

## Chapter (non-refereed)

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## 9. THE CONSERVATION OF PASTURE- WOODLANDS

P.T. HARDING

In Britain the conservation of woodlands has been directed mainly towards those woods with rich and diverse arrays of seed-bearing plants, or towards presumed examples of vegetational types. Recently, however, the desirability of conserving woodlands whose structure has been determined by different types of management was emphasised by Peterken (1974, 1977a, b). Five types were recognised by Peterken:

- a) Relicts of the medieval wood—pasture systems, [pasture-woodland];
- b) Ancient high forest woods, ie the native pinewoods of Scotland and some birchwoods in the highlands;
- c) Ancient coppice woodlands;
- d) Ancient woods in inaccessible sites;
- e) Woods formed by a long period of natural structural development.

Of these, ancient woods managed as coppice or as high-forest, or on inaccessible sites, make up most of the areas considered to be of value for wildlife conservation.

Examples of wood-pasture (pasture-woodland) management are of particular importance because, although relatively few areas are still managed in the traditional manner, many retain the associated structural features, characterised by the presence of over-mature broadleaved trees and dead wood, which are not commonly found in areas of woodland managed in other ways, for example high forest or coppice. The structure of broadleaved trees, particularly oaks (*Quercus robur* and *Q. petraea*), beech (*Fagus sylvatica*), ash (*Fraxinus excelsior*) and elms (*Ulmus* spp), in open canopy over grassland or bracken, frequently with areas of scrub, especially hawthorn (*Crataegus monogyna*), typifies pasture-woodlands. Pasture-woodlands were managed from pre-Norman times to provide grazing for deer and domestic stock, the tree component yielding both timber, winter shelter and food for deer and stock. Although areas of pasture-woodland have decreased since the late Middle Ages, they are thought to have survived better in lowland Britain than elsewhere in western Europe. Four broad types of pasture-woodlands are discernible: forests and chases, parks, wooded commons and winter grazed woodlands (Rackham, 1976; Rose & Harding, 1978).

Areas of pasture-woodland were recognised in the Nature Conservation Review as being important, particularly for the conservation of epiphytic lichens, timber-utilising invertebrates and hole-nesting birds (Ratcliffe, 1977).

### 1. The characteristic natural history of pasture-woodlands

Many species of coleopterous and dipterous insects occur in woodland, but some, such as *Bitoma crenata*, *Pediacus dermestoides* and *Litar-gus connexus*, are largely restricted to pasture-woodlands. Many of these restricted species are associated with dead or dying trees, itself a rare ecological resource (Stubbs, 1972). However, species such as *Abreus granulum*, *Ampedus cardinalis*, *Ischnomera sanguinicollis*, *Phloiotrya vaudoueri*, *Ptenidium gressneri* and *Rhizophagus oblongicollis* and some assemblages of species seem to be restricted further and occur only at sites known to have been managed as pasture-woodland for many centuries or throughout their recorded history. These species are comparable with the Urwaldtiere of "Old Forest Insects" of Palm (1959) and Buckland and Kenward (1973).

A preliminary list of 195 such species of Coleoptera has been compiled (Harding, 1977a) and a bibliography of the occurrence of 100 of these species in the British Isles (Harding, 1978f) is being used by a number of entomologists to evaluate the usefulness of such a list for conservation assessment purposes (eg Hammond, 1979).

Similarly, some assemblages of lichens and bryophytes such as the *Lobarion pulmonariae* community, can be regarded as characteristic of pasture-woodlands and to be indicative of ecological continuity (Rose, 1974, 1976; Rose & Harding, 1978; Rose & James, 1974; James *et al.*, 1977).

### 2. The extent of areas of conservation value

The Nature Conservancy Council wanted an up-to-date assessment of the extent and condition of the national resource of pasture-woodland habitats. ITE was commissioned to make a survey to enable this assessment to be made, and also to facilitate the evolution of improved management. The survey concentrated on invertebrates associated with dead wood, but with the occurrence of cryptogams being noted. With information from many entomologists and botanists, local conservation and natural history organisations, NCC staff, and colleagues in ITE, an annotated and slightly revised version of an earlier inventory (Harding, 1976) was prepared. This revision includes more than 400 areas considered to be of possible,

TABLE 16 Dynevor Deer Park, Dyfed: Age classes and growth forms of broadleaved species of trees and shrubs

	OVER-ANCIENT		MATURE		YOUNG		SAPLING	SHRUB	COPPICE	BOLE ONLY	DYING/DEAD	TOTALS
	Maiden	Pollard	Maiden	Pollard	Maiden	Maiden						
OAK ( <i>Quercus robur</i> & <i>Q. petraea</i> )		57	488	4	243	4				4	19	819
ASH ( <i>Fraxinus excelsior</i> )		1	8		11	4	4				4	32
ELM ( <i>Ulmus glabra</i> )		3	3	1	3	1	2		3	1	26	43
ELM ( <i>U. carpiniifolia</i> )					2							2
BEECH ( <i>Fagus sylvatica</i> )		6	34	2	28	2	3		1	1	5	82
LIME ( <i>Tilia x vulgaris</i> )		2	5	2	18	8						35
ALDER ( <i>Alnus glutinosa</i> )						1	2					3
BOX ( <i>Buxus sempervirens</i> )								3				3
HAZEL ( <i>Corylus avellana</i> )								9				9
SALLOW ( <i>Salix</i> spp)											1	1
ELDER ( <i>Sambucus nigra</i> )											1	1
HOLLY ( <i>Ilex aquifolium</i> )					1		3					4
HAWTHORN ( <i>Crataegus monogyna</i> )								20				20
RHODODENDRON ( <i>R. ponticum</i> )								21*				21*
SYCAMORE ( <i>Acer pseudoplatanus</i> )		1	30	5	63	7	7				1	114
OTHER MAPLES ( <i>Acer</i> spp)		1	3	1	3	1						9
HORSE CHESTNUT ( <i>Aesculus hippocastanum</i> )		5	3	6	12	19			1		2	48
SWEET CHESTNUT ( <i>Castanea sativa</i> )	2	2	13	2	7	1					1	28
CHERRY ( <i>Prunus</i> spp)						3						3
WALNUT ( <i>Juglans regia</i> )					1					1		2
TURKEY OAK ( <i>Quercus cerris</i> )				2	12						1	15
HOLM OAK ( <i>Quercus ilex</i> )					3							3
TOTALS	2	78	587	25	407	51	21	53	5	7	61	1297

\* Isolated shrubs only. Two dense areas of shrub are also present.

potential, or known conservation value for "the fauna of the mature timber habitat" (Harding 1978e)—the assessment being based on knowledge of invertebrate faunas, the structure of woodlands and historical records.

### 3. Surveys

Approximately 100 areas were surveyed between 1975 and 1978 to include a wide geographical range, with some areas which were known for their entomological interest and/or abundance of epiphytes together with hitherto unrecorded areas (Harding, 1976, 1977a, 1978a-d).

At each site, 5 attributes were recorded to give a brief assessment of the present-day appearance and management of the site.

3.1 Species composition, and species ratio, of trees and shrubs. Oak and beech were usually the most plentiful tree species, but birch, ash and elm were also frequent. Exotic species such as sycamore and sweet and horse chestnut were

frequent where landscape plantings had been made in the 18th and 19th centuries. Hawthorn occurred at almost every site, but at many sites shrubs were scarce.

3.2 Age classes of trees and shrubs. Most sites were characterised by an abundance of overmature trees (fully grown trees with dieback affecting some branches in the crown) and a lack of young trees (actively growing trees not yet having reached the presumed maximum in height and spread of crown). Table 16 shows a typical example of the age class structure of a parkland pasture-woodland in lowland Britain.

3.3 Regeneration/planting of trees and shrubs. Except where deer and other grazing stock were no longer present, successful natural regeneration of trees and shrubs was rare. Planting was infrequent except in a few cases, such as some National Trust properties (eg Dunham Massey Park in Greater Manchester) and a few privately or municipally owned parks, where small "cosmetic" plantings had been made in recent years. At most sites, the most recent phase of regeneration or planting

seemed to have been before the end of the 18th century (Plate 10).

3.4 Estimates of the amount and distribution of dead wood and the "fate" of dead wood. At most sites, dead wood was cleared either for firewood or to free land for grazing, or, as at Cadzow in Strathclyde, apparently to achieve a tidy appearance, or, in public access areas, in the interests of safety. Few examples of areas of relatively undisturbed dead and dying trees and fallen branches, as at Staverton Park in Suffolk, were found.

3.5 Present management and prospects. The management of most parkland sites was organised towards achieving the maximum amount of grazing on the land without completely destroying the characteristic appearance of parkland.

Many parks acted as a dual source of grazing for stock and deer, and of shooting, usually, as at Moccas Deer Park in Hereford/Worcester, as a properly kept pheasant shoot embracing an area much larger than the park itself. Other parks have been opened up to public access as safari parks (eg Longleat in Wiltshire) or as public recreation areas (eg Studley Royal Park in north Yorkshire). A few sites had been ploughed and most of the trees removed in recent years. Most of the former forest and chase areas are now managed for commercial forestry which has resulted in a loss of old trees. Although young trees have been planted at these sites, they are frequently of species not readily available as hosts to the typical flora and fauna of native broadleaved species. Two important forest areas, Epping Forest in Essex, and the Birklands area of Sherwood Forest in Nottinghamshire, are intensively used by the public for recreation. It is probable that these areas, together with parts of the New Forest in Hampshire, will experience new problems resulting from damage, particularly by fire and vandalism, by the public in the future.

Detailed surveys of 6 sites have also been made. The primary objective of each survey was to locate, map, identify to species and allocate to an age class and growth form, each tree and shrub at the site. From this information it was possible to state the present age structure for each species of tree and shrub (eg Table 16) and to propose what management would be necessary to maintain and, if possible, to enhance the value of the site for the conservation of timber-utilising invertebrates and epiphytes. In all cases, extensive programmes of planting were proposed, and, in some cases, it was recommended that small enclosures should be made to aid natural regeneration. The retention of dead wood, a highly valuable wildlife resource (Stubbs, 1972), was a recurrent problem at these

sites. In one case, it was recommended that a few particularly important dying and dead trees be purchased by NCC at their timber (firewood) value to ensure their continued presence to act as hosts for invertebrates. At Moccas Deer Park in Hereford/Worcester the detailed report of the structure, natural history, management and history of the park (Harding, 1977b) has been used by the Nature Conservancy Council (West Midlands Region) in its attempts to obtain a Nature Reserve Agreement. This is expected to be formally agreed in 1979, although the management recommendations are already being implemented.

#### 4. Conclusions

The results of various surveys of pasture-woodlands, made by ITE staff between 1975 and 1978 have been reported to NCC. In some cases, recommendations about the value of sites for the conservation of invertebrates and epiphytes associated with old trees have been acted upon by NCC. However, unless concerted action is taken to manage at least a representative set of sites for wildlife conservation, an important and little understood facet of woodland ecology in Britain will be seriously damaged or permanently lost, mainly as a result of neglect.

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