

Merlewood Research and Development Paper

Number 8

Report on Meeting of the Woodland Habitat Team
at Merlewood Research Station, 7th and 8th November, 1969.

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1. Introduction

A meeting of the woodland Habitat Team was held at the Merlewood Research Station on the 7th and 8th November, 1968. The meeting was planned to enable the research staff of the Habitat Team to present a suggested strategy of research in woodlands for the Nature Conservancy, and to provide Regional Officers with an opportunity to comment on the proposals and to advise the research staff on the selection of tactical problems within the broad strategy.

This paper presents a brief report on the meeting, outlines the main conclusions reached in discussion, and presents the proposals for future meetings of the woodland Habitat Team.

2. Programme of Meeting

The programme arranged for the meeting was as follows:-

Thursday, 7th November

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| 10.30 - 11.00 | Introduction to conference |
| 11.00 - 12.30 | Presentation of the proposed strategy for woodland research by J. N. R. Jeffers, based on Merlewood Research and Development Paper No. 3, followed by discussion of the proposals. |
| 13.30 - 15.15 | Sub-committee meetings to consider: <ol style="list-style-type: none">1. Selection of sites and criteria for site classification.2. Priorities in woodland management problems.3. Monitoring of changes in woodlands.4. Priorities in studies of individual species. |
| 15.45 - 17.00 | General discussion of woodland problems. |

Friday, 8th November

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| 9.00 - 10.30 | Review of techniques in woodland research:- <ol style="list-style-type: none">1. Statistical and computing techniques.2. Regeneration studies.3. Nutritional studies.4. Systems analysis.5. Classification methods.6. Root studies.7. Aerial photography.8. Biological activity.9. Radiobiology. |
| 11.00 - 12.30 | Discussion of techniques and their application to woodland problems. |
| 13.30 - 14.15 | Summary of conclusions reached by conference. |

A list of persons attending the meeting is given in the appendix to this report.

3. General Conclusions

There was general agreement, at the end of the meeting, that the research strategies proposed were directly relevant to the woodland problems of the Nature Conservancy, and that, if successful, these strategies would help Regional Officers to manage their own woodland reserves, sites of special scientific interest, etc., and would also enable them to meet the demands for advice on woodland management from other organisations. The meeting also revealed a need for more precise definition of the objectives of management in woodland reserves and sites of special scientific interest. It was felt that the policies and management plans for areas managed by the Conservancy were frequently unrealistic, and phrased in terms which were incapable of any precise interpretation. It was felt that many of the tactical choices within the research strategies could only be made rationally after more precise definition of the objectives of management. Nevertheless, it was stressed that Regional Officers would need to assign their own priorities to the projects included in the project register for the Habitat Team, and there would also be some advantage in the drawing up of project registers by individual Regional Officers for further consideration by the Habitat Team.

In as far as the objectives of reserve and site management are adequately defined at present, it was felt that the tactical decisions so far made, and expressed in the project register, were right, but each of the sub-committees made valuable suggestions for future work. The conclusions reached by these sub-committees are given in the following sections of this report.

The programme of research for the woodland Habitat Team cannot be divorced from the research into woodlands and woodland sites which has taken place at Marlwood, and elsewhere in the Nature Conservancy, in the past, despite the need to refine new objectives and strategies, and the meeting stressed the importance of examining existing data in relation to the present strategies, as well as the need to bring existing projects which were not directly related to the new strategies to a successful conclusion. In particular, it was felt that emphasis on productivity and biomass, which had been a feature of past work in the Conservancy on woodlands, would need to be carefully re-examined. It would also be necessary to ensure that, in both new and old projects, the defined secondary objectives were relevant to the primary objectives of the research strategies.

There was some discussion during the meeting on the future structure of the woodland Habitat Team. Two particular aspects were felt to be important, i.e. the communication of ideas, techniques, and results, and training in research for regional staff, and training in conservation for research staff. No specific proposals for meeting these requirements were made at the meeting, but the Head of the Habitat Team undertook to investigate possible ways of improving these two aspects of the organisation of the Habitat Team.

4. Selection of Sites and Criteria for Site Classification

- (a) Are there any particular groups of woodland sites, or site types, to which priority should be given in the site classification studies? If so, what are they?

The general conclusion was that in the first reconnaissance survey to be undertaken under Dr. Bunce's species analysis technique, it would be preferable not to select (subjective) any particular group of sites, but rather to allow a total range of variation to emerge from such a reconnaissance. At the second level of more detailed survey, it may then be possible, using a limited number of sites, possibly within defined woodland types to select priorities for particular groups. One criteria at any given time may be whether a woodland type is discovered to be so rare (i.e. unique) that it merits immediate consideration for classification studies in depth.

- (b) Are general site classifications more likely to be useful than classifications which are confined to defined regions or species?

The assumption was made that the word "general" referred to ecological site classification factors, e.g. rainfall, climate, geology, as opposed to the particularities of plant and animal communities to be found within them. It was hoped that both these approaches, i.e. the general and specific, could be incorporated at some stage, and it was important that classifications on the national level could be used also at Regional and other levels.

- (c) What criteria should be included in the site classifications?

The group accepted that the criteria must be determined by the level of classification at a given point in time, but that whatever criteria were used, the answer must be expressed in terms comprehensible to Conservation staff. The suggestion, therefore, was that species which represent the end point of a series of ecological processes should be used in the first instance to give a rough classification which should then be analysed in more depth using all available criteria. Important amongst the latter is the priority for the measurement of soil moisture and base rich status, as this appears to be a primary factor in variability both between sites and within sites. Much, however, can be done by recognising the Regional Geographical Regions which can assist in the classification process, e.g. Chiltern Beechwoods, Lake District Acid Oakwoods. It was accepted that Bunce's presence/absence association analysis for tree and grass cover was the most useful starting point for this first-tier classification.

Regional Officers would be very pleased to co-operate in any way they could in providing data more particularly from their own reserves. The major feature of such a preliminary classification would be the use of existing woodland survey criteria developed by Hanks and.

5. Experiments in Woodland Development Problems

- (a) Are woodland development problems which Regional Officers like to see given the highest priority in research?

(i) Regeneration

Lack of regeneration of oak in particular can be due to oak trees not seeding, acorns not germinating or seedlings not maturing to become seed bearing trees themselves.

How extensive is the protection of seeds and seedlings by birds and mammals?

Do fungi and bacteria adversely affect regeneration?

It would be helpful to know if regeneration has a pattern either in space or time.

Is regeneration failure a function of the age of a woodland?

(ii) Pattern in woodland development

Studies should be made to discover the temporal pattern of woodland growth. It is probable that most present woodland sites are centred in or around an area which has previously been woodland for a long time and it is probable that most emergent woodlands of the last 600 years have been rotated on different sites during this period. This is an exercise in historical geography.

The spatial pattern of woodlands should be studied to see if there is an optimum vertical and lateral structure for woodlands so that tree growth, regeneration, ground flora, insects, mammals, birds and other invertebrates may have their habitats optimised.

To what extent is the distribution of trees within a wood, the vigour of the woodland and the quality of its flora and ground flora related to soil exhaustion. This study could provide information on the natural constraints on flora and fauna.

(iii) Diversity

Should we aim to increase diversity of flora and fauna? If so, how? Research on good examples of diversity in present woodland habitats could be used to give guidance on how to diversify other woods.

(iv) Autecology

Studies should be made of the autecology of certain species of plants and animals to see what contribution they make to the total woodland habitat.

- (b) Are there any particular woods for which models are currently required? If so, which?

No, but it would be most helpful if certain simple woodland types could be used for testing the model making process so that it could be later used for more complex woodlands. For example, a birch wood has a life span of about eighty years, and developments in such woods occur quickly and should be simple to monitor. Occasionally, oak woodlands are important because they appear to be about to be failing to regenerate.

As desirable as these studies may be, there is grave doubt that enough relevant information is currently available, particularly concerning their vegetation, soil, climate, the nutritional status of the woodland soils, the macro- and micro-flora and fauna. If sufficient information can be obtained for a particular wood a model should be constructed and it would then be possible to test it against the original.

- (c) What woodland management problems are most likely to be encountered in discussions with private owners?

(i) Advice

There is usually a conflict between economic return and nature conservation. The extent of the conflict depends entirely upon the woodland owner's attitude toward these factors and it is generally a matter of trying to balance one against the other in an acceptable manner. Whatever happens we must give sound economic advice if required to do so. An interesting development in the last year or so has been the realisation that certain deciduous species do mature to produce a crop within the same time as conifer trees. Advice then given is often a matter of discovering whether the site, its aspect and its soil are suitable for any of the quick growing deciduous species. Another recent development concerns the additional factor of amenity. In the past, felling licences have been granted on condition that a margin of one chain width be left round former deciduous woodland areas. A central part of the woodland area is either replanted with conifers or ploughed. The surrounding fringe of woodland is specified purely for amenity purposes. A recent development has been the realisation that both amenity and nature conservation may both benefit if blocks of hardwood are left alternating with blocks of conifer. More information is needed on this point.

(ii) Multi-purpose Use of Woodland

The National Trust, the Forestry Commission and local authorities have all extended the use of certain areas of woodland in their possession to public recreation. Very rarely is this degree of multi-purpose use consistent with nature conservation. We should be in a position to advise on the layout of paths, clearings and picnic sites within the woodlands so that certain aspects of the nature conservation interest can be maintained.

- (d) In addition to the suggested topics for discussion, the sub-committee raised two further points.

(i) It would be helpful if certain areas could be identified and set aside as potential woodlands on present open sites. Techniques of seeding, planting and management of such areas need to be considered.

(ii) The topics discussed in this sub-committee and other sub-committees along with information from the established body of knowledge concerned with woodland management should all be brought together with a handbook on woodland management.

6. Monitoring of Changes in Woodlands

(a) what sites should be given greatest priority in establishing a monitoring system?

(i) First priority must go to those sites over which we have some degree of long-term control, i.e. N.A.R.s and possibly some S.S.I.s. Some descriptive work has already been carried out by R. C. Steele et al in the Western Oakwood Series from Yarnor to Letterewe, and some forty exclosures already exist in woodlands on reserves in Scotland alone. It is recommended that these, and any other studies extant at present, should be critically examined with a view to future monitoring. All exclosures should be assessed to determine which are not worthy of further study, except perhaps over such longer periods; in order to concentrate any monitoring studies in the more rewarding areas.

(ii) Still within the general heading of (i) above.

Second priority should go to woodlands which are undergoing the most rapid, and therefore the greatest, changes. A representative sample of the main woodland types should also be monitored.

(iii) The third order of priority includes those woodland sites over which we have no long-term control. These may include woodlands owned by the Forestry Commission, private individuals or private woodland management groups. Many such areas may undergo conversion from broad-leaved to coniferous tree species or may even be clear felled. It was considered that monitoring in such areas should be continued, at least for a while, after such a cataclysmic event, particularly if there was a possibility of regenerating in the near future.

(b) What aspects of the changes taking place in woodlands and woodland sites are the most important to monitor?

This sub-committee by virtue of the diverse disciplines of its small number of members thought that it was essential for this question to be answered by a team of competent woodland ecologists. Members disagreed widely as to what forms the most important constituent of a woodland. Some thought studies should start with the soil and progress upwards, whilst others (the majority) thought it better to start with the tree species and work down.

The limiting factor in any large scale monitoring programme would be the manpower available and the qualifications and capabilities of the individuals involved. If Regional staff, and more particularly wardens, were to be expected to take part, the monitoring required would need to be relatively simple and quickly carried out. For this reason it was agreed that monitoring would need to be restricted to botanical observations and measurements, such as recording ground flora on a presence or absence basis. Any more detailed studies could only be carried out on a limited number of selected sites by a specialist research team.

It was thought that any phenological changes should not come under the scope of a widespread monitoring system but should form observations to be limited to the selected sites mentioned above.

Consideration was given to the possibility of more specialist botanical, entomological, mathematical and climatological studies being carried out by personnel from organisations outside the Nature Conservancy. However, in general it was felt that this work ought to be done by members of the Woodland Habitat Team in order to ensure the necessary degree of reliability of results over a long period.

(c) How frequently should assessments of changes be made?

Monitoring should be carried out at sufficiently frequent intervals, in the initial stages, in order to ascertain the rate of change of the criteria being investigated and thereafter at less frequent regular intervals to record the said changes.

In practice, it was thought that initially monitoring may be carried out annually for, say, the first five years and thereafter at five-yearly intervals.

7. Priorities in Studies of Individual Species

(a) Which woodland species require the most urgent study?

Only tree species were discussed. The main native species - notably, oak, pine, birch and ash - were felt to be most urgently in need of further study. Also certain less widespread natives - such as alder (problems of range) and juniper (regeneration particularly).

Studies on introduced species were also felt to be needed, though it was realised that the Forestry Commission is accumulating a lot of data on widespread species, e.g. Sitka. Red oak was particularly mentioned - how does it compare with our native oaks in respect of, for example, long-term effects on the soil, support of varied insect populations, etc.?

The types of study required include problems of regeneration, competition between species, long-term effects on site (including soil conditions), minimal areas of viable communities and methods of creating/maintaining irregularity in woodlands.

(b) What special aspects of plant and animal taxonomy give the greatest trouble in practical work?

In regard to work on animals, it was felt that problems of identification were paramount and caused difficulties over communication because of the frequent lack of comparability of results. The answer was thought to lie in standardised 'lumping' or grouping of species. On a limited scale the use of experts can usually solve detailed taxonomic problems.

Genetics seemed to be the main problem with plants. How to discover whether a woodland is of local origin or has been planted using trees from a distant (perhaps foreign) seed source? Is there any point in regenerating a woodland reserve with local seed unless it is known whether the existing trees are native to the locality?

(c) Are there any species of plants or animals which require special investigation?

Requirements of rare species were felt to merit more attention. Amongst the more widespread plants, the ecology (especially behaviour) of brambles, bracken and Aschby willow-herb was stressed - particularly in relation to management.

Introduced species (both plant and animal) need adequate study, especially of behaviour and competition. What, if anything, is being done to study the increase in Collared doves and its possible reactions? Arising from this, it was felt rather strongly that the general question of "who does what" in regard to aliens needed to be rationalised. M.N.F.F. clearly have a responsibility to investigate pests but is anyone obliged to look at a new alien (e.g. the Collared dove) before it is known whether it will become a pest?

8. Future Meetings of the Woodland Habitat Team

A meeting of the Woodland Habitat Team was proposed for the spring of 1970, at which four practical examples of the strategies and substrategies outlined in the programme of research for the Habitat Team would be presented. The opportunity would also be taken to demonstrate these examples as part of the contribution of the Team to the European Conservation Year, 1970.

It was also suggested that a further meeting of the Habitat Team might be held in the autumn of 1969 in order to consider the implications of the Reserve Review, and to review progress on the development of effective communication of results, techniques, etc., and training schemes. While such a meeting would clearly be highly desirable, financial constraints may place a further meeting of the Woodland Habitat Team relatively low on the list of priorities, especially if some of the other Habitat Teams have been unable to hold their first meetings.

Appendix

List of Persons Attending the Wetland Habitat Team
Meeting, 7th and 8th November, 1968

Mr. J. F. Archibald	A.R.O., South West
Mr. M. E. Ball	D.R.O., Scotland W.
Miss M. D. Barrow	Monks Wood
Miss N. A. Bonnar	Headquarters
Mr. R. E. Bootc	Headquarters
Dr. R. J. Elliott	Shrewsbury
Dr. B. Forman	Headquarters
Dr. J. F. D. Frazer	Headquarters
Dr. P. A. Gay	R.O. South East
Dr. M. George	R.O., East Anglia
Miss N. J. Gordon	D.R.O., Scotland E.
Dr. D. R. Helliwell	Shrewsbury
Dr. M. W. Holdgate	Headquarters
Dr. G. Howells	D.R.O. North Wales
The Lord Howick	N.C. Chairman
Dr. D. Jenkins	Scotland
Mr. A. J. Kerr	D.R.O. Scotland S.
Mr. J. W. Kinnaird	Banchory
Dr. K. Mellanby	Monks Wood
Mr. E. Moll	Monks Wood (visiting)
Dr. J. Morton Boyd	Scotland
Mr. M. D. Mountford	Headquarters
Dr. D. F. Perkins	Bangor
Dr. G. Peterken	Monks Wood
Dr. M. E. B. Poore	Headquarters
Dr. T. O. Pritchard	Bangor
Mr. C. E. Ranson	D.R.O., East Anglia
Mr. J. A. Schofield	D.R.O., East Anglia
Mr. J. B. Smart	Monks Wood
Mr. R. C. Steele	Monks Wood
Mr. J. ... Thompson	R.O., Midlands
Mr. P. Walters Davies	R.O., South Wales
Dr. R. C. Welch	Monks Wood
Mr. M. J. Woodman	R.O., South