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INSTITUTE OF TERRESTRIAL ECOLOGY
(NATURAL ENVIRONMENT RESEARCH COUNCIL)

NCC/NERC CONTRACT HF3/08/12
ITE PROJECT 948
Progress report to Nature Conservancy Council

MANAGEMENT GUIDELINES FOR THE CONSERVATION OF
INVERTEBRATES, ESPECIALLY BUTTERFLIES, IN PLANTATION
WOODLAND

E POLLARD, M L HALL & J N GREATOREX-DAVIES

Monks Wood Experimental Station
Abbots Ripton
Huntingdon
Cambs PE17 2LS

March 1987

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The main aims of this 3 year study are:-

1. To prepare management guidelines for invertebrates, especially butterflies, in selected woods.
2. To add to the limited amount of information we have on the effects of management and ride orientation on other insect groups.
3. To initiate a programme of monitoring in selected woods to enable us to assess the impact of management and developing shade on the butterflies and their foodplants.

The first year of the study included a survey of 6 coniferous woods for which we had several years' data from the Butterfly Monitoring Scheme. To augment the butterfly data we recorded the shade conditions, herbaceous plants and Heteroptera on each section of the butterfly transects. These data have now been analysed.

The study of Heteroptera in 1985 showed that, as a group, these insects show very similar patterns of distribution in relation to shade, as do the plants and butterflies; that is the highest number of species is found in the sunnier rides. Indications are that management for butterflies (the clearance of ride edges and creation of open areas followed by rotational management) will also benefit many species of plants and invertebrates.

Field work in 1986 was concentrated on 2 woods, Whitecross Green Wood in Oxfordshire (BBONT) and Somerford Common in Wiltshire (FC). These woods have been managed recently for butterflies in different ways and monitoring is essential if the effects of the different management strategies are to be judged. Whitecross Green Wood has one main ride through the centre of the wood which has been 'scalloped', creating a series of small glades on alternate sides of the ride. Somerford Common has been managed more conservatively. The rides there have been cleared back to the original ditches and beyond to about 5 m, though not, as originally planned, to 10 m. These woods, both managed during 1985-86 and with programmes for the continuation of management, present an opportunity to monitor the long-term effects of the different management strategies on both plant and animal communities.

Both sites are recorded weekly for butterflies by excellent local recorders. For each section of the butterfly transects we now have permanently marked botanical transects (using buried metal markers), hemispherical photographs (for shade estimates) and fixed point photographs. We also have recent aerial photographs of each site.

The second major extension of the study in 1986 was to examine the influence of aspect on some groups of invertebrates, particularly those associated with hazel (Corylus avellana), a shrub frequently found at ride edges. Ten east west rides were chosen from Yardley Chase in Northamptonshire for this study. The hazel on north and south-facing sides of the rides was sampled separately. The most intensive sampling was of lepidopterous leaf miners, specific to hazel. The results showed some differences between north and south-facing aspects, but these differences were small. In southern Britain, hazel is predominantly an understorey shrub. It is possible that the invertebrate fauna has evolved to cope with a fluctuating regime of shade and light resulting in greater tolerance to aspect. However, results for other insect groups suggest that some species of Heteroptera and Coleoptera on hazel do benefit from direct sunlight, so that orientation of rides is a factor to be considered in management recommendations, even for the fauna of shrub species.

As the work to date indicates some faunal differences between north and south-facing ride sides, work will continue in the final year of the study to discover whether insects are more abundant on ride margins with a sunny aspect, or if numbers simply reflect the relative abundance of their foodplants. To test this, we hope to study the fauna associated with a herbaceous species, (possibly thistle) on north and south-facing aspects.

However, the greater part of our time this year will be devoted to the continued monitoring of Whitecross Green Wood and Somerford Common, and the production of management recommendations for a selection of other woods. We also hope to produce evidence of the general benefits to be gained from management for butterflies.