



Introduction

The research

Two woodland sites within The National Forest have been identified for long-term monitoring of changes to their biodiversity. A series of ecological surveys¹ have been undertaken at Willesley Wood (40ha), owned by the Woodland Trust and planted in 1992; and at Sence Valley Forest Park (60ha), owned by the Forestry Commission and created in 1995. Surveys were undertaken in 1998 and 2005/6, with the intention of carrying out follow-up surveys approximately every five years.

Why do it?

The National Forest is creating a large-scale, ecologically diverse new woodland environment, with the aim of eventually connecting around 19,000ha of new and existing woodlands and other habitats. It is important to monitor the effects of the Forest's creation on biodiversity and trends over time, as part of the sustainable development of the Forest. The survey sites will provide a record of species colonisation and change as newly created habitats mature. They will also act as indicator sites to help measure the quality of habitats being created in the Forest. In turn, this provides pointers to the Forest's success in improving biodiversity at a landscape scale, for common, declining and rarer wildlife species.

Aims & objectives

- To undertake surveys of Willesley Wood and Sence Valley Forest Park to compare wildlife and habitat change between 1998 and 2005/6.
- To map and describe the key habitats and species at each site.
- To identify indicator species which warrant further monitoring work.
- To identify future management options to enhance biodiversity, within the context of multi-purpose objectives for each site.

The Project

Description

The two survey sites were chosen because of their contrasting backgrounds. Willesley Wood (WW) comprised 37ha of former arable farmland with a 3ha mature woodland, which was previously used for pheasant rearing. Sence Valley Forest Park (SV) formed part of the Coalfield North opencast coal site. The surveys provide evidence of how biodiversity can be enhanced through woodland creation following arable farming and coal working.

Approach

The surveys were undertaken by ecologists from the Leicestershire Environmental Resources Centre, plus specialist volunteer recorders. The methods used were:

- **Flora:** Each site was divided into compartments and the main habitats were mapped using the Phase 1 ecological survey methodology.
- **Fungi and lichens:** Surveyors walked routes through the tree planted and grassland areas, noting any species identified. Two visits were made to each site.
- **Invertebrates:** Transects were walked using Butterfly Conservation Society guidelines. Moths were recorded over two nights at WW and three nights at SV. Dragonfly surveys followed routes alongside the watercourses and wetlands at each site.
- **Birds:** A modified version of the British Trust for Ornithology Common Bird Census was used.
- **Mammals, reptiles and amphibians:** Casual observations of species were noted as part of the other surveys.

Timescales

The most recent surveys took place between autumn 2005 and winter 2006.

Budget

£9,870, including VAT.

Results

Outcomes

Local biodiversity interest at both sites has increased considerably since 1998. Given the age of both sites (10 and 13 years at the time of survey), this demonstrates the significant biodiversity impact of the Forest's creation in its early years.

- **Flora:** Ground flora at WW shows encouraging early development with notable grassland species including Common Spotted Orchid and Heath Bedstraw, plus other more common species. At SV species are more limited and generally restricted to ones found on disturbed ground. However the wetland areas include a wider range of species including Butterbur and Marsh Willowherb. Bluebell is also found in remnant woodland areas at both sites.
- **Fungi and lichens:** Fungi results for WW in 2006 compared very favourably with the 1998 survey. The mature woodland contains some uncommon fungi and some of the grassland areas contain fungi that are good indicators of unimproved grassland. 45 new species were recorded in 2006, though 45 seen in 1998 were not recorded (which is fairly typical over such a time period). At SV two uncommon and 20 new species were found (with 11 seen in 1998 no longer recorded).

Notable lichens were also found at WW with three species classified as rare; an old woodland lichen, was also identified.

Overall 7 new species were found, but 20 species found in 1998 were no longer recorded.

- **Butterflies and Moths:** The surveyors considered WW to be surprisingly diverse for a young woodland, with 152 species identified. Three of the moth species are very localised. At SV 20 of the 48 species recorded were either local or scarce migrants, which was also considered impressive.
- **Dragonflies:** Of the 24 Leicestershire species, 6 were seen at WW and 8 at SV. Several species are considered to be breeding at each site including the Large Red, Blue and Blue-tailed Damselflies. The relatively high numbers of species indicates the good quality of wetland habitats at each site.
- **Birds:** There have been significant increases in woodland and woodland edge birds at both sites, including Green Woodpecker, Willow and Grasshopper Warblers and Common Whitethroat. Other notable species seen in 2006 but not in 1998 include Buzzard, Hobby, Sand Martin (SV) and Arctic Redpoll (a first Leicestershire record at SV). As the woodland areas have matured a number of grassland species have declined. Across both sites 9 Red list and 5 Amber list species of UK Birds of Conservation Concern were identified.
- **Mammals, reptiles and amphibians:** The main species of note was a weasel spotted at SV.

Applications

- A similar approach to adopting indicator sites for ecological monitoring could be applied to other UK forest creation initiatives.
- An historical record of the effects of woodland creation will add to national knowledge and understanding of the dynamics of newly created habitats over time.
- Having a robust, long-term data set will help the NFC and conservation organisations to monitor biodiversity change and develop management approaches across the Forest.



