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George F. Peterken

Excerpt

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Part I

DEFINITIONS, SIGNIFICANCE AND SURVIVAL

1

Woodland, nature and history:
a personal introduction

The cultural landscape can only be understood by its antithesis: untouched, unspoilt nature. The realisation of this dualism is the basis for understanding and appreciating either.

Knut Faegri (Introduction to Birks et al., 1988)

Recognising the impact of the present on the past, we confront anew the paradox implicit in preservation. Vestiges are saved to stave off decay, destruction, and replacement and to keep an unspoiled heritage. Yet preservation itself reveals that permanence is an illusion. The more we save, the more aware we become that such remains are continually altered and re-interpreted. We suspend their erosion only to transform them in other ways. And saviours of the past change it no less than iconoclasts bent on its destruction.

David Lowenthal (1985)

ON THE 18TH OF JULY 1971, the British television channel BBC2 showed the astonishing spectacle of a small brass ensemble standing in Staverton Thicks playing some music composed by Michael Tippett. They looked thoroughly out of place, even

lost, knee-deep in emerging bracken, against the dark and forbidding background of spreading oaks and taller hollies. Despite this, one could understand why they were there. The location was convenient, if one must play music in a woodland, for,

down the road at Snape, Benjamin Britten had established The Maltings as a festival venue. More significantly, the choice was appropriate, for the musicians intended to evoke wild and primitive conditions. It was easy to believe that our performers were lost in a natural woodland, even though Staverton Thicks, far from being natural, is the product of a millennium of management.

The musicians were presenting one particular idea of and response to natural woodland: that it was frightening and disorientating. But there have been many other responses. Natural woodland has also been regarded as impossible, interesting, undesirable, improvable, ideal or awesome, and the particular response of each individual person tells us much about his or her personality and background. In that sense, natural woodland is not a neutral, objective reality, but a product of the culture of a society and the various imaginations of individual people. And yet, it is, or was, something real and touchable; forested land on which people have had little or no impact.

This book is written primarily for ecologists and conservationists, who have been particularly prone to imagine and to idealise natural woodland. It aims to describe the reality behind the idea and then to apply it to issues in nature conservation. This opening chapter sets the scene. It outlines in a personal manner the significance of natural woodland in nature conservation and expresses what I hope to achieve.

1.1 THE SIGNIFICANCE OF NATURAL WOODLAND

Despite my title and the emphasis on material from North America and continental Europe, my principal target is managed woodland in Britain. My central axiom is one that many previous authors have adopted, that natural woodland provides a reference point for managed woodland, particularly when the objectives of management include nature conservation.

In my ideal world, some natural woodland would have survived in Britain itself, but sadly this is not what has happened. Prehistoric peoples cleared the

majority of the original-natural forests and medieval land managers exploited or managed the remnants. Fortunately, natural woodland survived elsewhere in the north temperate zone, and it is from this that we can build up a picture of the former and potential natural woodland of Britain.

Why bother? After all, though virgin forest may have survived in Scotland as late as the eighteenth century (see 14.1.2), natural woodland seems an irrelevant concept in modern Britain. We have a cultural landscape which is dominated by the effects of past and present management. Woodland now covers only 11% of a land that it once covered almost completely. Most of this sparse woodland is artificial: it has been planted. The commonest tree in Britain is Sitka spruce, an introduced, evergreen conifer in a land where native woodland was, and would still be, mainly deciduous and broadleaved. If fragments of original, natural woodland had miraculously survived into modern times, they could hardly have remained unaffected by activities in the managed landscape around them, just as the woods we try to restore to a natural state are influenced by their surroundings. And, even if we tried to re-create natural woodland, decades at least would have to elapse before it could grow free of the obvious effects of past management. Britain's natural woodland has gone, and we can never re-create it completely.

Despite this, natural woodland is relevant today for interconnected conservation, scientific, cultural and material reasons. These themes are developed more in sections 2.4 and 12.3, but briefly:

- (1) Woodland nature reserves often include areas which are left unmanaged. This may be because there is no obvious need to do anything yet, or resources are insufficient to do what is desirable. But unmanaged stands may also be retained in order to allow mature habitats with large trees, dead wood and variety of structure to develop. Furthermore, reserve managers may seek to restore woodland to a natural state by active intervention. Whatever the reason, it is important to have some idea of how the habitat may develop and how species may respond.
- (2) The ecology of natural woodland is a worthy

subject for scientific enquiry. It is interesting to observe the interplay of natural forces; to understand their effects on the distribution of species and the performance of populations; to study the conditions within which wild species evolved and early man fought for survival; and to understand the very long-term changes which have been taking place in the earth's environment.

- (3) Natural woodland can also act as a reference point, or control in the scientific sense, for measuring human impacts on the environment. Natural stands can be compared with managed stands – and other land uses on sites which would naturally be wooded – thereby yielding a direct measure of the effects of forest management or of the conversion of woodland to pasture, arable, etc. Natural woodland also provides settings for measuring widespread environmental effects of, for example, pollution and climatic warming, free from the local effects of site management. This notion of control can also be applied to nature conservation issues: natural woodland can show, for example, how much saproxylic species (see 11.5.2) have been depleted in managed woods and how much the complement of open space species has been enriched. Natural woodland can show that, in some regions, the disturbances due to nature are every bit as cataclysmic as rapacious logging.
- (4) Materially, there is a developing body of opinion that in the long-term we will best protect the productive potential of forests for timber if we stay as close as possible to a natural system of management. Site nutrient status, freedom from disease, even the growth form of individual trees may be better in mixtures with a full natural rotation of age-classes present. Natural regeneration may be a cheaper and more practicable method of restocking after harvest.
- (5) Natural woodland is a major element of wilderness in the north temperate and boreal regions of the world. Indeed, the linguistic roots of woodland and wilderness are the same. Wilderness has important psychological values for people who are anxious to get away from urban-based civilisation for periods of refreshment. In North America, wil-

derness and 'the frontier' have been important components of national identity.

The advocacy of natural woodland as a reference point is hardly new. It was central to early approaches to woodland nature conservation in, for example, Epping Forest, England (Buxton, 1898). A school of European forestry has long advocated silvicultural systems based on natural woodland (Köstler, 1956), though nature conservation was not an objective. However, for the past 20 years, natural features and processes have been overshadowed as a basis for conservation in British woodland by a surge of interest in woodland history.

It is my belief that we should renew our interest in natural woodland. Combined with a continuing recognition of the importance of history, it offers a more secure basis for conservation in both nature reserves and managed woodland. This belief is shared by many modern authors (e.g. Hansen *et al.*, 1991), though it is important to recognise and make allowances for the fact that people were pervasive influences long before the advent of modern technologies (Gómez-Pompa and Kaus, 1992).

1.2 HISTORY AS AN ELEMENT IN WOODLAND NATURE CONSERVATION

Over the last decade or two, British ecologists have recognised the importance of history in both the ecology and nature conservation of woodland. We have learned that many individual woods have ascertainable histories going back hundreds, even thousands, of years, and that this continuity of habitat has provided opportunities for the original woodland flora and fauna to survive where it originally grew. Ancient woods, having been recognised as important for nature conservation and as historical monuments, have been identified and listed. They have been given a special place in Britain's forestry policy, and have been acquired in large numbers as nature reserves and public amenities. We have agreed that most must be managed if they are to retain their valuable features, but the management which is considered most suitable has been

of a traditional, conservative character, i.e. wherever possible retaining the existing mix and distribution of species by using traditional coppice and wood-pasture systems of management. At the same time, there has been constant denigration of introduced species, particularly the new conifer plantations in the uplands.

This approach to woodland ecology and nature conservation was the theme of my earlier book, *Woodland Conservation and Management* (Peterken, 1981, 1993a). It reflected the interests and attitudes of many ecologists who had been fascinated by the pioneer work in historical ecology of H. M. Steven and A. Carlisle (1959), Geoffrey Dimbleby (1962) and Colin Tubbs (1964), and its substantial development by Oliver Rackham (1975, 1976, 1980, 1989), among others. Within a decade of its formulation, the idea of ancient woodland was bandied with confidence by working foresters, Members of Parliament and Select Committees of the House of Lords. Pressure groups, such as Friends of the Earth and the Council for the Preservation of Rural England focussed their agitation on the need for all ancient woods to be preserved. Whether or not the concept was accurately understood by all who used it, the mixture of environment and cultural history was potent indeed. There is no doubt that the idea of ancient woodland struck a chord with the general public.

As it happened, neither the idea of ancient woodland, nor the link between history and woodland conservation was new. The idea was admirably expressed by early nineteenth century foresters in Britain (Watkins, 1988), and in 1860 by Henry David Thoreau in Massachusetts, USA (Torrey and Allen, 1962). The appeal of history in modern conservation was used by the Commons and Footpaths Preservation Society in their efforts to save Epping Forest and other places in the 1860s (Eversley, 1910), which culminated in the 1877 New Forest Act and the 1878 Epping Forest Act. The former saved the unenclosed, 'Ancient and Ornamental' wood-pastures of the New Forest from felling and planting. The latter saved Epping Forest from agriculture for the spiritual refreshment of Londoners. Admittedly, the historical element may not have been as explicit then as it became later, but it was

clearly a factor, and one suspects that some sense of threatened heritage was the root motivation. Interestingly, the nineteenth century conservationists were, like the pioneers of National Parks in the USA, imbued with the idea that the 'natural' environment should not be molested. Both were oblivious to the potential for conflict between the conservation of natural environments and the maintenance of historic conditions, which developed a century after Epping Forest was protected (Corke (1978); Rackham (1978); Ranson (1978)).

1.3 LIMITATIONS OF THE HISTORICAL APPROACH

Shortly after my earlier book was published, I had two formative experiences which convinced me that the historical and conservative approach to woodland conservation was only part of the answer. The first was a domestic wrangle over some large, ancient woods in southern England, which came to be known as the 'Bernwood dilemma'. For centuries, Bernwood Forest near Oxford had been coppiced, but after the 1930s the coppices were converted to conifer plantations by the Forestry Commission (Thomas 1988). Such transformed woods have usually been regarded as damaged – even destroyed – in nature conservation terms. The native mixtures of trees and shrubs are destroyed; the ground vegetation is largely extinguished by deep shade and heavy litter fall; the woodland fauna is assumed to have been severely impoverished; and the historic features, which were recognisable in the shape, age and distribution of the native trees, are destroyed. All this mattered in Bernwood, for this was the richest forest for butterflies in Britain. The 'problem' was that the rides and roads within the plantations remained rich in plants and thronged with woodland butterflies, despite the best efforts of herbicide-wielding foresters to control the 'weeds'. Moreover, these open spaces became ever more important in relative terms, because farming had done away with the grassland and hedges outside the woods, and coppice management had declined so far in the remaining semi-natural woods that rides and other open spaces had become overgrown

and unsuitable for butterflies. Embarrassingly, the 'damaging' treatment proved to be better for some groups of woodland species than ostensibly less-damaging neglect, an irony which was not lost on the Forestry Commission's staff journal, *The Slasher* (*sic*).

The other formative experience came on a family holiday in California and the Mountain States, USA. Spending the royalties from my first book on a grand tour of more National Parks than we could really appreciate, we arrived one late afternoon at Yellowstone. There we were confronted with a landscape of coniferous forests consisting of lodge-pole pine, Douglas-fir, Engelmann spruce, subalpine fir and others, which had been devastated by fire and outbreaks of pine beetle and spruce budworm. For mile after mile we drove through stands of dry snags, poor foliage and tangles of fallen logs. Outside the geyser basins and the high altitude meadows, the world's first – and arguably still one of the most spectacular – National Park was wholly covered in purely coniferous forests, consisting of species which were execrated by conservationists in Britain and Europe. Younger stands which had escaped fire and disease were almost as dense and uniform as plantations in upland Britain. The natural old-growth was, by the standards of British forestry, untidy, shabby and apparently unhealthy, yet it covered the bulk of this marvellous park. Impressively, the Park Authorities accepted this 'damage' with equanimity, and even welcomed fire if it started naturally. My problem was this: did the principle of naturalness really allow me to marvel at a sight in Yellowstone which, had it been in Britain, I would have hesitated to show to a visiting American?

These and several subsequent experiences provided the necessary shock to my pre-1981 pattern of thought. They made me realise that natural woodland does not necessarily conform to its image of grandeur, health, vigour and diversity, that disturbance is an integral part of the natural system, and that many species depend on disturbance to survive. I acquired a new willingness to ask whether our alien conifer plantations could be regarded as potential facsimiles of natural conifer forests. The National Parks and Forests of the USA also gave

me a new view of wilderness as something which was not wholly separate from human activities, past or present, and confirmed a view I had already developed in continental Europe, that the conservative approach which we adopt to woodland conservation in Britain is an understandable, and not wholly undesirable, consequence of the great reduction and fragmentation of our woodland cover.

Over the last 20 years I have witnessed many attempts – some at my suggestion – to restore traditional management to ancient woods, and have watched them confirm David Lowenthal's conclusion that the past cannot be preserved without alteration. The tools available are modern. Earthworks are unavoidably damaged or restored. Pollards can only survive for a limited span. The pattern of working is determined by modern limitations, not historical needs. Furthermore, the woods had already changed while coppicing had been neglected: new species had colonised, nutrients had accumulated and coppice stools had died. In any case it is an illusion to think that there was one historic state which can be restored, for traditional management changed and developed, even if the pace had been slow by modern standards. More fundamentally, historical treatment has become self-conscious and thereby somewhat false. The woods are an expression of mankind as well as nature, and the people that matter have changed greatly.

Increasingly, it has seemed to me that these valiant conservation efforts should not be stigmatised as reactionary or partial failures, but rather that a new philosophy is needed to give them forward momentum within a framework of limited and delimited change.

1.4 AIMS OF THIS BOOK

This book is a product of this changed perspective. The historical approach remains important, but it should be combined with what I could call the natural approach. In Part 2, I describe some of the important dynamic characteristics of natural temperate and boreal forests; in Part 3, I outline how

the virgin forest remnants have been affected by people; and in Part 4, I discuss some issues in woodland nature conservation which I think should take account of this knowledge of natural woodland. The focus is on nature conservation in Britain, but the source of inspiration is the wealth of research on natural woodland ecology in North America and, to a lesser extent, continental Europe.

The bulk of the book is scientific, but the concept of 'natural' and our attitudes to an environment without human influence spring from deep roots in human culture. If, as I propose, natural woodland is to be used as a reference point for woodland conservation, and if one objective of nature reserves is to create examples of natural woodland, then one must try to understand the significance of the natural condition to human society and the great variety of our reactions to it. As one example of the significance of attitudes to naturalness we need look no further than the differences which have bedevilled the relationship between foresters and conservationists. Although debates between the two groups have generally been in technical terms – whether this or that treatment damages or benefits wildlife – and have been further complicated by the seemingly inevitable competition between bureaucratic agencies, the heart of the difference has been in attitudes to nature and management. Accordingly, in Chapter 2, I include a more philosophical discussion of the concept of natural, which may go some way to place the rest of the book in a wider cultural context.

The specific objectives of this book are:

- (1) To summarise our understanding of the original natural forests of the temperate and boreal regions of North America and Europe, and thus to make this knowledge more readily available to British ecologists.
- (2) To construct a view of natural woodland in Britain, which can act as a reference point for ecologists and foresters.
- (3) To develop nature conservation policies and practices for British woods and plantations, which take account of the natural characteristics of woodland; and to balance this with the historical approach.
- (4) To raise the level of interest in and appreciation of non-intervention reserves and long-term ecological research.

1.5 A DEDICATION

If there was a single inspiration for this book, it was the late Eustace Jones' (1945) paper on 'the structure and reproduction of temperate natural forests'. This is the paper I would select if I was told I could take just one to a desert island. For years I seemed to be the only ecologist in Britain who had read it, but now, together with Alex Watt's 'pattern and process' paper (Watt, 1947), it must be one of the more widely cited classics, especially (and understandably) in North America.

I once asked Eustace Jones how his paper came to be written and whether there was any connection with Watt's paper. The answer was initially deflating: it had been prepared some years before for a new forestry course at Oxford; there was no direct connection with Watt's paper; and Jones' paper was published because the editors were hard up for material at the end of the war. However, his further comments (personal communication, quoted with his permission) emphasised what he saw as foresters' greater practical experience and attachment to reality:

I had felt [even as an undergraduate at Cambridge] that there was too much theorising from the arm chair about matters such as succession. It still surprises me that Tansley could put forward such an extremely hypothetical view of primary succession, so far removed from reality, in the introduction to *The British Islands and their Vegetation*. I have long felt that all too ready acceptance of unproven hypotheses as though they were principles of general validity has been an immense hindrance to the progress of ecology, and the acceptance as gospel of all Clements' dogma is perhaps the most striking example. That pre-1940 ecologists swallowed this all with its mysticism and woolly thinking, and rejected Gleason's clear concise logic, indicates an appallingly low average intellectual standard! The fact is, of course, that many botanists and zoologists were (and still are) attracted to ecology primarily because they are good naturalists, and there

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INTRODUCTION

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is no correlation between being a good naturalist and having a logical mind.

Forestry and conservation have both suffered from a number of myths and false assumptions. Some of those that affected attitudes in North America were outlined by Raup (1964). Woodland

nature conservation in Britain has been shaped by assumptions about both the character of natural woodland and the effects of man on the woodland we see today. Latterly, much has been done to build up a realistic appreciation of the historical elements in British woods. Now, we need to reassess the natural elements and to consider their implications.

2

Definitions, values and
philosophies

[No-one] has yet described for me the difference between that wild forest which once occupied our oldest townships, and the tame one which I find there to-day. It is a difference which would be worth attending to. The civilized man not only clears the land permanently to a great extent, and cultivates open fields, but he tames and cultivates to a certain extent the forest itself. By his mere presence, almost, he changes the nature of the trees as no other creature does . . . It has lost its wild, damp, and shaggy look, the countless fallen and decaying trees are gone, and consequently that thick coat of moss which lived on them is gone too.

Henry David Thoreau (1864, p. 151)

NATURAL WOODLAND is a fruitful source of misunderstanding and argument. Defining it is difficult enough, but, since the idea of 'wild forest' has also become central to a system of values and a force in determining how land is utilised, ambiguities in the concept are exploited by those in competition for influence and resources. Whilst naturalists tend to value natural environments highly, the impulse of most foresters has been not only to tame and to

civilise, but also to throw doubt on the value or even the existence of natural conditions. The present chapter cannot change this, but it will seek to clarify the debate by defining naturalness and natural woodland, identifying why they are valuable, and reviewing the origins of attitudes which underlie current debates between foresters and nature conservationists.

2.1 THE CONCEPT OF NATURALNESS

When vegetation is described as 'natural', any one of several different meanings may be intended. We may use the term in what I will call the *wilderness* sense, to mean that the vegetation owes its features strictly to natural factors alone, and not to the actions of people. We may additionally mean to imply that this state of affairs has prevailed at all times in the past, i.e. that the vegetation is 'virgin'. Alternatively, we may adopt a *rural* definition, whereby 'natural' broadly contrasts with urban, accepting that even a cultural landscape can be described as 'natural'. At a different level still, natural may be defined in an *urban* sense, for example when a city park of planted trees, sown lawns and rose beds is 'natural' beside the surrounding roads and buildings.

'Natural' can thus be both absolute and relative. The rural definition in particular covers a range of conditions, but the 'natural' vegetation in the farmed landscape is usually restricted to communities of mainly native species, which arrived by natural means at the places they now occupy. Human actions, past and present, are accepted as factors which influenced such vegetation, so 'natural' implies 'naturally responsive' to both environmental factors and human activity, rather than an absolute condition. The principal 'artificial' kinds of vegetation are plantations and other sown crops.

'Natural' and 'naturally' are not just descriptors of vegetation, landscape and environmental processes. In common parlance, according to the *Oxford English Dictionary* (1979), the word 'natural' connotes: objects, attributes, relationships and behaviour which are native or indigenous; unaltered, unimproved, unsophisticated, simple; an inherent condition, not artificial, genuine, life-like; consonant with; common sense; or due to force of circumstances. One point which stands out, and which is closely related to attitudes to the natural environment, is that 'natural' can convey either approval or disapproval according to context and the standpoint of the speaker. Whereas 'natural' is now a popular selling point for cosmetics, it can also imply that a person is uncivilised, unenlightened, unregenerate or morally in a state of nature.

When food is described as natural rather than manufactured or cooked; or when land and vegetation is described as natural, meaning unimproved, the usage may well have pejorative overtones.

The idea of nature has undergone profound change (Williams, 1972). During the eighteenth century, Christianity was replaced by a belief in the divinity of nature as the main creative force in western civilisation (Clark, 1969, p. 269). In classical times (Olwig, 1984), nature meant a process, a principle of development. The word itself was derived from the Latin *nascere* 'to be born', which refers to both origins and potential for development. Any subsequent state developing from an initial state was still natural, because it was inherent in the initial state. Thus, the pastoral landscape idealised in classical times was as natural as primitive conditions: humans were part of nature; and natural environments formed a continuum in space and time. In modern times, however, the word 'natural' came to describe a state, i.e. it was restricted to that part of the classical meaning which referred to *primaevial* or original conditions. Wild states were no longer regarded with dread, but were seen with approval as something outside, even opposed to, society. Even so, some of the original meaning of 'nature' as potential and process lingered on. Against this background, the wilderness definition is modern, whereas the rural and urban definitions are classical.

This book applies 'natural' to the narrow topic of woods and forests. As with all aspects of the 'natural' environment, a question immediately arises: are people part of nature? The answer is determined by one's personal perception and consciousness, but as a scientist who seeks to stand aside and to observe the phenomena he sees around him, my instinct is to regard people as being separate from nature. Nevertheless, other views are possible: that apostle of the wild, Henry David Thoreau, sought in *Walden* to convey a 'timeless message [that] mankind and nature form an ecological unity' (Kehr, 1983).

Defining 'natural' is not in my view a matter of right or wrong, but of arriving at something useful for a particular purpose. I prefer the wilderness