RSPB, 2002, *Focused on action: the RSPB 2001-2002*, RSPB, Sandy, Bedfordshire.
- RSPB/ITE, 1999, *Species and Habitat Action Plan Assessment Form - Capercaillie (Tetrao urogallus)*, unpublished.

- Scottish Biodiversity Group, 1997, *Biodiversity in Scotland: The Way Forward*, The Scottish Office, Edinburgh.
- SNH, 1994, Red Deer and the Natural Heritage, Scottish Natural Heritage, Edinburgh.
- Sharrock, J.T.R., 1976, *The Atlas of Breeding Birds in Britain and Ireland 1968-1972*, British Trust for Ornithology, Tring.
- Simonson, W., Thomas, R., 1999, *Biodiversity: Making the Links*, English Nature, Peterborough.
- Staines, B.W., 1995, 'The Impact of Red Deer on the Regeneration of Native Pinewoods' in J.R. Aldhous (ed.) *Our Pinewood Heritage*, Conference Proceedings 20-22 October 1994, Inverness, Forestry Authority, Edinburgh, 107-114.
- Staines, B.W., Balharry, R., Welch, D., 1995, 'The Impact of Red Deer and Their Management on the Natural Heritage in the Uplands' in D.B.A. Thompson, A.J. Hester and M.B. Usher (eds.) *Heaths and Moorland: Cultural Landscapes*, HMSO, Edinburgh, 294-308.
- Stamp, D., 1969, *Nature Conservation in Britain*, Collins, London.
- Steven, H.M., Carlisle, A., 1959, *The Native Pinewoods of Scotland*, Oliver and Boyd, Edinburgh.
- Summers, R., 1999, *The History and Ecology of Abernethy Forest, Strathspey*, Internal RSPB Report, RSPB, Inverness.
- Summers, R., Proctor, R., Raistrick, P., Taylor, S., 1997, 'The Structure of Abernethy Forest, Strathspey, Scotland', *Botanical Journal of Scotland*, 49 (1), 39-55.
- Tansley, A.G., 1949, *The British Islands and the Vegetation* (2nd Edition), Cambridge University Press, Cambridge.
- Taylor, S., 1995, 'Pinewood Restoration at the RSPB's Abernethy Forest Reserve' in J.R. Aldhous (ed.) *Our Pinewood Heritage*, Conference Proceedings 20-22 October 1994, Inverness, Forestry Authority, Edinburgh, 145-154.
- Tickner, M., 1989, *Abernethy Forest Reserve: vegetation survey, botanical site evaluation and management prescriptions*, RSPB Internal Report, Sandy, Bedfordshire.
- Tucker, G.M., Heath, M.F., 1994, *Birds in Europe: Their Conservation Status*, Birdlife International, Cambridge.
- UK Biodiversity Group 1998a *Tranche Two Action Plans. Volume I: Invertebrates and Vascular Plants*, English Nature, Peterborough.
- UK Biodiversity Group 1998b *Tranche Two Action Plans. Volume II: Terrestrial and Freshwater Habitats*, English Nature, Peterborough.
- UK Biodiversity Group 1998c *Tranche Two Action Plans. Volume III: Plants and Fungi*, English Nature, Peterborough.
- UK Biodiversity Group, 1998b, *Tranche Two Action Plans. Volume II: Terrestrial and Freshwater Habitats*, English Nature, Peterborough.
- UK Biodiversity Group, 1999a, *Tranche Two Action Plans: Volume IV: Invertebrates*, English Nature, Peterborough.
- UK Biodiversity Group, 1999b, *Tranche Two Action Plans: Volume V Maritime Species and Habitats*, English Nature, Peterborough.
- UK Biodiversity Group, 1999c, *Tranche Two Action Plans. Volume VI: Terrestrial and Freshwater Species and Habitats*, English Nature, Peterborough.
- UK Biodiversity Group, 2000, *Tranche Two Action Plans: Index to the Steering Group Report and Tranche Two Action Plans*, English Nature, Peterborough.
- UK Biodiversity Group, 2001, *Sustaining the Variety of Life: 5 years of the UK Biodiversity Action Plan*, DETR, London.
- UK Biodiversity Steering Group, 1995a, *Biodiversity: The UK Steering Group Report: Volume 1: Meeting the Rio Challenge*, HMSO, London.
- UK Biodiversity Steering Group, 1995b, *Biodiversity: The UK Steering Group Report: Volume 2: Action Plans*, HMSO, London.

- Usher, M.B., (ed.) 2000, *Action for Scotland's Biodiversity*, Scottish Biodiversity Group/Scottish Executive, Edinburgh.
- Usher, M.B., 1967, *Aberlady Bay Local Nature Reserve: Description and Management Plan*, East Lothian County Council, Haddington.
- Usher, M.B., 1973, *Biological Management and Conservation*, Chapman and Hall, London.
- Walker, G.J., Kirby, K.J., 1989, *Inventories of Ancient, Long-Established and Semi-Natural Woodland in Scotland*, Research and Survey in Nature Conservation No. 22, Nature Conservancy Council, Peterborough.
- Williams, G., Green, R., 1993, 'Towards an Upland Habitat Action Plan', *RSPB Conservation Review*, 7, 5-11.
- Wood, J.B., 1983, 'Management Plans' in A. Warren and F.B. Goldsmith (eds.) *Conservation in Perspective*, John Wiley & Sons, London, 247-266.
- Wood, J.B., 1993, 'Managing Nature' in F.B. Goldsmith and A. Warren (eds.) *Conservation in Progress*, John Wiley & Sons, London, 25-34.
- Wood, J.B., Heaton, A.M., 1976, 'Management Planning for National Nature Reserves', *Conservation Reports*, 9, University College London, London.
- Wood, J.B., Warren, A., (eds.), 1978, *A Handbook for the Preparation of Management Plans: Revision 2*, Discussion Papers in Conservation No. 18, University College London, London.
- Wynne, G., 1993, 'Presentation by Mr Graham Wynne, Director of Conservation, RSPB', in Wright, F.J., Galbraith, C.A., Bendal, R., (eds.), 1993, *Action for Biodiversity in the UK: A seminar organised by the Joint Nature Conservation Committee and the Department of the Environment, 13-14 May 1993*, JNCC, Peterborough, 45-51.
- Wynne, G., Avery, M., Campbell, L., Juniper, T., King, M., Smart, J., Steel, C., Stones, C., Stubbs, A., Taylor, J., Tydeman, C., Wynde, R., 1993, *Biodiversity Challenge: An Agenda for Biodiversity in the UK*, Sandy, RSPB.
- Wynne, G., Avery, M., Campbell, L., Gubbay, S., Hawkswell, S., Juniper, T., King, M., Newbery, P., Smart, J., Steel, C., Stones, C., Stubbs, A., Taylor, J., Tydeman, C., Wynde, R., 1995a, *Biodiversity Challenge: An Agenda for Biodiversity in the UK* (second edition), Sandy, RSPB.
- Wynne, G., Avery, M., Hawkswell, S., Juniper, T., King, M., Smart, J., Steel, C., Stubbs, A., Taylor, J., Tydeman, C., 1995b, 'The Road from Rio: Action for Biodiversity', *RSPB Conservation Review*, 9, 14-19.

## Secondary Sources

- Adams, W.M., 1986, *Nature's Place: Conservation Sites and Countryside Change*, Allen and Unwin, London.
- Adams, W.M., 1990, *Green Development: Environment and Sustainability in the Third World*, Routledge, London.
- Adams, W.M., 1993, 'Places for Nature: Protected Areas in British Nature Conservation' in F.B. Goldsmith and A. Warren (eds.) *Conservation in Progress*, John Wiley and Sons, Chichester, 185-208.
- Adams, W.M., 1996a, *Future Nature: A Vision for Conservation*, Earthscan, London.
- Adams, W.M., 1996b, 'Creative Conservation, Landscape and Loss', *Landscape Research*, 21 (3), 265-276.
- Adams, W.M., 1997, 'Rationalization and Conservation: Ecology and the Management of Nature in the United Kingdom', *Transactions of the Institute of British Geographers*, NS 22, 277-291.
- Adams, W.M., 2001, 'Joined-up Conservation', *ECOS*, 22(1), 22-27.
- Adams, W.M., 2003a, 'When Nature Won't Stay Still: Conservation, Equilibrium and Control' in W.M. Adams and M. Mulligan (eds.) *Decolonizing Nature: Strategies for Conservation in a Postcolonial Era*, Earthscan, London, 220-246.

- Adams, W.M., 2003b, *Future Nature: A Vision for Conservation*, Earthscan, London (2<sup>nd</sup> Edition).
- Allen, D., 1976, *The Naturalist in Britain: A Social History*, Lane, London.
- Anderson, K., 1995, 'Culture and Nature at the Adelaide Zoo: At the Frontiers of Human Geography', *Transactions of the Institute of British Geographers*, NS20, 275-294.
- Anderson, K., Gale F, 1992, *Inventing Places: Studies in Cultural Geography*, Longman Cheshire, Melbourne.
- Atkinson, P., Coffey, A., 1997, 'Analysing Documentary Realities' in D. Silverman (ed.) *Qualitative Research: Theory, Method and Practice*, Sage, London, 45-62.
- Bernard, H.R., 2000, *Social Research Methods: Qualitative and Quantitative Approaches*, Sage, London.
- Benton, L.M., Short, J.R., 1999, *Environmental Discourse and Practice*, Blackwell, Oxford.
- Benton, T., 1994, 'Biology and Social Theory in the Environmental Debate' in M. Redclift and T. Benton (eds.) *Social Theory and the Environment*, Routledge, London, 28-50.
- Billig, M., 1987, *Arguing and Thinking: A Rhetorical Approach to Social Psychology*, Cambridge University Press, Cambridge.
- Billig, M., 1997, 'Discursive, Rhetorical and Ideological Messages' in C. McGarty and A. Haslam (eds.) *The Message of Social Psychology*, Blackwell, Oxford, 36-53.
- Billig, M., Condor, S., Edwards, D., Gane, M., Middleton, D., Radley, A., 1988, *Ideological Dilemmas: A Social Psychology of Everyday Thinking*, Sage, London.
- Biodiversity Challenge, 2001, *Biodiversity Counts: Delivering a Better Quality of Life*, RSPB, Sandy.
- Birch, M., 1998, 'Re/constructing Research Narratives: Self and Sociological Identity in Alternative Settings' in J. Ribbens and R. Edwards (eds.) *Feminist Dilemmas in Qualitative Research: Public Knowledge and Private Lives*, Sage, London, 171-185.
- Bird, E.A.R., 1987, 'The Social Construction of Nature: Theoretical Approaches to the History of Environmental Problems', *Environmental Review*, 11, 255-264.
- Bloor, D., 1976, *Knowledge and Social Imagery*, University of Chicago Press, Chicago.
- Bloor, D., 1999, 'Anti-Latour', *Studies in History and Philosophy of Science*, 30 (1), 81-112.
- Bocking, S., 1993, 'Conserving Nature and Building a Science: British Ecologists and the Origins of the Nature Conservancy' in M. Shortland (ed.) *Science and Nature: Essays in the History of the Environmental Sciences*, British Society for the History of Science, Stanford in the Vale, 89-114.
- Bocking, S., 1997, *Ecologists and Environmental Politics: A History of Contemporary Ecology*, Yale University Press, Newhaven.
- Botkin, D., 1990, *Discordant Harmonies*, Oxford University Press, New York.
- Bowker, G., 2000, 'Biodiversity datadiversity', *Social Studies of Science*, 30(5), 643-683.
- Bowker, G., Star, S.L., 1999, *Sorting Things Out: Classification and its Consequences*, MIT Press, Cambridge MA.
- Bramwell, A., 1989, *Ecology in the Twentieth Century: A History*, Yale University Press, Newhaven.
- Braun, B., 2000, 'Producing Vertical Territory: Geology and Governmentality in Late Victorian Canada', *Ecumene*, 7, 6-46.
- Braun, B., 2002, *The Intemperate Rainforest: Nature, Culture and Power on Canada's West Coast*, University of Minnesota Press, Minneapolis.
- Braun, B., Wainwright, J., 2001, 'Nature, Poststructuralism and Politics' in N. Castree and B. Braun (eds.) *Social Nature: Theory, Practice and Politics*, Blackwell, Oxford, 41-63.
- Bryant, R.L., 2002, 'Non-Governmental Organizations and Governmentality: 'Consuming' Biodiversity and Indigenous People in the Philippines', *Political Studies*, 50, 268-292.
- Bryman, A., 2001, *Social Research Methods*, Oxford University Press, Oxford.

- Budiansky, S., 1995, *Nature Keepers: the new science of nature management*, Weidenfeld and Nicholson, London.
- Bunce, M., 1994, *The Countryside Ideal: Anglo-American Images of Landscape*, Routledge, London.
- Burgess, J., 1992, 'The Cultural Politics of Nature Conservation and Economic Development' in K. Anderson and F. Gale (eds.) *Inventing Places: Studies in Cultural Geography*, Longman Cheshire, Melbourne, 235-251.
- Burgess, J., 1993, 'Representing Nature: Conservation and the Mass Media', in F.B. Goldsmith and A. Warren (eds.) *Conservation in Progress*, Wiley, London, 51-64.
- Burgess, R.G., 1984, *In the Field: An Introduction to Field Research*, Routledge, London.
- Burman, E., Parker, I., 1993, (eds.) *Discourse Analytic Techniques: Repertoires and Readings of Texts in Action*, Routledge, London.
- Burningham, K., Cooper, G., 1999, 'Being Constructive: Social Constructionism and the Environment', *Sociology*, 33 (2), 297-316.
- Callon, M., 1986, 'Some Elements in a Sociology of Translation: Domestication of the Scallops and the Fishermen of St Brieuc Bay' in J. Law (ed.) *Power, Action and Belief: A New Sociology of Knowledge*, Routledge, London, 196-233.
- Cameron, L., 1999, 'Histories of Disturbance', *Radical History Review*, 74(4), 4-24.
- Carabine, J., 2001, 'Unmarried Motherhood 1830-1990: A Genealogical Analysis' in M. Wetherell, S. Taylor, S. Yates (eds.) *Discourse as Data*, Sage/Open University, Milton Keynes, 267-310.
- Castree, N., Braun, B., 2001, *Social Nature: Theory, Practice and Politics*, Blackwell, Oxford.
- Chouliaraki, L., Fairclough, N., 1999, *Discourse in Late Modernity: Rethinking Critical Discourse Analysis*, Edinburgh University Press, Edinburgh.
- Clifford, J., Marcus, G.E., 1986, *Writing Culture: The Poetics and Politics of Ethnography*, University of California Press, Berkeley, CA.
- Cloke, P., Milbourne, P., Thomas, C., 1996, 'The English National Forest: Local Reactions to Plans for Renegotiated Nature-Society Relations in the Countryside', *Transactions of the Institute of British Geographers*, NS 21, 552-571.
- Coates, P., 1998, *Nature: Western Attitudes Since Ancient Times*, Polity Press, Cambridge.
- Cornwell, J., 1988, 'A Case-Study Approach to Lay Health Beliefs' in J. Eyles and D. Smith (eds.) *Qualitative Methods in Human Geography*, Polity Press, Cambridge, 219-232.
- Crofts, R., 2003, 'Developing an Agenda for Plant Conservation in Scotland – Conclusions of the Symposium', *Botanical Journal of Scotland*, 55(1), 225-233.
- Cronon, W., 1995a, (ed.) *Uncommon Ground: Rethinking the Human Place in Nature*, W.W.Norton, Washington.
- Cronon, W., 1995b, 'The Trouble with Wilderness; Or, Getting Back to the Wrong Nature', in W Cronon (ed.) *Uncommon Ground: Rethinking the Human Place in Nature*, W.W.Norton, Washington, 69-90.
- Darier, E., 1996, 'Environmental Governmentality: The Case of Canada's Green Plan' *Environmental Politics*, 5(4), 585-606.
- Darier, E., (ed.) 1999, *Discourses of the Environment*, Blackwell, Oxford.
- Davidson, J., 2001, 'Joking Apart ...': A 'Processual' Approach to Researching Self-Help Groups', *Social and Cultural Geography*, 2(2), 163-182.
- de Laine, M., 2000, *Fieldwork, Participation and Practice: Ethics and Dilemmas in Qualitative Research*, Sage, London.
- Dean, J., 1979, 'Controversy Over Classification: A Case Study from the History of Botany' in B. Barnes and S. Shapin (eds.) *Natural Order: Historical Studies of Scientific Culture*, Sage, London, 211-230.
- Dean, M., 1994, *Critical and Effective Histories: Foucault's Methods and Historical Sociology*, Routledge, London.
- Dean, M., 1999, *Governmentality: Power and Rule in Modern Society*, Sage, London.

- Demeritt, D., 1994, 'Ecology, Objectivity and Critique in Writings on Nature and Human Societies', *Journal of Historical Geography*, 20(1), 22-37.
- Demeritt, D., 1996, 'Social Theory and the Reconstruction of Science and Geography', *Transactions of the Institute of British Geographers*, NS 21, 484-503.
- Demeritt, D., 1998, 'Science, Social Constructivism and Nature' in N. Castree and B. Braun (eds.) *Remaking Reality: Nature at the Millennium*, Routledge, New York, 177-197.
- Demeritt, D., 2001a, 'The Construction of Global Warming and the Politics of Science', *Annals of the Association of American Geographers*, 91(2), 307-337.
- Demeritt, D., 2001b, 'Being Constructive about Nature' in N. Castree and B. Braun (eds.) *Social Nature: Theory, Practice and Politics*, Blackwell, Oxford, 22-40.
- Demeritt, D., 2001c, 'Scientific Forest Conservation and the Statistical Picturing of Nature's Limits in the Progressive-era United States' *Environment and Planning D: Society and Space*, 19, 431-459.
- Demeritt, D., 2002, 'What is the 'Social Construction of Nature'? A typology and sympathetic critique', *Progress in Human Geography*, 26 (6), 767-790.
- Denzin, N.K., 1997, *Interpretative Ethnography: Ethnographic Practices for the 21<sup>st</sup> Century*, Sage, London.
- Dickens, P., 1996, *Reconstructing Nature: Alienation, Emancipation and the Division of Labour*, Routledge, London.
- Dixon, J., 1998, 'Nature Conservation' in P. Lowe and S. Ward (eds.) *British Environmental Policy and Europe*, Routledge, London, 214-231.
- Dizard, J.E., 1993, 'Going Wild: The Contested Terrain of Nature' in J. Bennett and W. Chaloupka (eds.) *In the Nature of Things: Language, Politics and the Environment*, University of Minnesota Press, Minneapolis, 111-135.
- Doyle, T., McEachern, D., 1998, *Environment and Politics*, Routledge, London.
- Dreyfus HL, Rabinow P, 1982, *Michel Foucault: Beyond Structuralism and Hermeneutics*, Harvester Wheatsheaf, Hemel Hempstead.
- Dryzek, J.S., 1997, *The Politics of the Earth: Environmental Discourses*, Oxford University Press, Oxford.
- Duncan, J.S., Duncan, N.G., 2001, 'The Aestheticization of the Politics of Landscape Preservation', *Annals of the Association of American Geographers*, 91 (2), 387-409.
- Dunlap, R., Catton, W.R., 1994, 'Struggling with Human Exceptionalism: The Rise, Decline and Revitalisation of Environmental Sociology', *American Sociologist*, Spring, 5-30.
- Dunlap, T., 1991, 'Organisation and Wildlife Preservation: The Case of the Whooping Crane in North America', *Social Studies of Science*, 21, 197-221.
- Dwyer, J. C., Hodge, I. D., 1996, *Countryside in Trust*, Wiley and Sons, Chichester.
- Eden, S., 2001, 'Environmental Issues: Nature Versus the Environment', *Progress in Human Geography*, 25(1), 79-85.
- Eder, K., 1996, *The Social Construction of Nature*, Sage, London.
- Edley, N., 2001, 'Analysing Masculinity: Interpretative Repertoires, Ideological Dilemmas and Subject Positions' in M. Wetherell, S. Taylor, S. Yates (eds.) *Discourse as Data*, Sage/Open University, Milton Keynes, 189-228.
- Edley, N., Wetherell, M., 1999, 'Imagined Futures: Young Men's Talk About Fatherhood and Domestic Life', *Journal of Social Psychology*, 38, 181-194.
- Edwards, D., Potter, J., 1992, *Discursive Psychology*, Sage, London.
- Einarsson, N., 1993, 'All Animals are Equal But Some Are Cetaceans: Conservation and Culture Conflict' in K. Milton (ed.) *Environmentalism: The View from Anthropology*, Routledge, London, 73-84.
- Enticott, G., 2001, 'Calculating Nature: The Case of Badgers, Bovine Tuberculosis and Cattle', *Journal of Rural Studies*, 17, 149-164.
- Escobar, A., 1996, 'Constructing Nature: Elements for a Poststructural Political Ecology' in R. Peet and M Watts (eds.) *Liberation Ecologies: Environment, Development, Social Movements*, Routledge, London.

- Evans D, 1992, *A History of Nature Conservation in Britain*, Routledge, London.
- Evernden, N., 1992, *The Social Creation of Nature*, John Hopkins University Press, Baltimore.
- Fairclough, N., 1989, *Language and Power*, Longman, London.
- Fairclough, N., 1992, *Discourse and Social Change*, Polity Press, Cambridge.
- Fairclough, N., 1995, *Critical Discourse Analysis: A Critical Study of Language*, Longman, London.
- Foucault, M., 1972, *The Archaeology of Knowledge*, Tavistock, London.
- Foucault, M., 1974, *The Order of Things: An Archaeology of the Human Sciences*, Routledge, London.
- Foucault, M., 1977, *Discipline and Punish: The Birth of the Prison*, Penguin, London, (Trans. Alan Sheridan).
- Foucault, M., 1978, *The History of Sexuality. Part 1: An Introduction*, Vintage, New York.
- Foucault, M., 1980a, 'Nietzsche, Genealogy, History' in M. Foucault, *Language, Counter-memory, Practice: selected essays and interviews*, Cornell University Press, Ithica NY, 139-164.
- Foucault, M., 1980b, 'Truth and Power' in M. Foucault, (ed.) C. Gordon, *Power/Knowledge*, Hassocks, Sussex, 109-133.
- Foucault, M., 1981, 'Questions of Method: An Interview with Michel Foucault', *Ideology and Consciousness*, 8, 3-14.
- Foucault, M., 1984, 'Space, Power, Knowledge' in P. Rabinow (ed.) *The Foucault Reader*, Penguin, London.
- Foucault, M., 1991, 'Governmentality' in G. Burchell, C. Gordon and P. Miller (eds.) *The Foucault Effect: Studies in Governmentality*, University of Chicago Press, Chicago, 87-104.
- Friday, L., 1997, *Wicken Fen: The Making of a Wetland Nature Reserve*, Harley, Colchester.
- Frouws J, 1998, 'The Contested Redefinition of the Countryside. An Analysis of Rural Discourses in the Netherlands', *Sociologia Ruralis*, 38 (1), 54-68.
- Gandy, M., 1996, 'Crumbling Land: The Postmodernity Debate and the Analysis of Environmental Problems', *Progress in Human Geography*, 20 (1), 23-40.
- Garner, R., 1996, *Environmental Politics*, Prentice Hall/Harvester Wheatsheaf, London.
- Geertz, C., 1973, *The Interpretation of Cultures: Selected Essays*, Basic Books, London.
- Giblett, R., 1996, *Postmodern Wetlands: Culture, History, Ecology*, Edinburgh University Press, Edinburgh.
- Gilbert, N., Mulkay, M., 1984, *Opening Pandora's Box: A Sociological Analysis of Scientists' Discourse*, Cambridge University Press, Cambridge.
- Gilg, A., 1978, *Countryside Planning*, David and Charles, Newton Abbot.
- Gilg, A., 1991, *Countryside Planning Policies for the 1990s*, CAB International, Wallingford.
- Glacken, C.J., 1967, *Traces on the Rhodian Shore*, University of California Press, Berkeley.
- Gold, F.R., Gold, M.G., 1995, *Imagining Scotland: Tradition, Representation and Promotion in Scottish Tourism since 1750*, Scolar Press, Aldershot.
- Golinski, J., 1998, *Making Natural Knowledge: Constructivism and the History of Science*, Cambridge University Press, Cambridge.
- Grove, R.H., 1995, *Green Imperialism: Colonial Expansion, Tropical Island Edens and the Origins of Environmentalism 1600-1860*, Cambridge University Press, Cambridge.
- Grove, R.H., 1997, *Ecology, Climate and Empire: Colonialism and Global Environmental History 1400-1940*, White Horse Press, Cambridge.
- Guba, E.G., Lincoln, Y.S., 1994, 'Competing Paradigms in Qualitative Research' in N. D. Denzin and Y.S. Lincoln (eds.) *Handbook of Qualitative Research*, Sage, London, 105-117.
- Hacking, I., *The Social Construction of What?*, Harvard University Press, Cambridge, Mass.
- Hajer, M., 1995, *The Politics of Environmental Discourse*, Clarendon Press, Oxford.



- Hall, S., 1997, 'The Work of Representation' in S. Hall (ed.) *Representation: Cultural Representations and Signifying Practices*, Sage, London, 13-74.
- Hammersley M, Atkinson P, 1983, *Ethnography: Principles in Practice*, Tavistock, London.
- Hannah, M.G., 2000, *Governmentality and the Mastery of Territory in Nineteenth-Century America*, Cambridge University Press, Cambridge.
- Hannigan, J., 1995, *Environmental Sociology: A Social Constructionist Perspective*, Routledge, London.
- Haraway, D.J., 1989, *Primate Visions: Gender, Race and Nature in the World of Modern Science*, Routledge, New York.
- Haraway, D.J., 1991, 'Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective', in *Simians, Cyborgs and Women: The Reinvention of Nature*, Free Association Books, San Francisco, 183-202.
- Haraway, D.J., 1992, 'The Promises of monsters: A Regenerative Politics for Inappropriate/Others' in L. Grossberg, C. Nelson and P. Treichler (eds.) *Cultural Studies*, Routledge, New York, 275-332.
- Haraway, D.J., 1997, *Modest\_Witness@Second\_Millennium.FemaleMan\_Meets\_OncoMouse: Feminism and Technoscience*, Routledge, London.
- Harding, S., 1986, *The Science Question in Feminism*, Open University Press, Milton Keynes.
- Harding, S., 1991, *Whose Science? Whose Knowledge? Thinking From Women's Lives*, Open University Press, Milton Keynes.
- Harrison, C.M., 1993, 'Nature Conservation, Science and Popular Values' in F.B. Goldsmith and A. Warren (eds.) *Conservation in Progress*, Wiley, London, 35-49.
- Harrison, C.M., Burgess, J., 1994, 'Social Constructions of Nature: A Case Study of Conflicts Over the Development of Rainham Marshes', *Transactions of the Institute of British Geographers*, NS 19, 291-310.
- Hayles, N.K., 1995, 'Searching for Common Ground' in M.E. Soule and G. Lease (eds.) *Reinventing Nature? Responses to Postmodern Deconstruction*, Island Press, Washington, 47-63.
- Hays, S.P., 1959, *Conservation and the Gospel of Efficiency: The Progressive Conservation Movement, 1890-1920*, Harvard University Press, Cambridge.
- Henderson, N., 1992, 'Wilderness and the Nature Conservation Ideal: Britain, Canada and the United States Contrasted', *Ambio*, 21 (6), 394-399.
- Hetherington, K., Law, J., 2000, 'After networks', *Environment and Planning D: Society and Space*, 18, 127-132.
- Hewitt, J.P., Stokes, R., 1975, 'Disclaimers', *American Sociological Review*, 40, 1-11.
- Hinde, T., 1985, *Forests of Britain*, Victor Gollancz, London.
- Hoggart, K., Lees, L., Davies, A., 2002, *Researching Human Geography*, Arnold, London.
- Holland, A., Rawles, K., 1993, 'Values in Conservation', *ECOS*, 14(1), 14-19.
- Holliday, A., 2002, *Doing and Writing Qualitative Research*, Sage, London.
- Holloway, J., 1998, "'Undercurrent Affairs': Radical Environmentalism and Alternative News", *Environment and Planning A*, 30, 1197-1217.
- Hollway, W., 1984, 'Gender Difference and the Production of Subjectivity' in J. Henriques, W. Hollway, C. Urwin, C. Venn, V. Walkerdine, *Changing the Subject: Psychology, Social Regulation and Subjectivity*, Methuen, London, 227-263.
- Hoy, D., (ed.) 1986, *Foucault: A Critical Reader*, Blackwell, Oxford.
- Hunter, J., 1995, *On the Other Side of Sorrow - Nature and People in the Scottish Highlands*, Mainstream, Edinburgh.
- Irwin, A., 2001, *Sociology and the Environment: A Critical Introduction to Society, Nature and Knowledge*, Polity Press, Cambridge.
- Jardine, N., Secord, J.A., Spary, E.C., (eds.) 1996, *Cultures of Natural History*, Cambridge University Press, Cambridge.

- Jenkins, J., James, P., 1994, *From Acorn to Oak Tree: The Growth of the National Trust, 1895-1994*, Macmillan, London.
- Johnson, S. P., 1993, *The Earth Summit: The United Nations Conference on Environment and Development (UNCED)*, Graham & Trotman/Martinus Nijhoff, London.
- Johnston, J. L., 2000, *Scotland's Nature in Trust: The National Trust for Scotland and its Wildlife and Crofting Management*, T. & A.D. Poyser, London.
- Johnston, J. L., Balharry, R., 2001, *Beinn Eighe: The Mountain Above the Wood*, Birlinn, Edinburgh.
- Journet, D., 1991, 'Ecological Theories as Cultural Narratives', *Written Communication*, 8(4), 446-472).
- Kaye, K.J., 1990, 'Use of the Countryside by the Urban State: Scotland's North-West Seaboard and Islands', *Scottish Geographical Magazine* Vol. 106, No. 2, 89-98.
- Kempton, W., Boster, J.S., Hartly, J.A., 1995, *Environmental Values in American Culture*, MIT Press, Cambridge MA.
- Kirsch, S., 2002, 'John Wesley Powell and the Mapping of the Colorado Plateau, 1869-1879: Survey Science, Geographical Solutions and the Economy of Environmental Values', *Annals of the Association of American Geographers*, 92, 548-572.
- Knorr-Cetina, K., 1981, *The Manufacture of Knowledge: An Essay on the Constructivist and Contextual Nature of Science*, Pergamon Press, Oxford.
- Kuhn, T., 1962, *The Structure of Scientific Revolutions*, University of Chicago Press, Chicago.
- Kwa, C., 1987, 'Representations of Nature Mediating Between Ecology and Science Policy: The Case of the International Biological Programme', *Social Studies of Science*, 17, 413-442.
- Kwan, M.P., 2002, 'Quantitative Methods and Feminist Geographic Research' in P. Moss (ed.) *Feminist Geography in Practice: Research and Methods*, Blackwell, Oxford, 160-172.
- Lal, J., 1996, 'Situating Locations: The Politics of Self, Identity and 'Other' in Living and Writing the Text' in D.L. Wolf (ed.) *Feminist Dilemmas in Fieldwork*, Westview Press, Boulder, CO, 185-214.
- Lambert, R. A., 1999, 'In Search of Wilderness, Nature and Sport: The Visitor to Rothiemurchus 1780-2000' in T. C. Smout and R. A. Lambert (eds.), *Rothiemurchus: Nature and People on a Highland Estate 1500-2000*, Scottish Cultural Press, Dalkeith, 32-59.
- Lambert, R.A., 1998, *Species History in Scotland: Introductions and Extinctions Since the Ice Age*, Scottish Cultural Press, Edinburgh.
- Lambert, R.A., 2000, 'Conservation, Recreation and Tourism: Craigellachie National Nature Reserve, Aviemore, 1950 -1980', *Northern Scotland*, 20, 113-124.
- Lambert, R.A., 2001, *Contested Mountains: Nature, Development and Environment in the Cairngorms Region of Scotland, 1880-1980*, White Horse Press, Cambridge.
- Lambert, R.A., 2002, 'The Grey Seal in Britain: A Twentieth Century History of a Nature Conservation Success', *Environment and History*, 8(4), 449-474.
- Larsen, S.E., 1992, 'Is Nature Really Natural?', *Landscape Research*, 17(3), 116-122.
- Larsen, S.E., 1994, 'Nature on the Move: Meanings of Nature in Contemporary Culture', *Ecumene*, 1 (3), 283-300.
- Latour, B., 1987, *Science in Action: How to Follow Scientists and Engineers Through Society*, Open University Press, Milton Keynes.
- Latour, B., 1988, *The Pasteurization of France*, Harvard University Press, Cambridge MA.
- Latour, B., 1993, *We Have Never Been Modern*, Harvester Wheatsheaf, Hemel Hempstead.
- Latour, B., 1999a, 'On Recalling ANT' in J. Law and J. Hassard (eds.) *Actor Network Theory and After*, Blackwell, Oxford, 15-25.
- Latour, B., 1999b, *Pandora's Hope: Essays on the Reality of Science Studies*, Harvard University Press, Cambridge MA.

- Latour, B., 1999c, 'One More Turn After the Social Turn...' in M. Biagioli (ed.) *The Science Studies Reader*, Routledge, New York, 276-289.
- Latour, B., Woolgar, S., 1986, *Laboratory Life: The Construction of Scientific Facts*, Princeton University Press, New Jersey.
- Law, J., 1991, *A Sociology of Monsters: Essays on Power, Technology and Domination*, Routledge, London.
- Law, J., 1994, *Organizing Modernity*, Blackwell, Oxford.
- Law, J., Hassard, J., 1999, *Actor Network Theory and After*, Blackwell, Oxford.
- Lemke, J., 1995, *Textual Politics: Discourse and Social Dynamics*, Taylor & Francis, London.
- Light, J.S., 1997, 'The Changing Nature of Nature', *Ecumene* 4 (2), 181-195.
- Livingstone, D., 1995a, 'The Polity of Nature: Representation, Virtue, Strategy', *Ecumene*, 2 (4), 353-377.
- Livingstone, D., 1995b, 'The Spaces of Knowledge: Contributions Towards a Historical Geography of Science', *Environment and Planning D: Society and Space*, 13, 5-34.
- Lorimer, H., 1999, 'Ways of Seeing the Scottish Highlands: Marginality, Authenticity and the Curious Case of the Hebridean Blackhouse', *Journal of Historical Geography*, 25 (4), 517-533.
- Lorimer, H., 2000, 'Guns, Game and the Grandee: The Cultural Politics of Deerstalking in the Scottish Highlands', *Ecumene*, 7 (4), 403-431.
- Lowe, P.D., 1983, 'Values and Institutions in the History of British Nature Conservation' in A Warren and FB Goldsmith (eds.) *Conservation in Perspective*, John Wiley, Chichester, 329-352.
- Lowe, P.D., Goyder, J., 1983, *Environmental Groups in Politics*, Allen & Unwin, London.
- Luke, T.W., 1999, 'Environmentality as Green Governmentality' in E. Darier (ed.) *Discourses of the Environment*, Blackwell, Oxford, 121-151.
- Mabey, R., 1980, *The Common Ground: A Place for Nature in Britain's Future?*, Hutchinson, London.
- MacDonald, F., 1998, 'Viewing Highland Scotland: Ideology, Representation and the 'Natural Heritage'', *Area* 30 (3), 237-244.
- Mackay, D., 1995, *Scotland's Rural Land Use Agencies*, Scottish Cultural Press, Edinburgh.
- Mackenzie, F., 1998, "'The Cheviot, the Stag...and the White, White Rock?'" Community, Identity and Environmental Threat, Isle of Harris, Outer Hebrides, Scotland', *Environment and Planning D: Society and Space*, 16, 509-532.
- Mackenzie, J.M., 1997, *Empires of Nature and the Nature of Empires: Imperialism, Scotland and the Environment*, Tuckwell, East Linton.
- Mackenzie, D., Barnes, B., 1979, 'Scientific Judgement: The Biometry-Mendelism Controversy' in B. Barnes and S. Shapin (eds.) *Natural Order: Historical Studies of Scientific Culture*, Sage, London, 191-210.
- Macnaghten, P., 1993, 'Discourses of Nature: Argumentation and Power' in E Burman and I Parker (eds) *Discourse Analytic Techniques: Repertoires and Readings of Texts in Action*, Routledge, London, 52-72.
- Macnaghten, P., Urry, J., 1998, *Contested Natures*, Sage, London.
- Macnaghten, P., Urry, J., (eds.) 2001, *Bodies of Nature*, Sage, London.
- Madge, C., Raghuran, P., Skelton, T., Willis, K., Williams, J., 1997, 'Methods and Methodologies in Feminist Geographies: Politics, Practice and Power' in Women and Geography Study Group, *Feminist Geographies: Explorations in Diversity and Difference*, Addison Wesley Longman, Harlow, Essex, 86-111.
- Mallet, J., 2001, 'Concepts of Species' in S.A. Levin (ed.) *Encyclopaedia of Biodiversity*, Vol. 5, Academic Press, San Diego, 427-451.
- Marren, P., 1993, 'The Siege of the NCC: Nature Conservation in the Eighties' in F.B. Goldsmith and A. Warren (eds.) *Conservation in Progress*, John Wiley & Sons, London, 283-299.

- Marren, P., 2002, *Nature Conservation: A Review of the Conservation of Wildlife in Britain 1950-2001*, HarperCollins, London.
- Marshall, H., Wetherell, M., 1989, 'Talking about Career and Gender Identities: A Discourse Analysis Perspective' in S. Skevington and D. Baker (eds.) *The Social Identity of Women*, Sage, London, 106-129.
- Mather, A.S., 1993, 'Protected Areas in the Periphery: Conservation and Controversy in Northern Scotland', *Journal of Rural Studies*, 9 (4), 371-384.
- Matless, D., 1992, 'An Occasion for Geography: Landscape, Representation, and Foucault's Corpus', *Environment and Planning D: Society and Space*, 10(1), 41-56.
- Matless, D., 2000, 'Versions of Animal-Human: Broadland, c.1945-1970' in C. Philo and C. Wilbert (eds.) *Animal Spaces, Beastly Places: New Geographies of Human-Animal Relations*, Routledge, London, 115-140.
- Matthew, E.M., 2002, 'Conservation of Nature and Landscape' in C. Gimingham (ed.) *The Ecology, Land Use and Conservation of the Cairngorms*, Packard Publishing, Chichester, 169-183.
- McCormick, J., 1991, *British Politics and the Environment*, Earthscan, London.
- McCracken, G., 1988, *The Long Interview*, Sage, London.
- McDowell, L., 1992, 'Doing Gender: Feminism, Feminists and Research Methods in Human Geography', *Transactions of the Institute of British Geographers*, NS 17, 399-416.
- McHenry, H., 1997, 'Wild Flowers in the Wrong Field are Weeds! Examining farmers' Constructions of Conservation', *Environment and Planning A*, 29, 1039-1053.
- McIntosh, R.P., 1985, *The Background of Ecology: Concept and Theory*, Cambridge University Press, Cambridge.
- McNay, L., 1992, *Foucault and Feminism: Power, Gender and the Self*, Polity Press, Cambridge.
- Meadows, D.L., Randers, J., Behrens, W.W., 1972, *The Limits to Growth – A Report for The Club of Rome's Project on the Predicament of Mankind*, Pan, London.
- Merchant, C., 1981, *The Death of Nature: Women, Ecology and the Scientific Revolution*, HarperCollins, New York.
- Merchant, C., 1996, *Earthcare: Women and the Environment*, Routledge, London.
- Miles, J., Tudor, G., Easton, C., Mackey E. C., 1997, 'Habitat Diversity in Scotland' in L.V. Fleming, A.C. Newton, J.A. Vickery and M.B. Usher (eds.) *Biodiversity in Scotland: Status, Trends and Initiatives*, The Stationary Office Edinburgh, 43-56.
- Mills, S., 1997, *Discourse*, Routledge, London.
- Minter, R., Toogood, M., 1994, 'Progress for a Change', *ECOS*, 15 (3/4), 1-2.
- Mitchell, I., 1999, *Isles of the West: A Hebridean Voyage*, Canongate, Edinburgh.
- Mitman, G., 1992, *The State of Nature: Ecology, Community and American Social Thought, 1900-1950*, The University of Chicago Press, Chicago.
- Mitman, G., 1996, 'When Nature is the Zoo: Vision and Power in the Art and Science of Natural History', *Osiris*, 11, 117-143.
- Mitman, G., 1999, *Reel Nature: America's Romance with Wildlife on Film*, Harvard University Press, Cambridge, MA.
- Moore, N.W., 1987, *The Bird of Time: The Science and Politics of Nature Conservation; A Personal Account*, Cambridge University Press, Cambridge.
- Morrison, K., 1995, *Marx, Durkheim, Weber: Formations of Modern Thought*, Sage, London.
- Mormont, M., 1987, 'Rural Nature and Urban Natures', *Sociologia Ruralis*, 27 (1), 3-20.
- Murdoch, J., 1997a, 'Inhuman/nonhuman/human: Actor-Network Theory and the Prospects for a Nondualistic and Symmetrical Perspective on Nature and Society', *Environment and Planning D: Society and Space*, 15, 731-756.
- Murdoch, J., 1997b, 'Towards a Geography of Heterogeneous Associations', *Progress in Human Geography*, 21 (3), 321-337.
- Murdoch, J., 1998, 'The Spaces of Actor-Network Theory', *Geoforum*, 29 (4), 357-374.

- Murdoch, J., Lowe, P., 2003, 'The Preservation Paradox: Modernism, Environmentalism and the Politics of Spatial Division', *Transactions of the Institute of British Geographers*, NS 28, 318-332.
- Murdoch, J., Marsden T, 1995, 'The Spatialization of Politics: Local and National Actor-Spaces in Environmental Conflict', *Transactions of the Institute of British Geographers*, NS 20, 368-380.
- Murdoch, J., Ward, N., 1997, 'Governmentality and Territoriality: The Statistical Manufacture of Britain's 'National Farm'', *Political Geography*, 16 (4), 307-324.
- Murphy, R., 1994a, *Rationality and Nature: A Sociological Inquiry into a Changing Relationship*, Westview press, Boulder, CO.
- Murphy, R., 1994b, 'The Social Construction of Science Without Nature', *Sociology*, 28, 957-974.
- Myers, G., 1990a, *Writing Biology: Texts in the Construction of Scientific Knowledge*, University of Wisconsin Press, Madison.
- Myers, G., 1990b, 'Every Picture Tells a Story: Illustrations in E.O Wilson's Sociobiology' in M. Lynch and S. Woolgar (eds.) *Representation in Scientific Practice*, MIT Press, Cambridge, Massachusetts, 231-265.
- Myerson, G., Rydin, Y., 1996, *The Language of Environment: A New Rhetoric*, University College London Press, London.
- Nairn, K., 2002, 'Doing Feminist Fieldwork About Geography Fieldwork' in P. Moss (ed.) *Feminist Geography in Practice: Research and Methods*, Blackwell, Oxford, 146-159.
- Nash, R., 1973, *Wilderness and the American Mind*, Yale University Press, Newhaven.
- Nast, H.J., 1994, 'Opening Remarks on 'Women in the Field'', *Professional Geographer*, 46, 54-66.
- Nicholson, E. M., 1957, *Britain's Nature Reserves*, Country Life, London.
- Nicolson, M., 1989, 'National Styles, Divergent Classifications: A Comparative Case Study from the History of French and American Plant Ecology', *Knowledge and Society*, Vol. 8, 139-186.
- Norton, B.G., 1991, *Towards Unity Among Environmentalists*, Oxford University Press, Oxford.
- O'Connor, F. B., 1983, 'The Ecological Basis for Conservation' in A. Warren and F.B. Goldsmith (eds.) *Conservation in Practice*, Wiley and Sons, London, 87-98.
- O'Hara, R.J., 1992, 'Telling the Tree: Narrative Representation and the Study of Evolutionary History', *Biology and Philosophy*, 7, 135-160.
- O'Riordan, T., 1976, *Environmentalism*, Pion, London.
- Oelschlaeger, M., 1991, *The Idea Of Wilderness - From Prehistory to the Age of Ecology*, Yale University Press, Newhaven.
- Okley, J., Callaway, H., (eds.) 1992, *Anthropology and Autobiography*, Routledge, London.
- Olwig, K., 1984, *Nature's Ideological Landscape*, Allen Unwin, London.
- Orphir, A., Shapin, S., 1991, 'The Place of Knowledge: A Methodological Survey', *Science in Context*, 4(1), 3-21.
- Outram, D., 1996, 'New Spaces in Natural History' in N. Jardine, J Secord and E. Spray (eds.) *Cultures of Natural History*, Cambridge University Press, Cambridge, 249-270.
- Pahl-Wostl, C., 1995, *The Dynamic Nature of Ecosystems: Chaos and Order Intertwined*, Wiley, Chichester.
- Parker, I., 1990, 'Discourse: Definitions and Contradictions', *Philosophical Psychology*, 3 (2), 189-204.
- Parker, I., 1992, *Discourse Dynamics*, Routledge, London.
- Pepper, D., 1984, *The Roots of Modern Environmentalism*, Croom Helm, London.
- Pepper, D., 1996, *Modern Environmentalism: An Introduction*, Routledge, London.

- Peterken, G., 1981, *Woodland Conservation and Management* (First edition), Chapman and Hall, London.
- Peterken, G., 1993, *Woodland Conservation and Management* (Second edition), Chapman and Hall, London.
- Peterken, G., 1996, *Natural Woodland: Ecology and Conservation in Northern Temperate Regions*, Cambridge University Press, Cambridge.
- Petren, K., 2001, 'Concept of Habitat and Niche' in S.A. Levin (ed.) *Encyclopaedia of Biodiversity*, Vol. 3, Academic Press, San Diego, 303-315.
- Philo, C., 1992, 'Foucault's Geography', *Environment and Planning D: Society and Space*, 10(2), 137-161.
- Philp, M., 1990, 'Michel Foucault' in Q. Skinner (ed.) *The Return of Grand Theory in the Human Sciences*, Cambridge University Press, Cambridge, 65-81.
- Pickett, S.T.A., White, P.S., 1985, *The Ecology of Natural Disturbance and Patch Dynamics*, Academic Press, New York.
- Porter, T.M., 1995, *Trust in Numbers: The Pursuit of Objectivity in Science and Public Life*, Princeton University Press, Princeton, N.J.
- Potter, J., 1996, *Representing Reality: Discourse, Rhetoric and Social Construction*, Sage, London.
- Potter, J., Wetherell, M., 1987, *Discourse and Social Psychology: Beyond Attitudes and Behaviour*, Sage, London.
- Potter, J., Wetherell, M., 1994, 'Analyzing Discourse' in A. Bryman and R.G. Burgess (eds.) *Analyzing Qualitative Data*, Routledge, London, 47-66.
- Potter, J., Wetherell, M., Gill, R., Edwards, D., 1990, 'Discourse: noun, verb or social practice?', *Philosophical Psychology*, 3 (2), 205-217.
- Proctor, J.D., 1998a, 'The Social Construction of Nature: Relativist Accusations, Pragmatist and Critical Realist Responses', *Annals of the Association of American Geographers*, 88 (3), 352-376.
- Proctor, J.D., 1998b, 'Geography, paradox and environmental ethics', *Progress in Human Geography*, 22 (2), 234-255.
- Proctor, J.D., 1998c, 'The Spotted Owl and the Contested Moral Landscape of the Pacific Northwest' in J. Wolch and J. Emel (eds.) *Animal Geographies: Place, Politics and Identity in the Nature-Culture Boorderlands*, Verso, London, 191-217.
- Pryor and Rickett Silviculture, 1996, 'Model Management Plans for Woods of Special Environmental Value', *English Nature Research Reports No. 82*, English Nature, Peterborough.
- Rackham, O., 1976, *Trees and Woodland in the British Landscape*, Dent, London.
- Rackham, O., 1980, *Ancient Woodland: Its History, Vegetation and Uses in England*, Edward Arnold, London.
- Ramsay, P., 1997, *Revival of the Land: Creag Meagaidh National Nature Reserve*, SNH, Perth.
- Ratcliffe, D., 1977, *A Nature Conservation Review: The Selection of Biological Sites of National Importance to Nature Conservation in Britain*, Cambridge University Press, Cambridge.
- Richardson, L., 1998, 'Writing: A Method of Inquiry' in N.K. Denzin and Y.S. Lincoln (eds.) *Collecting and Interpreting Qualitative Materials*, Sage, London, 345-371.
- Ritchie, J., 1920, *The Influence of Man on Animal Life in Scotland*, Cambridge University Press, Cambridge.
- Robson, C., 2002, *Real World Research* (Second Edition), Blackwell, Oxford.
- Rodwell, J.S., 1991-1997, *British Plant Communities*, Vols. 1-5, Cambridge University Press, Cambridge.
- Rose, G., 1997, 'Situating Knowledges: Positionality, Reflexivity and Other Tactics', *Progress in Human Geography*, 21(3), 305-320.

- Rose, N., Miller, P., 1992, 'Political Power Beyond the State: Problematics of Government', *British Journal of Sociology*, 43(2), 173-205.
- Rothschild, M., Marren, P., 1997, *Rothschild's Reserves: Time and Fragile Nature*, Harley Books, Colchester.
- Rouse, J., 1987, *Knowledge and Power: Toward a Political Philosophy of Science*, Cornell University Press, Ithaca.
- Rouse, J., 1993, 'Foucault and the Natural Sciences' in J. Caputo and M. Yount (eds.) *Foucault and the Critique of Institutions*, Pennsylvania State University Press, University Park, Pa, 137-162.
- Rutherford, P., 1999, 'The Entry of Life into History' in E. Darrier (ed.) *Discourses of the Environment*, Blackwell, Oxford, 37-62.
- Ryan, J.R., 2000, 'Hunting with the Camera': Photography, Wildlife and Colonialism in Africa' in C. Philo and C. Wilbert (eds.) *Animal Spaces, Beastly Places: New Geographies of Human-Animal Relations*, Routledge, London, 203-221.
- Samstag, T., 1988, *For the Love of Birds*, RSPB, Sandy.
- Samuel, A.M.M., 1996, *Science as Practice: Conserving Scotland's Natural Heritage*, Unpublished PhD Thesis, Lancaster University.
- Samuel, A.M.M., 1998, 'An Integrated Conservation Policy for Scotland: A Rhetoric That Belies Practice', *Scottish Affairs*, 23, 93-107.
- Samuel, A.M.M., 2000, 'Cultural Symbols and Landowners Power: The Practice of Managing Scotland's Natural Resource', *Sociology*, 34 (4), 691-706.
- Schama, S., 1995, *Landscape and Memory*, HarperCollins, London.
- Schegloff, E. A., 1997, 'Whose Text? Whose Context?', *Discourse and Society*, 8, 165-187.
- Scott, R., Luscombe, G., 1995, 'Creative Conservation: A Way forward' *ECOS*, 16(2), 13-16.
- Schumacher, E.F., 1973, *Small is Beautiful: A Study of Economics as if People Mattered*, Abacus, London.
- Shapin, S., 1998, 'Placing the View from Nowhere: Historical and Sociological Problems in the Location of Science', *Transactions of the Institute of British Geographers*, NS 23, 5-12.
- Sheail, J., 1976, *Nature in Trust – The History of Nature Conservation in Britain*, Blackie, London.
- Sheail, J., 1981, *Rural Conservation in Interwar Britain*, Clarendon Press, Oxford.
- Sheail, J., 1987, *Seventy-Five Years in Ecology: The British Ecological Society*, Blackwell, Oxford.
- Sheail, J., 1995, 'The Ecologist and Environmental History – A British Perspective', *Journal of Biogeography*, 22, 953-966.
- Sheail, J., 1998, *Nature Conservation in Britain – The Formative Years*, HMSO, London.
- Sheail, J., 2001, 'The National Parks and Access to the Countryside Act of 1949 – its Origins and Significance' in T.C. Smout (ed.) *Nature, Landscape and People Since the Second World War*, Tuckwell Press, East Linton, 1-12.
- Sheail, J., Traweek, J.R., Mountford, J.O., 1997, 'The UK Transition from Nature Preservation to 'creative conservation'', *Environmental Conservation*, 24 (3), 224-235.
- Short, J.R., 1991, *Imagined Country: Society, Culture and Environment*, Routledge, London.
- Sismondo, S., 1993, 'Some Social Constructions', *Social Studies of Science*, 23, 515-51.
- Sismondo, S., 1996, *Science Without Myth: On Constructions, Reality and Social knowledge*, State University of New York Press, Albany.
- Smith, J.S., 1993, 'Changing Deer Numbers in the Scottish Highlands since 1780' in T.C. Smout (ed.) *Scotland Since Prehistory: Natural Change and Human Impact*, Scottish Cultural Press, Aberdeen, 89-97.
- Smout, T.C., 1993, *The Highlands and the Roots of Green Consciousness 1750 – 1990*, Occasional Paper No. 1, Scottish Natural Heritage, Perth.

- Smout, T.C., 2000, *Nature Contested: Environmental History in Scotland and Northern England since 1600*, Edinburgh University Press, Edinburgh.
- Smout, T.C., 1997, 'Highland Land-Use before 1800: Misconceptions, Evidence and Realities' in T.C. Smout (ed.) *Scottish Woodland History*, Scottish Cultural Press, Edinburgh, 5-23.
- Smout, T.C., 1999, 'Recreating Native Woodland: A Plea for More Thinking', *Scottish Woodland History Discussion Group Notes IV*, Centre for Environmental History and Policy, Stirling.
- Soper, K., 1995, *What is Nature?*, Blackwell, London.
- Soper, K., 1996, 'Nature/'nature'' in G. Robertson, M. Mash, L. Tickner, J. Bird, B. Curtis and T. Putman (eds.) *FutureNatural: Nature, Science, Culture*, Routledge, London.
- Soule, M., Lease, G., 1995, *Reinventing Nature? Responses to Postmodern Deconstruction*, Island Press, Washington.
- Stamp, D., 1969, *Nature Conservation in Britain*, Collins, London.
- Stanley, L., 1992, *The Auto/Biographical I: The Theory and Practice of Feminist Auto/biography*, Manchester University Press, Manchester.
- Steward, T.A., Pickett, V., Parker, T., Feidler, P.L., 1992, 'The New Paradigm in Ecology: Implications for Conservation Biology above the Species Level' in P. L. Feidler and S.K. Jain (eds.) *Conservation Biology: The Theory and Practice of Nature Conservation, Preservation and Management*, Chapman and Hall, London, 65-88.
- Sutherland, W.J., 2000, *The Conservation Handbook: Research, Management and Policy*, Blackwell, Oxford.
- Tait, J., Lane, L., Carr, S., 1988, *Practical Conservation: Site Assessment and Management Planning*, The Open University/Nature Conservancy Council, Milton Keynes.
- Takacs, D., 1996, *The Idea of Biodiversity: Philosophies of Paradise*, John Hopkins University Press, Baltimore.
- Tansley, A.G., 1946, *Our Heritage of Wild Nature: A Plea for Organized Nature Conservation*, Readers Union/Cambridge University Press, London.
- Taylor, P. J., 1988, 'Technocratic Optimism, H.T. Odum, and the Partial Transformation of Ecological Metaphor after World War II', *Journal of the History of Biology*, 21(2), 213-244.
- Thomas, J.A., 2001, 'Can Ecologists Recreate Habitats and Restore Absent Species?' in T.C. Smout (ed.) *Nature, Landscape and People Since the Second World War*, Tuckwell Press, East Linton, Scotland, 150-160.
- Thomas, K., 1983, *Man and the Natural World: Changing Attitudes in England 1500-1800*, Penguin, London.
- Thrift, N., 1996, *Spatial Formations*, Sage, London.
- Thrift, N., 1999, 'Steps to an Ecology of Place' in D Massey, J Allen, P Sarre (eds.) *Human Geography Today*, Polity, London, 295-322.
- Tipping, R., 1994, The Form and Fate of Scotland's Woodlands, *Proceedings of the Society of Antiquities of Scotland*, 124, 1-54.
- Tonkiss, F., 1998, 'Analysing Discourse' in C. Searle (ed.) *Researching Society and Culture*, Sage, London, 245-260.
- Toogood, M., 1995, 'Representing Ecology and Highland Tradition', *Area*, 27 (2), 102-109.
- Toogood, M., 1996a, 'Nature and Nation: Ecology and the Reconstruction of the Highlands', *Scotlands*, 3, 42-55.
- Toogood, M., 1996b, *Natural States: The Culture of Ecology and Nature Conservation 1949-1973*, Unpublished PhD Thesis, Lancaster University, Lancaster.
- Toogood, M., 1997, 'Semi-Natural History', *ECOS*, 18 (2), 62-68.
- Toogood, M., 2003, 'Decolonizing Highland Conservation' in W.M. Adams and M. Mulligan (eds.) *Decolonizing Nature: Strategies for Conservation in a Postcolonial Era*, Earthscan, London, 152-171.



- Tsouvalis-Gerber, J., 1998, 'Making the Invisible Visible: Ancient Woodlands, British Forest Policy and the Social Construction of Reality' in C. Watkins (ed.) *European Woods and Forests: Studies in Cultural History*, CAB International, Wallingford, Oxon, 215-229.
- Tubbs, C.R., 1968, *The New Forest: An Ecological History*, David and Charles, Newton Abbot.
- Turner, B., 1984, *The Body and Society*, Blackwell, Oxford.
- Urry, J., 1995, *Consuming Places*, Routledge, London.
- Usher, M.B., 1997, 'Scotland's Biodiversity: An Overview' in L.V. Fleming, A.C. Newton, J.A. Vickery and M.B. Usher (eds.) *Biodiversity in Scotland: Status, Trends and Initiatives*, The Stationary Office, Edinburgh, 5-20.
- Usher, M.B., (ed.) 1999, *Landscape Character: Perspectives on Management and Change*, The Stationary Office, Edinburgh.
- Vivat, B., 2002, 'Situated Ethics and Feminist Ethnography in a West of Scotland Hospice' in L. Bondi et. al. *Subjectivities, Knowledges and Feminist Geographies*, Rowman and Littlefield Publishers, Oxford, 236-258.
- Warren, C., 2002, *Managing Scotland's Environment*, Edinburgh University Press, Edinburgh.
- Warren, C., 2000, 'Birds, Bogs and Forestry' Revisited: The Significance of the Flow Country Controversy', *Scottish Geographical Magazine*, 116 (4), 315-337.
- Waterton, C., 2002, 'From Field to Fantasy: Classifying Nature, Constructing Europe', *Social Studies of Science*, 32 (2), 177-204.
- Watkins, C., 1988, 'The Idea of Ancient Woodland in Britain From 1800' in S. Salbitano (ed.) *Human Influence on Forest Ecosystems in Europe*, ESF FERN-CNR, Pitagora Editrice, Bologna, 237-246.
- Weber, M., 1968, *Economy and Society: An Outline of Interpretative Sociology*, Bedminster Press, New York.
- Wetherell, M., 1998, 'Positioning and Interpretative Repertoires: Conversation Analysis and Post-Structuralism in Dialogue', *Discourse and Society*, 9 (3), 387-412.
- Wetherell, M., 2001, 'Debates in Discourse Research' in M. Wetherell, S. Taylor, S. Yates (eds.) *Discourse Theory and Practice: A Reader*, Sage, London, 380-399.
- Wetherell, M., Potter, J., 1988, 'Discourse Analysis and the Identification of Interpretative Repertoires' in C. Antaki (ed.) *Analysing Everyday Explanation*, Sage, London, 168-183.
- Wetherell, M., Potter, J., 1992, *Mapping the Language of Racism: Discourse and the Legitimation of Exploitation*, Harvester Wheatsheaf, Hemel Hempstead.
- Wetherell, M., Taylor, S., Yates, S.J., 2001, *Discourse Theory and Practice: A Reader*, Sage, London.
- Whatmore, S., 1997, 'Dissecting the Autonomous Self: Hybrid Cartographies for a Relational Ethics', *Environment and Planning D: Society and Space*, 15, 37-53.
- Whatmore, S., 1999, 'Hybrid Geographies: Rethinking the 'Human' in Human Geography' in Massey D, Allen J, Sarre P (eds) *Human Geography Today*, Polity, London, 22-39.
- Whatmore, S., 2002, *Hybrid Geographies: Natures, Cultures, Spaces*, Sage, London.
- Whatmore, S., Boucher. S., 1993, 'Bargaining with Nature: The Discourse and Practice of 'environmental planning gain'', *Transactions of the Institute of British Geographers*, NS18, 166-178.
- Whatmore, S., Thorne, L., 1997, 'Nourishing Networks: Alternative Geographies of Food' in D. Goodman and M. Watts (eds.) *Globalising Food: Agrarian Questions and Global Restructuring*, Routledge, London, 287-304.
- Whatmore, S., Thorne, L., 1998, 'Wild(er)ness: Reconfiguring the Geographies of Wildlife', *Transactions of the Institute of British Geographers*, NS 23, 435-454.

- Whittington, G., 1996, *Fragile Environments: The Use and Management of Tentsmuir NNR, Fife*, Scottish Cultural Press, Edinburgh.
- Widdicombe, S., Wooffitt, R., 1995, *The Language of Youth Subcultures: Social Identity in Action*, Harvester Wheatsheaf, Hemel Hempstead.
- Willems-Braun, B., 1997, 'Buried Epistemologies: The Politics of Nature in (Post)colonial British Columbia', *Annals of the Association of American Geographers*, 87(1), 3-31.
- Williams, R., 1973, *The Country and the City*, Chatto & Windus, London.
- Williams, R., 1976, *Keywords: A Vocabulary of Culture and Society*, Fontana/Croom Helm, London.
- Williams, R., 1980, 'Ideas of Nature' in *Problems in Materialism and Culture*, Verso, London, 67-85.
- Wilson, A., 1992, *The Culture of Nature: North American landscape from Disney to Exxon Valdez*, Blackwell, Cambridge MA.
- Wilson, E.O., 1988, *BioDiversity*, Papers from the National Forum on Biodiversity held September 21-24, 1986, Washington, D.C., National Academy of Sciences/Smithsonian Institution, Washington.
- Withers, C.W.J., 1999, 'Contested Visions: Nature, Culture and the Morality of Landscape in the Scottish Highlands' in A. Buttimer and L. Wallin (eds.) *Nature, Culture, Identity*, 271-286.
- Wolch, J., Emel, J., (eds.) 1998, *Animal Geographies: Place, Politics and Identity in the Nature-Culture Boorderlands*, Verso, London.
- Wolf, D.L., 1996, 'Situating Feminist Dilemmas in Fieldwork' in D.L. Wolf (ed.) *Feminist Dilemmas in Fieldwork*, Westview Press, Boulder, CO, 1-55.
- Womack, P., 1989, *Improvement and Romance: Constructing the Myth of the Highlands*, Macmillan, Basingstoke.
- Woods, M., 1997, 'Researching Rural Conflicts: Hunting, Local Politics and Actor-Networks', *Journal of Rural Studies*, 14 (3), 321-340.
- Woods, M., 1998, 'Mad Cows and Hounded Deer: Political Representations of Animals in the British Countryside', *Environment and Planning A*, 30, 1219-1234.
- Woods, M., 2000, 'Fantastic Mr Fox? Representing Animals in the Hunting Debate' in C. Philo and C. Wilbert (eds.) *Animal Spaces, Beastly Places: New Geographies of Human-Animal Relations*, Routledge, London, 182-202.
- Worster, D., 1977, *Nature's Economy: A History of Ecological Ideas*, Cambridge University Press, Cambridge.
- Worster, D., 1988, 'Doing Environmental History' in D. Worster (ed.) *The Ends of the Earth: Perspectives on Modern Environmental History*, Cambridge University Press, Cambridge, 289-307.
- Worster, D., 1990, 'The Ecology of Order and Chaos', *Environmental History Review*, 14, 1-18.
- Worster, D., 1993, *The Wealth of Nature: Environmental History and the Ecological Imagination*, Oxford University Press, Oxford.
- Wynne, B., 1992, 'Misunderstood Misunderstandings: Social Identities and the Public Uptake of Science', *Public Understanding of Science*, 1 (3), 281-304.
- Wynne, B., 1996, 'May the Sheep Safely Graze? A Reflexive view of the Expert-Lay Knowledge Divide' in S. Lash, B. Szersynski and B. Wynne (eds.) *Risk, Environment and Modernity: Towards a New Ecology*, Sage, London, 44-83.
- Yearley, S., 1989, 'Bog Standards: Science and Conservation at a Public Inquiry', *Social Studies of Science*, 19, 421-438.
- Yearley, S., 1991, *The Green Case: A Sociology of Environmental Arguments, Issues and Politics*, HarperCollins, London.
- Yearley, S., 1993, 'Standing in for Nature: The Practicalities of Environmental Organisations' Use of Science' in K. Milton (ed.) *Environmentalism: The View From Anthropology*, Routledge, London, 59-72.

- Young, S.C., 1993, *The Politics of the Environment*, Baseline Books, Manchester.
- Zimmerer, K.S., 1994, 'The 'New Ecology' and Human Geography: The Prospect and Promise of Integration', *Annals of the Association of American Geographers*, 84(1), 108-125.
- Zimmerer, K.S., 2000, 'The Reworking of Conservation Geographies: Nonequilibrium Landscapes and Nature-Society Hybrids', *Annals of the Association of American Geographers*, 90(2), 356-369.

## APPENDIX I: Glossary

**English Nature** – The government agency responsible for nature conservation in England. Established in 1991 when the Nature Conservancy Council was split into separate ‘country agencies’. Equivalent to Scottish Natural Heritage and the Countryside Council for Wales, but with a slightly different remit, given the different arrangements in England and Scotland. English nature does not, for example, deal with amenity issues or National Parks, which were the responsibility of the Countryside Commission and now (since 1999) the Countryside Agency.

**International Union for the Conservation of Nature (IUCN)** – Now called the World Conservation Union but retaining its original acronym, IUCN is the world forum on conservation issues, especially endangered species and habitats.

**Joint Nature Conservation Committee (JNCC)** – The organisation established at the same time as the three country conservation agencies in 1991-1992 to advise the UK Government of UK-wide nature conservation issues.

**National Nature Reserve (NNR)** – Nature reserve owned or managed under agreement by English Nature, the Countryside Council for Wales or Scottish Natural Heritage to conserve wildlife or geological interest. The network of reserves, which was originally established by the Nature Conservancy and developed by the Nature Conservancy Council, is meant to ensure that all the important habitats or geological formations are represented. NNRs therefore represent the finest examples of Britain’s habitats.

**Nature Conservancy (NC)** – Institutionalised through the National Parks and Access to the Countryside Act 1949, the Nature Conservancy was the first science-based conservation body in the world (Marren 2002). In its early years (1950-1965) the Nature Conservancy, under the Directorship of Max Nicholson, was responsible for the establishment of a nationwide system of National Nature Reserves and Sites of Special Scientific Interest. In Government, however, its role was ambiguous and questions were asked about its ability to be scientific and impartial whilst also advocating that the conservation of nature was itself a good thing. In 1973 the research and administrative sides of the agency were separated in what came to be called ‘the split’ (Sheail 1998). Two new agencies were established: the Nature Conservancy Council and the Institute for Terrestrial Ecology.

**Nature Conservancy Council (NCC)** – Established after the splitting-up of the Nature Conservancy in 1973, the Nature Conservancy Council was responsible for the government conservation activity between 1973 and 1991. After the split the NCCs emphasis shifted away from scientific research – which had been one of the key elements in the establishment of the Nature Conservancy – and towards site safeguard. Since the majority of the land in National Nature Reserves and Sites of Special Scientific Interest was not owned by the NCC, this was essentially an administrative task.

**Red Data Books** – Lists of endangered species. Originally developed at an international level by IUCN. Red data books have subsequently been developed at the national level.

**Royal Society for the Protection of Birds (RSPB)** – The RSPB is one of the ‘big three’ voluntary conservation organisations in the UK (with the Wildlife Trusts and the National Trusts). Formed in 1891 and receiving its royal charter in 1904, the organisation gradually grew and by 2002 had over one million members. It is a powerful force in conservation and governmental circles (Marren 2002; Samstag 1988; Sheail 1976; Lowe and Goyder 1983).

**Site of Special Scientific Interest (SSSI)** – Sites that represent the best examples of wildlife habitats in the UK. The SSSI is arguably the central pillar of governmental conservation in the UK. Originally established under the National Parks and Access to the Countryside Act of 1949, they were strengthened and under the Wildlife and Countryside Act 1981. While designated by the Nature Conservancy Council, SSSIs were predominantly owned by private landowners and benevolent management was secured by management agreement. SSSIs fostered great resentment in the 1980s because of the ability of conservation agencies to determine or inhibit what private landowners could do. The administration of SSSIs was changed in England by the Countryside and Rights of Way Act 2000 and is likely to change in Scotland through the passage of the Nature Conservation Bill in the Scottish Parliament.

**Scottish Biodiversity Group (SBG)** – The Scottish Biodiversity Group was formed in 1996 so that the objectives of the UK Biodiversity Action Plan could be translated into action in Scotland. In the context of there being separate conservation agencies in Scotland, England and Wales, a UK-wide initiative was incongruous and hard to implement. Separate country groups were established to tailor action planning to their particular context. While the country groups came together in the UK Biodiversity Group (now the UK Biodiversity Partnership), the result has been the development of different approaches to action planning.

**Scottish Biodiversity Forum (SBF)** – The Scottish Biodiversity Forum grew out of the Scottish Biodiversity Group and was officially established in May 2002. This transformation was thought necessary so as to open membership out to include Government agencies, local authorities, voluntary bodies, farmers, fishermen, foresters, business and scientists in an atmosphere of partnership. The SBF developed the Scottish Biodiversity Strategy between 2002-2004.

**Scottish Natural Heritage (SNH)** – The government agency responsible for nature conservation in Scotland. Established in 1991 when the Nature Conservancy Council was split into separate ‘country agencies’ (with the Nature Conservancy Council for Scotland forming a transitional arrangement between 1989 and 1991). Formed by merging the Nature Conservancy Council in Scotland and the Countryside Commission for Scotland, SNH has responsibility for landscape amenity issues and designations and for more strictly conservation issues and designations.

**UK Biodiversity Steering Group** – The group (consisting of representatives from the different country agencies, conservation NGOs, the JNCC, the Department of Environment, academia and farming and land-owning communities) that was given the task of developing a structure for the governmental response to the Convention of Biological Biodiversity as set out in *Biodiversity: The UK Action Plan*. The group was sub-divided into smaller groups that developed thinking on local biodiversity action planning, target setting, dealing with biodiversity data and public awareness and involvement. The Steering Group published its report in 1995 setting out example species and habitat action plans.

**UK Biodiversity Group** – The successor group to the UK Biodiversity Steering Group. In its early work (1996-1998) the UK Biodiversity Group refined and extended action planning by producing more action plans and filling the gaps left by the Steering Group. The Group then focused on establishing reporting mechanisms so that progress against actions could be monitored and produced the Millennium Biodiversity Report. In the years 2000-2003 the Group sought to develop the National Biodiversity Network so that information could be shared via the Internet and it sought ways of co-ordinating action between national groups. The UK Biodiversity Group became the UK Biodiversity Partnership in 2003.

## APPENDIX II: Interviewees

|                     |  |
|---------------------|--|
| Dr Andy Amphlett    | Ecologist, RSPB Scotland.                                    |
| Lloyd Austin        | Head of Policy, RSPB Scotland.                               |
| Clifton Bain        | Senior Policy Officer, RSPB Scotland.                        |
| Dr Ian Bainbridge   | Ecological Advisor, Scottish Executive.                      |
| Dick Balharry       | Former Regional Manager, Scottish Natural Heritage.          |
| Dr Andrew Coupar    | Scottish Natural Heritage, Inverness.                        |
| Dr Neil Cowie       | Reserves Ecologist, RSPB Scotland.                           |
| Desmond Dougan      | Reserve Warden, RSPB Scotland.                               |
| Dr Andy Douse       | Scottish Natural Heritage, Edinburgh.                        |
| Dr Mary Gibby       | Head of Research, Royal Botanic Garden Edinburgh.            |
| Alister Jones       | Biodiversity Policy Officer, Forestry Commission.            |
| Kenny Kortland      | Capercaillie Project Officer, RSPB/Forestry Commission.      |
| Colin McLean        | Reserve Manager, RSPB Scotland.                              |
| Dr Bob Moss         | Former Research Scientist, Centre for Ecology and Hydrology. |
| Dr Tom Prescott     | Former Reserve Manager, RSPB Scotland.                       |
| Bob Proctor         | Researcher, RSPB Scotland.                                   |
| Norrie Russell      | Reserve Manager, RSPB Scotland.                              |
| Dr Ron Summers      | Research Scientist, RSPB Scotland.                           |
| Stewart Taylor      | Former Reserve Manager, RSPB Scotland.                       |
| Prof. Michael Usher | Former Chief Scientific Advisor, Scottish Natural Heritage.  |

### APPENDIX III: Interview Extract

*Note on transcription.* I chose a simple transcription procedure. When a speaker pauses I indicate the pause thus: ... I note laughter and have included the ums and ers. I was not, however, paying great attention to the time of the pause, overlapping speech or other small detail because I did not envisage paying that much attention to the minutiae of the interaction, as would a conversation analyst. Whilst the interviewee's answers appear incredibly long and suggest editing, no such editing took place. They are long precisely because my interviewees were extremely articulate.

Andrew: Ok, ...well my next question is really kind of ...easy in some respects but speaks to difficult issues. And that's simply the question of why the capercaillie and the black grouse are important...

Interviewee: Well I think that probably comes out of the UK Biodiversity action plan process...er er the once once you, once Rio reported the UK, I'm sure you know all this, the UK Government then developed its response to Rio and ...they made, for reasons you'd, you know, have to go to the Government, I wasn't around at the time when all these decisions were made, but they have majored very heavily on the species action plan side and the habitat action plan side er and Defra and the Department of the Environment as they were, have been heavily criticised for that by some. And there is some dissatisfaction in some circles that that that the um government department the Department of Environment at the time majored so heavily on what was one small aspect. You need to, it would be helpful sometime if you could have a look at what we call the Scott report, have you got it, It's a report Michael Scott did for SNH, I'm not quite sure how accessible it is, but erm I'm quite happy to get you ahold of a copy of that, In which Michael tried, he's our Deputy Board Chairman, what Michael tried to do was rebalance the effort. Anyway that's an aside, that's an aside, the way the process worked was that the DOE majored very heavily at the time on the species and habitat action plan side of the biodiversity convention. As a result of that there was a decision made in order to develop a list of species which action would be taken for and the UK biodiversity report highlighted those species, it initially categorised them according to what I suspect at the time was perceived as the degree of threat um and er those species which came out top, in the case of birds, er Corncrake, capercaillie, aquatic warbler and a few others that what we, at the time was called the short list. And then there were a group of species which were assigned to a thing called the middle list er, where it was still intended to write action plans for them but they would be done slightly later, in a sort of phased approach they would be brought on at a later stage. And then there was intended at the time that there would be a much larger list of species which would be used as a sort of, as a condensed list of all the species that we deal with, these would be kept a watch on and er that was essentially the long list. Now how that process worked, how those lists were developed I'm not quite sure, I wasn't around at the time. But since then the long list has disappeared, it's been replaced by a thing called the species of conservation concern, the SoCC list which is much bigger than the long list and then the middle and short list species have been amalgamated and they are just priority species and a priority species is just a species that has an action plan, a costed action plan. Now if you look at those species they conform very well to er the species which appear on the RSPB's red list erm the match is not absolutely identical but by and large if its on the red list then it is probable that it will have a biodiversity action plan and certainly the other way round, all the biodiversity action plan species are currently on the red list, I'm pretty certain, there may be one or two exceptions but I'm fairly certain and that's how they were all prioritised. Now obviously in a Scottish context a lot of those species that appeared on the short and the middle list, what ar priority species, are English, Stone Curlew, things like that, not relevant up here erm and it is

inevitable that attention should be focused on things like capercaillie, Corncrake. And in terms of resources and effort, probably more effort's gone into corncrake than just about anything else, but capercaillie's fast catching up at the moment and black grouse is lagging quite considerably behind. And that's partly due to the way the process was phased in, you know with corncrake and capercaillie coming first, the organisational structures developed first and there is I suppose a sort of bureaucratic organisational time lag in terms of obtaining and delivering resources. And I'm sure in the long term, probably five years time, if we've cracked capercaillie erm then you will see a progressive switch of attention and resources to some of the other species, you know black grouse, common scoter and many of the other species that have come on relatively recently.

...

Andrew: Ok eer... I suppose I had a more specific question as well. Your response there was how they were prioritised within the bureaucratic process, but those species must have been identified as being in need of the process in the first place, and how were they identified in that way, how do we decide that species is important?

Interviewee: Well... I think...I suspect, that much of the information on which we base, certainly for the birds, and this is not true for many of the others species erm, we focused on two particular things, we focused on straight rarity...but in a sense rarity is not the best way of looking at species, but for many taxonomic groups that's all we have to go on, erm but what has exercised the mind of ornithologists for quite a long time, and that's the basis behind the red lists, and you know the RSPB's red, amber and green categorisation, is trends within the populations. And ultimately for birds we have much better trend information, for most other taxonomic groups we are lucky if we've got even distribution information or population information and the idea of having trend information, but for birds we have very good trend information. Now I think, in a sense, if you look at the Biodiversity action plans there is quite a fundamental difference between the ornithological ones and many of the others because trend information is very important in that process, many of the species that are in the biodiversity action plan are widespread and yet they are there because they have very very rapid decreasing trends. Obviously that applies particularly to the skylark and you know most of the other farmland birds. Even capercaillie. If you look at it, it's distribution is still fairly widespread and if you compare the distribution of a lot of the bird species with say a lot of the vascular plants and a lot of the invertebrates what characterises the inclusion of a lot of those species is the fact that they are pretty restricted in their range, they have very disjunct distributions with small populations here, that are scattered, fragmented populations and often the sort of knowledge, state of knowledge that's based on whether or not they were suitable for inclusion has really relied purely on distributional information erm and and very little on trend information. We're trying, I mean I think in the vascular plant community, they are beginning through development of repeat atlases, they are beginning to to this sort of information and they are beginning to identify those species which are suffering. But I think that what characterises the birds, and so in a sense its an inevitable, I mean the biodiversity process wasn't new it didn't re-invent the wheel or anything like that it hijacked the existing one, if you want to call it hijacked, its not exactly it's a pejorative term. But it made use of existing processes for categorising birds into threat categories. And you have to remember that most of these plans at this early stage were written by the RSPB, you know the RSPB were very heavily involved. So it was inevitable that, what eventually came out of it was er, this is probably being slightly tendentious but but you know accorded very much with an RSPB agenda. Which I think everybody accepts, there is nothing sinister about that really er I'm sure even DoE were perfectly well aware of that er ...and so were the country agencies at the time, but it was there it was on the shelf so why not use it.

Andrew: yeah, definitely...to be a bit more specific on the capercaillie, how would you erm identify the requirements that the capercaillie needed in its niche



Interviewee: how did we identify or how do we identify the requirements

Andrew: both

Interviewee: well, its one of those species that's been very well researched for certainly since the sort of the I would say the mid '70s or so, you know there has been a long running research programme undertaken by what was the institute for terrestrial ecology is now the Centre of Ecology and Hydrology. Erm and so...we had a very good, what I would call an autecological basis on which to assess requirements erm so I think there has been...it's the way you develop any species... an action plan for any species, you have to understand it's ecology and er ...we have probably for capercaillie less than anything else yeah probably black grouse follows on from that but you know there was a lot of the essential fundamental research a lot of the fundamental science had been done already or was in the process of being done and that's not meant that there has not been additional required research on that. And there is quite a difference there with some of the farmland birds where you looked at it there was very little autecological research and much of the action that has been taking place for many of the farmland birds over the last few years has been getting the fundamental research sorted out erm and you know it would include a wide range of issues from tree sparrow and corn buntings and things like that and there are still research requirements for some of those species. But we were lucky ...we were fortunate in having a very good autecological basis for capercaillie it was a very well known species. In a sense that tends that...in a sense that tends to buy us the process anyway. I mean capercaillie was chosen because it was so well known erm and because there was you know the work that had been undertaken had identified this very rapid decline, whether its as rapid as the population figures suggest is open to question, there is some, there's some, theirs is very good reason to suppose that the figure of 20,000 which is quoted in the the er species action plan was somewhat fanciful at the time. But has the population declined – yes – no doubt about it, has it declined fast – yes it has declined fast. There is no doubt about the need, probably yes at the moment. Does that help at all.?

Andrew: I think so. You made a distinction between did and do. Is it different now?

Interviewee: er I think our, the requirements now are different. They are much more focused, we tend to focus them much more ...what happened...why CEH or ITE as they were spent so much time on capercaillie back in the '70s is, I really don't know, you'd have to go back into the mists of time. And it often focuses on the interests of one particular individual, I mean CEH has always had this fascination and interest in 'the grouse'. Although interestingly they sort of partition and red grouse get taken by or used to get taken by ITE...er the pioneering work of Adam Watson, David Jenkins and Bob Moss and people like that although red grouse has now been taken very heavily on by the Game Conservancy Trust erm and then Bob Moss developed his interest in Capercaillie and its probably the, you know, you have to remember that ...a lot of these processes for a lot of these species, not all of them, are so uniquely tied to individuals or organisations or groups. With capercaillie you just cannot get away from the name of Bob Moss...and he has been a driving force in the process and still continues to be very very important driving force in the process. But in terms of the research and action that is needed, yes things have changed, it's much more focused. But its still a requirement erm having said that the time for actually pure autecological work is over and you know we have to pull our finger out and do the work now.

Andrew: to do that work, how do you translate that research into identifying a management strategy that fulfils the requirements that you've identified?

Interviewee: Its not a particular, I mean that that that isn't rocket science. The research, much of the research that has been done has focused heavily on you know various aspects of the life history of Capercaillie. Particularly in terms of the breeding habitat requirements, erm and once you know that you have a sort of management menu for a particular species in terms of what the particular species likes in terms of the proportions of different habitats. And the question is whether or not those conditions exist in suitable abundance across the range, now you know, and you identify those factors which er you know are responsible for deterioration of those features and try and address those and obviously one of those is grazing and grazing pressure, er that has been identified as an important factor and that has to be dealt with. That can be dealt with at a number of particular scales. It can be addressed at the site scale, so you know action can be very localised in terms of you know what RSPB have done with red deer grazing at Abernethy. But that isn't always necessary sorry that isn't always appropriate and sometimes some of this work has to be done on a much larger scale and that could involve the Deer Commission. And I think that's one of the interesting things about, one of the interesting things about conservation is often we are very successful in dealing with requirements of species at a very local scale, you know its relatively easy to manage Abernethy for capercaillie... but many of these species often require to be managed at a much broader scale and many of the issues which...and that if anything is where the biodiversity process has not been successful. It hasn't addressed the big policy issues, it hasn't had the bearing on the CAP you know things like that that we would have liked it to have done erm and those I think are some of the erm. If you look at the notable successes within the biodiversity action plan, those species where we have really made progress, they are often those that are relatively site restricted where you know the action is not particularly complex, arises out of a good understanding of the auteco you know the ecology of the species that you can take a very specific piece of action on that particular site or a number of sites and hey presto your population recovers and you can see that with some of the vascular plant species aswell really that when we understand the ecology we can do a lot for them relatively easily and often relatively cheaply erm, the difficulties come with those species which are much wider you know have a much wider dispersion and where some of the important policies are operating on a much broader scale and the CAP is a good one, forestry is another one. I think that's probably an area where we have been much more successful in terms of turning around certainly forestry, old forestry practices of blanket afforestation with conifers, you know that policy has changed and the Forestry Commission is not the same organisation that it was ten years ago so we've been successful in that particular area. Um ...so again I'm not quite sure if that strictly answers your question...The process is not a particularly complicated one but it does rest on having a good understanding of the science and erm when you have an understanding of the science erm then there is an issue of translating that into policy. I think you know if we look at a more specific issue with capercaillie and if you look at the fence issue which is one that came to the fore probably a lot later than some of the others you know we only really understood and realised that fences were having the effect they have...probably...say well at most ten years ago, but most of the research was done in the mid nineties really. You know so for a species that has probably been on the slide since the seventies, we came onto fences relatively recently but you know in terms of the way that we respond to that, the political response, the policy response has been relatively rapid once that research has gone through all its, you know the academic side of thins, you know there was a process of actually getting that advice into government, getting government to accept that advice, er, and then getting them to do something about it. And that process has happened and I mean there are many people will say it hasn't happened fast enough but I think for Government it's probably happened pretty quickly actually... You know, I mean probably five to ten, certainly five even, certainly ten years ago but you could argue that up to five years ago erm, the wide held view among land management and land practitioners was that is you want forest regeneration you did it with deer fences and now

deer fences are an ugly word and deer fences are no longer seen as being an acceptable way of dealing with the problem and then that leads us into the issue of culling red deer...that's obviously another issue, but it's interesting to see how quickly what was, I would say probably you could argue five years ago, how a perfectly acceptable policy has been turned round and it is now, you know the government has been subsidising landowners to put up deer fences for many years and the Forestry Commission with WGS grants have paid for fences and now we spend seven hundred thousand pounds paying the very same landowners to take the bloody things down. That's quite a rapid turn around in policy I think ...[laughs]

Andrew: Yes... there's lots of examples in nature conservation... as new understandings have developed, taking for example lodgepole pine as a nursery crop and now they are re-seeding having to pay to get them cut down.

Interviewee: Governments will always see it as a sort of seamless process but in fact when you look at it, in hindsight, when you look at it it is such a complete about turn, a complete volt face it is quite amusing to look back on it really...

## APPENDIX IV

THE 37 BROAD HABITATS, THE 38 KEY HABITATS AND EC HABITATS  
DIRECTIVE LISTED HABITATS FOR SPECIAL ATTENTION (Source: UK  
Biodiversity Steering Group 1995a: 23-24).

| Broad Habitats                           | Key habitats (* = costed action plan prepared)                                 | EC Habitats Directive - Annex I types (+ = priority in the Directive)   |
|--|--|---|
| 1. Broadleaved and yew                   | Upland oakwood*<br>Lowland beech<br>Upland mixed ash woodland<br>Wet woodlands | Old oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles<br>Beech forests with <i>Ilex</i> and <i>Taxus</i> rich in epiphytes ( <i>Ilici-Fagion</i> )<br>Asperulo-Fagetum beech forests<br>Stellario-Carpinetum oak hornbeam forests<br>Tilio-Acerion ravine forests+<br>Bog woodland+<br>Residual alluvial forests ( <i>Alnion glutinoso-incanae</i> )+<br>Old acidophilous oak woods with <i>Quercus robur</i> on sandy plains<br><i>Taxus baccata</i> woods+              |
| 2. Planted coniferous woodland           |  |   |
| 3. Native pine woodland                  | Native pine wood*  | Caledonian forest+  |
| 4. Lowland wood pastures                 | Lowland wood pastures and parklands  |   |
| 5. Boundary features                     | Ancient and/or species – rich hedgerows*                                       |   |
| 6. Arable                                | Cereal field margins*  |   |
| 7. Improved grassland                    |  |   |
| 8. Unimproved neutral grassland          | Lowland hay meadow<br>Upland hay meadow  | Lowland hay meadows ( <i>Alopecurus pratensis</i> , <i>Sanguisorba officinalis</i> )<br>Mountain hay meadows (British types with <i>Geranium sylvaticum</i> )   |
| 9. Acid grassland                        | Lowland dry acid grassland<br>Purple moor grass and rush pastures*             | Siliceous alpine and boreal grasslands<br><i>Molinia</i> meadows on chalk and clay (Eu-Molinion)  |
| 10. Calcareous grassland                 | Lowland calcareous grassland   | Semi-natural dry grasslands and scrubland facies on calcareous substrates ( <i>Festuco-Brometalia</i> ) (important orchid sites)+<br>Semi-natural dry grasslands and scrubland facies on calcareous substrates ( <i>Festuco-Brometalia</i> )<br>Species-rich <i>Nardus</i> grassland, on siliceous substrates in mountain areas (and sub-mountain areas, in continental Europe)+<br>Alpine calcareous grasslands<br><i>Juniperus communis</i> formations on heaths or calcareous grasslands |
| 11. Lowland heathland                    | Lowland heathland*   | Northern Atlantic wet heaths with <i>Erica tetralix</i><br>Southern Atlantic wet heaths with <i>Erica ciliaris</i> and <i>Erica tetralix</i> +<br>Dry heaths (all subtypes)<br>Dry coastal heaths with <i>Erica vagans</i> and <i>Ulex maritimus</i> +  |
| 12. Grazing marsh                        | Coastal and floodplain grazing marsh*  |   |
| 13. Fens, carr, marsh, swamp and reedbed | Fens*<br>Reedbeds*   | Alkaline fens<br>Calcareous fens with <i>Cladium mariscus</i> and <i>Carex davalliana</i> +<br>Petrifying springs with tufa formations ( <i>Cratoneurion</i> )+<br>Alpine pioneer formations of <i>Caricion bioloris atrofuscae</i> +   |

|   |   |   |
|---|---|---|
|   |   | <i>Molinia</i> meadows on chalk and clay (Eu-Molinion)<br>Transition mires and quaking bogs<br>Depressions on peat substrates (Rhynchosporion)  |
| 14. Lowland raised bog  | Raised bog  | Active raised bogs+<br>Degraded raised bogs (still capable of natural regeneration)<br>Depressions on peat substrates (Rhynchosporion)  |
| 15. Standing open water   | Mesotrophic standing waters*<br>Eutrophic standing waters<br>Aquifer fed naturally fluctuating water bodies | Natural eutrophic lakes with Magnopotamion or Hydrocharition<br>-type vegetation<br>Hard oligo-mesotrophic waters with benthic vegetation of <i>chara</i> formations<br>Oligotrophic waters containing very few minerals of Atlantic sandy plains with amphibious vegetation: <i>Lobelia</i> , <i>Littorella</i> and <i>Isoetes</i><br>Oligotrophic waters in medio-European and perialpine areas with amphibious vegetation: <i>Littorella</i> or <i>Isoetes</i> or annual vegetation on exposed banks<br>Dystrophic lakes |
| 16. Rivers and streams  | Chalk rivers*   | Floating vegetation of <i>Ranunculus</i> of plain and submountainous rivers   |
| 17. Canals  |   |   |
| 18. Montane (alpine and subalpine types)                          |   | Alpine and subalpine heaths<br>Sub-Arctic willow scrub<br>Eutrophic tall herbs  |
| 19. Upland heathland  | Upland heathland  | <i>Juniperus communis</i> formations on heaths or calcareous grasslands<br>Northern Atlantic wet heaths with <i>Erica tetralix</i><br>Dry heaths (all types)  |
| 20. Blanket bog   | Blanket bog   | Blanket bog (active only)+  |
| 21. Maritime cliff and slope                                      | Maritime cliff and slope  | Vegetated sea cliffs of the Atlantic and Baltic coasts  |
| 22. Shingle above high tide mark                                  | Coastal vegetated shingle structure   | Perennial vegetation of stony banks<br>Annual vegetation of drift lines   |
| 23. Boulders and rock above high tide                             |   |   |
| 24. Coastal: strandline   |   |   |
| 25. Machair   | Machair   | Machair   |
| 26. Saltmarsh   | Coastal: saltmarsh  | <i>Salicornia</i> and other annuals colonising mud and sand<br><i>Spartina</i> swards (Spartinion)<br>Atlantic salt meadows (Glauco-Puccinellietalia)<br>Mediterranean salt meadows ( <i>Juncetalia maritimi</i> )<br>Mediterranean and thermo-Atlantic halophilous scrubs<br>( <i>Arthrocnemetalia fruticosae</i> )  |
| 27. Sand dune   | Coastal sand dune (including dune grass, dune heath, dune scrub and strandline vegetation)                  | Embryonic shifting dunes<br>Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes)<br>Fixed dunes with herbaceous vegetation (grey dunes)+<br>Decalcified fixed dunes with <i>Empetrum nigrum</i> +<br>Eu-Atlantic decalcified fixed dunes (Calluno-Uliceae)+<br>Dunes with <i>Salix arenaria</i><br>Humid dune slacks<br>Dune juniper thickets ( <i>Juniperus</i> spp)+   |
| 28. Estuaries   | Estuaries   | Estuaries<br>Mudflats and sandflats not covered by sea water at low tide  |
| 29. Saline lagoons  | Saline lagoons*   | Lagoons+  |
| 30. Islands and archipelagos                                      |   |   |
| 31. Inlets and enclosed bays (including sea lochs, rias and voes) | <i>Ascophyllum nodosum mackii</i> beds<br>Maerl beds<br>Deep mud<br>Sea grass beds*                         | Large shallow inlets and bays   |
| 32. Open coast  | Maerl beds  | Sandbanks which are slightly covered by sea water   |

|                           |   |   |
|---------------------------|---|---|
|                           | Chalk coasts (littoral and sublittoral) | all the time<br>Mudflats and sandflats not covered by sea water at low tide<br>Reefs<br>Submerged or partly submerged sea caves   |
| 33. Open sea water column |   |   |
| 34. Shelf break           |   |   |
| 35. Offshore seabed       |   |   |
| 36. Limestone pavements   | Limestone pavements*                    | Siliceous scree<br>Eutric scree<br>Chasmophytic vegetation on rocky slopes -<br>Calcareous sub-types<br>Chasmophytic vegetation on rocky slopes -<br>Silicicolous sub-types<br>Limestone pavements+ |
| 37. Urban                 |   |   |

## APPENDIX V

Revisions to the Broad Habitat Classification (Source: UK Biodiversity Group 2000: 36-37).

| Original broad habitat type             | Change made   | Revised broad habitat type            |
|---|---|---------------------------------------|
| 1 Broadleaved and yew                   | Redefined to include mixed woodland                                     | 1 Broadleaved, mixed and yew woodland |
| 2 Planted coniferous woodland           | Redefined to include native and semi-natural coniferous woodland        | 2 Coniferous woodland                 |
| 3 Native pine woodland                  | Now only recognised as a Priority habitat type                          |                                       |
| 4 Lowland wood pastures and parkland    | Now only recognised as a Priority habitat type                          |                                       |
| 5 Boundary features                     | Redefined to include linear features                                    | 3 Boundary and linear features        |
| 6 Arable                                | Redefined to include horticulture and woody crops                       | 4 Arable and horticulture             |
| 7 Improved grassland                    | Unchanged   | 5 Improved grassland                  |
| 8 Unimproved neutral grassland          | Redefined to include semi-improved neutral grassland                    | 6 Neutral grassland                   |
| 10 Calcareous grassland                 | Unchanged   | 7 Calcareous grassland                |
| 9 Acid grassland                        | Unchanged   | 8 Acid grassland                      |
|   | Added   | 9 Bracken                             |
| 11 Lowland heathland                    | Redefined to include upland heathland                                   | 10 Dwarf shrub heath                  |
| 12 Grazing marsh                        | Priority habitat  |                                       |
| 13 Fens, carr, marsh, swamp and reedbed | Redefined to remove carr and include flushes                            | 11 Fen, marsh and swamp               |
| 14 Lowland raised bog                   | Redefined to include blanket bogs                                       | 12 Bogs                               |
| 15 Standing open water                  | Redefined to include canals   | 13 Standing open water and canals     |
| 16 Rivers and streams                   | Unchanged   | 14 Rivers and streams                 |
| 17 Canals                               | Deleted and incorporated into standing open water                       |                                       |
| 18 Montane                              | Restricted to only habitats which occur exclusively in the montane zone | 15 Montane habitats                   |
| 19 Upland heathland                     | Deleted and incorporated into Dwarf shrub heath                         |                                       |
| 20 Blanket bog                          | Deleted and incorporated into Bogs                                      |                                       |
| 36 Limestone pavements                  | Now only recognised as a Priority habitat type                          |                                       |
|   | Added   | 16 Inland rock                        |
| 37 Urban                                | Redefined to include all built-up areas                                 | 17 Built-up areas and gardens         |
| 21 Maritime cliff and slope             | Priority habitat  |                                       |
| 23 Boulders and rocks above high tide   | Removed   |                                       |
| 22 Shingle above high tide mark         | Priority habitat and renamed coastal vegetated shingle                  |                                       |
| 24 Coastal strandline                   | Removed   |                                       |
| 25 Machair                              | Priority habitat  |                                       |
| 26 Saltmarsh                            | Priority habitat  |                                       |
| 27 Sand dune                            | Priority habitat  |                                       |
| 28 Estuaries                            | Removed   |                                       |
| 29 Saline lagoons                       | Priority habitat  |                                       |
| 30 Islands and archipelagos             | Removed   |                                       |
| 31 Inlets and enclosed bays             | Removed   |                                       |
| 32 Open coast                           | Removed   |                                       |
| 34 Shelf break                          | Removed   |                                       |
| 33 Open sea water column                | Removed   |                                       |
| 35 Offshore seabed                      | Removed   |                                       |
|   | Added   | 18 Supralittoral rock                 |

|  |       |                                 |
|--|-------|---------------------------------|
|  | Added | 19 Supralittoral sediment       |
|  | Added | 20 Littoral rock                |
|  | Added | 21 Littoral sediment            |
|  | Added | 22 Inshore sublittoral rock     |
|  | Added | 23 Inshore sublittoral sediment |
|  | Added | 24 Offshore shelf rock          |
|  | Added | 25 Offshore shelf sediment      |
|  | Added | 26 Continental shelf slope      |
|  | Added | 27 Oceanic seas                 |



## APPENDIX VI

Relationship between the revised broad habitats and priority habitat types (Source: UK Biodiversity Group 2000: 38-39).

| No. Broad habitat                     | Priority habitat  |
|---------------------------------------|---|
| 1 Broadleaved, mixed and yew woodland | Upland oakwood<br>Lowland beech and yew woodland<br>Upland mixed ashwoods<br>Wet woodland<br>Lowland wood pasture and parkland 1                                  |
| 2 Coniferous woodland                 | Native pine woods   |
| 3 Boundary and linear features        | Ancient and/or species rich hedgerows   |
| 4 Arable and horticulture             | Cereal field margins  |
| 5 Improved grassland                  | Coastal and floodplain grazing marsh 1  |
| 6 Neutral grassland                   | Lowland meadows<br>Upland hay meadows   |
| 7 Calcareous grassland                | Lowland calcareous grassland<br>Upland calcareous grassland   |
| 8 Acid Grassland                      | Lowland dry acid grassland  |
| 9 Bracken                             | No associated priority habitat  |
| 10 Dwarf shrub heath                  | Lowland heathland<br>Upland heathland   |
| 11 Fen, marsh and swamp               | Purple moor grass and rush pastures<br>Fens<br>Reedbeds   |
| 12 Bogs                               | Lowland raised bog<br>Blanket bog   |
| 13 Standing open water and canals     | Mesotrophic lakes<br>Eutrophic standing waters<br>Aquifer fed naturally fluctuating water bodies  |
| 14 Rivers and streams                 | Chalk rivers  |
| 15 Montane habitats                   | No associated priority habitat  |
| 16 Inland rock                        | Limestone pavements   |
| 17 Built up areas and gardens         | No associated priority habitat  |
| 18 Supra littoral rock                | Maritime cliff and slopes   |
| 19 Supra littoral sediment            | Coastal sand dunes<br>Coastal vegetated shingle<br>Machair  |
| 20 Littoral rock                      | <b>Littoral chalk (one plan with sublittoral chalk) 2</b><br><i>Sabellaria alveolata</i> reefs  |
| 21 Littoral sediment                  | Coastal saltmarsh<br>Mudflats<br><b>Seagrass beds (<i>Zostera noltii</i>) 2</b><br>Sheltered muddy gravels  |
| 22 Inshore sublittoral rock           | <i>Modiolus modiolus</i> beds<br><i>Sabellaria spinulosa</i> reefs<br>Sublittoral chalk (one plan with littoral chalk)<br>Tidal rapids                            |
| 23 Inshore sublittoral sediment       | Maerl beds<br>Mud habitats in deep water<br>Saline lagoons<br>Seagrass beds ( <i>Zostera marina</i> )<br>Serpulid reefs<br><b>Sublittoral sands and gravels 2</b> |
| 24 Offshore shelf rock                | No associated priority habitat  |
| 25 Offshore shelf sediment            | Sublittoral sands and gravels   |
| 26 Continental shelf slope            | <i>Lophelia pertusa</i> reefs   |
| 27 Oceanic seas                       | No associated priority habitat  |

## APPENDIX VII

### Species Action Plan for Capercaillie (Source: UK Biodiversity Steering Group 1995b: 106).

#### CAPERCAILLIE (*TETRAO UROGALLUS*)

##### 1. CURRENT STATUS

1.1 The capercaillie is a localised breeding species which is largely confined to Scottish native pinewoods. In the UK, it became extinct in the mid-18th century and was re-introduced in the mid-19th. Numbers have declined rapidly throughout its range in Northern Europe over recent decades with the current UK population estimate now standing at 2,200 birds in winter.

1.2 The capercaillie is listed on Annex 1 of the Birds Directive and Appendix II of the Bern Convention. It is also listed on Schedules 2, 3 and 9 of the WCA 1981.

##### 2. CURRENT FACTORS CAUSING LOSS OR DECLINE

2.1 The factors affecting this species are poorly understood but may include:

2.1.1 Predation due to a reduction in keeping.

2.1.2 Collisions with deer fences.

2.1.3 Over-shooting and human disturbance.

2.1.4 Over-grazing by deer and sheep reducing the vigour of ground vegetation.

2.1.5 An increase in adverse weather conditions during June when chicks are newly hatched.

##### 3. CURRENT ACTION

3.1 Management prescriptions have been implemented to increase numbers of breeding capercaillie and suitability of habitat in a number of forests, i.e. natural pinewoods and areas with better *Vaccinium* field layers.

3.2 Research into preferred habitat is ongoing, managed by the inter-agency Capercaillie Working Group in Scotland.

3.3 Voluntary bans on shooting are in place on many estates and all FE forests

##### 4. ACTION PLAN OBJECTIVES AND TARGETS

4.1 This species has declined in recent years. The plan aims to halt the decline, the causes of which are becoming clearer, and to restore the species to its former range.

4.2 Halt the decline of the capercaillie in its core range in eastern and central Scotland by 2000.

4.3 Maintain, and expand where possible, the range and population numbers of capercaillie in Scotland to 20,000 (the status of the early 1970s) by 2010.

##### 5. PROPOSED ACTIONS WITH LEAD AGENCIES

###### 5.1 Policy and legislation

5.1.1 Seek to protect, manage, create and enhance native pinewoods for the benefit of capercaillie. (ACTION: FA, FE, SNH, SOAEFD)

###### 5.2 Site safeguard and management

5.2.1 Encourage sympathetic management of Scots pine, especially extended rotations in commercial plantations. (ACTION: FA, FE, SNH)

5.2.2 Encourage management of non-Scots pine woodland for capercaillie within, or close to, existing capercaillie ranges. (ACTION: FA, FE, SNH)

5.2.3 Consider aerial spraying of insecticide within, or close to, existing ranges on a case-by-case basis to avoid undue impact to capercaillie. (ACTION: FA, FE)

5.2.4 Seek to enhance the continuity of existing isolated woodland fragments within the current range of the species. (ACTION: FA, FE, SNH)

5.2.5 Promote reduced grazing by deer and sheep to encourage regeneration of native pinewood and blaeberry understorey, and to allow removal of fences. (ACTION: FA, Red Deer Commission, SOAEFD)

##### 5.3 Species management and protection

5.3.1 Encourage removal of forest fences where practicable and, following further research by the Capercaillie Working Group, improve visibility of remaining fences. (ACTION: FA, FE, SNH)

5.3.2 Consider adding capercaillie to Schedule 1 of the WCA 1981 to make disturbance of nesting birds an offence. (ACTION: DOE, SOAEFD)

5.3.3 Encourage private estates and FE to continue the voluntary ban on shooting capercaillie. (ACTION: SNH)

##### 5.4 Advisory

5.4.1 Provide advice to landowners and managers of native pinewoods and plantations on favourable methods of management for capercaillie, in particular managers of estates considering re-introduction or re-stocking programmes. (ACTION: FA, SNH)

5.4.2 Ensure the provision of appropriate advice on predator control. (ACTION: SNH)

##### 5.5 Future Research and Monitoring

5.5.1 Survey suitable sites to assess the number and breeding success of capercaillie in relation to methods of habitat management and predator control, and their inter-relationship with other native pinewood species. (ACTION: SNH)

5.5.2 Establish the frequency of collisions of capercaillie with deer fences and research the effectiveness of marking fences in reducing collision risks. (ACTION: FC, SNH)

5.5.3 Encourage a survey of numbers and distribution, and establish a long-term population monitoring scheme. (ACTION: SNH)

5.5.4 Pass information gathered during survey and monitoring of this species to JNCC or BRC so that it can be incorporated in national databases. (ACTION: SNH)

5.5.5 Provide information annually to Birdlife International on the UK status of the species to contribute to maintenance of an up-to-date global red list. (ACTION: JNCC)

##### 5.6 Communications and Publicity

5.6.1 Lek sites should remain confidential to protect the breeding population. (ACTION: SNH)

5.6.2 Consider publishing a Code of Practice for birdwatching, to highlight the problems of human activity in the vicinity of capercaillie and other sensitive species and advise on appropriate techniques. (ACTION: SNH, JNCC).