The assessment and management of wildlife areas: what can Systems offer?

Conference or Workshop Item

THE ASSESSMENT AND MANAGEMENT OF WILDLIFE AREAS: WHAT CAN SYSTEMS OFFER?

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1. INTRODUCTION

There are various systems approaches to tackling decision making, but all systems thinking and analysis is predicated on the concept of holism rather than reductionism. This concept is not unknown in biology. Indeed, it was the study of biological systems that led to the recognition of the significance of this way of viewing complex issues:

'Biology is an 'unrestricted' science ... and its phenomena are of a complexity which has severely tested scientific method. Biologists, in fact, have been among the pioneers in establishing ways of thinking in terms of wholes, and it was a biologist, Ludwig von Bertalanffy, who suggested generalising this thinking to refer to any kind of whole, not simply to biological systems.' (Checkland, 1981).

Such complexity is amply demonstrated by the management of wildlife areas. Wildlife areas are very diverse; in the types of wildlife they contain, in the processes that shape them, in where they are located and in the scale at which they are viewed. They are also perceived very differently by those with direct and indirect relationships with them. Farmers, planners, policy makers, the rural and urban public, professional ecologists and conservation organisations each have potentially different world views.

Although complexity is often recognised as a feature of wildlife areas, any assessment of their value and prescriptions for management are usually based on a narrow, reductionist framework, involving either just wildlife or people but rarely both. Indeed, despite the quote above there has been little application of systems ideas to such human activity systems. This paper attempts to show how systems ideas may help provide a broader, synthetic approach. In particular we draw on the idea that holistic thinking brings together multiple views to identify future options (Open University, 1996).

2. EVALUATING WILDLIFE AREAS

The assessment of wildlife areas is problematic in terms of the scale and criteria chosen. Various sophisticated schemes and methods are used to assess wildlife areas (Usher, 1986; Goldsmith, 1991) but they often concentrate on well bounded, important sites, and are usually assessed by trained professionals. For instance, the assessment of wildlife areas in the UK has, to date, principally focused on the selection of biological Sites of Special Scientific Interest (SSSIs) or similar designations by the relevant nature conservation agencies, to provide a *national* network of prime sites rather than identify the management needs at a *local* level in the wider countryside. Furthermore, although striving to be objective, many of the authors of such schemes recognise that they are not truly objective, but invariably either contain hidden value judgements or overt but largely unused subjective assessments. The criteria for SSSI designation continue to be based on those defined

by Ratcliffe (1977) namely the physical and biological criteria of size, diversity, naturalness, rarity, fragility and typicalness as *primary* criteria, and the human related criteria of recorded history, potential value and intrinsic appeal as *secondary* criteria.

Much of this approach is underpinned by the worldview that wild areas equate with wilderness and are hence largely untouched by humans. However when looking at fragmented habitats in the wider countryside we are actually dealing with a highly managed cultural, landscape (Naveh, 1995) which is the product of human intervention. We need to understand not just how wildlife areas function but also the forces shaping them. Naveh (1995) notes that cultural aspects cannot be treated as 'external disturbance factors'. Positivistic approaches to assessing wildlife areas as part of a wider landscape which fail to consider the human dimension are, therefore, inappropriate.

A systems approach should consider:

(i)The system of interest that is being assessed. Should we draw the boundary around a lower level of description e.g. a single habitat, or a higher level e.g. a mosaic of habitats set in a wider landscape? If wildlife is the dominant interest, then many people often just consider the species a single site contains (particularly those which are rare and colourful), rather than the dynamics of populations and communities within a given area (including the less wildlife friendly areas). Where the boundary is drawn will also depend on the perspectives taken.

(ii) The participants or stakeholders involved and the views they take. A major issue is the degree of influence the participants or stakeholders have on the activities of others. For instance, who decides what is the purpose of the system and which criteria to measure it by? Is the decision maker the problem owners (farmers?), the analysts (professionals?), the system owners (the public?) or all of them? Furthermore, is the purpose of the system to be the designation of important wildlife sites, the distribution of grants, the informing of planning decisions, or the enforcement of management plans or a combination of these?

Work at the Open University is aimed at producing profiles of 'habitats' that are based on a range of criteria rather than a single criterion. The work has involved various participants in devising assessment criteria that can be used by amateur as well as professional workers, and that incorporate different perspectives. The focus is on habitats in the wider urban and rural countryside, rather than habitats in professionally managed and monitored nature reserves. This work is exemplified by 2 different types of wildlife areas in the UK.

3. WILDLIFE CORRIDORS IN URBAN AREAS

'Wildlife corridors' is a concept that is being used to describe linear areas that link up important, fragmented wildlife areas. They can be wildlife sites in their own right and may also enable the movement of some species between sites. They may be semi-natural in origin, for example rivers, or artificial, such as canals. As part of a project in Milton Keynes that started in 1994 we have helped identify two levels of

description or scales of corridor based on the idea that they create networks of habitats (Lane, Wheeler and Oreszczyn, 1995):

- Major, larger corridors which contain a variety of habitats and are usually connected to important wildlife sites. They may be important at a regional scale, often crossing administrative boundaries e.g. road verges and railway lines.

- Local, small, corridors usually of a single habitat type which help to form an intricate network branching off from major corridors e.g. hedgerows and gardens.

As the project was being funded by a variety of participants (Commission for New Towns, Buckinghamshire County Council, Milton Keynes Borough Council, Milton Keynes Parks Trust, English Nature) and the objective was to use it for planning and management purposes, it was decided that the higher level of description was the one to focus on.

We empirically devised an assessment profile partly based on the most popularly used criteria of those proposed by Ratcliffe (1977) but also including recreational and community value, and landscape value. This profile adopted an approach used in a scheme piloted in a training project (Tait, Lane and Carr, 1988) where each criterion was split up into a 4-point star rating scale.

A sample corridor was used for testing the criteria and rating system with several volunteers, and the criteria subsequently refined through several iterations before being applied to various corridors within Milton Keynes. As major corridors can vary greatly along their length, they were divided into units of assessment to achieve more accurate assessments. Each unit of assessment is approximately the same size but is mainly classified as a reasonably coherent geographical unit when looked at on a map or in the field. This profile gives an informative picture on the quality of the characteristics which make up a corridor unit, highlighting strengths and weaknesses. They allow either a composite profile of a whole corridor or a comparison between units within the same corridor to be made (Table 1).

Table 1. Examples of assessment profiles of wildlife corridors in Milton Keynes

Corridor unit number	**Unit 1**	**Unit 2**	**Unit 3**
Criterion			
NATURALNESS			
Age	****	**	**
Provenance	***	**	***
DIVERSITY			
Habitat number	****	****	****
Habitat proportions	**	*	*
Other greenspace	***	*	**
RARITY			
Habitat rarity	**	*	*
Species rarity	NK	NK	NK
SIZE AND EXTENT			
Corridor unit area	****	****	****
Linearity	****	****	****
Corridor unit connectivity	**	***	***
Habitat connectivity	****	***	**

Corridor unit number	**Unit 1**	**Unit 2**	**Unit 3**
Habitat continuity	***	*	**
Corridor unit continuity	****	***	**
RECREATIONAL AND COMMUNITY			
Availability of information	*	*	*
Number of facilities	***	****	****
Proximity to residential area	****	****	***

* low value **** high value NK Not known

Although this scheme has proved useful there are still many questions surrounding the choice of criteria, their ease of use by amateurs, its widespread applicability and the appropriate assessment unit to use. In particular, although many professionals and amateurs have been used to test the scheme, there has not been any significant involvement of the stakeholders beyond those mentioned here in agreeing to the criteria proposed.

4. HEDGEROWS IN RURAL AREAS

Research on hedgerows and hedgerow management has largely focused (i) on the wildlife aspects of hedgerows, largely ignoring the people part of the system and (ii) on the individual hedge scale (the local corridors mentioned above) rather than the landscape scale. There is therefore a need to redraw the boundary to include the complex human factors which have largely been placed outside the system. This project, which began in 1995, attempts to examine hedgerows and their value to people in the landscape rather than as individual components. The project is investigating the cultural dimensions of hedged landscapes through the collection and exploration of different stakeholder perspectives and by examining ways of bringing different stakeholder perspectives together.

Participation in research or management projects by non-specialists may take many forms, ranging from passive participation - where research is carried out on people who then have no share in the information extracted, to self-mobilisation - where people take action independent of external research organisations. Research suggests that complex environmental projects are more likely to succeed if a more active or interactive participatory approach is taken, whereby local people rather than just the institutions are involved in the work (Woodhill and Roling, 1993; Pretty, 1994; Grimble et. al. 1995).

Hedgerows have been chosen for this project because firstly, they are the product of human intervention in the landscape and are valued for many different reasons, e.g. wildlife value, historical, visual, and cultural value. Secondly, they are being lost mainly through lack of management. Management decisions involve many different stakeholders, each with their own perspectives, for example policy makers through the grants made available, planners through new legislation on the protection of hedgerows and the conservation organisations who campaign and complain about changes in the landscape, etc. Finally, hedgerows function at different scales within the landscape - at the individual hedge scale, farm scale and landscape scale, and decisions occurring at one scale will have implications for the others.

5. DESIGNING FUTURE LANDSCAPES

Much of the work outlined above is aimed at assessing wildlife areas and giving pointers to appropriate management options. However the adoption of management practices will depend upon the nature of the encouragement and advice being given. In some cases land managers will adopt practices resonant with their own views but many are only influenced by financial reward or legal penalties. Grant aid and legal designations have often been used to encourage the maintenance and recreation of wildlife areas in the wider countryside and at the same time encouraging public access. However, less consideration is given to the impact of these individual developments on the overall landscape, and lay people have little or no say in how grant aid might be apportioned. What is now required is an iterative, participative process based in communities, that looks forward rather than simply trying to conserve the status quo, and which considers not only the consequences of peoples actions but also the actions themselves.

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