Hopewell House Farm Study

Introduction

In July 1980 the Yorkshire Mammal Group was invited to participate in the Demonstration Farm Project, run by the Countryside Commission. This Project aimed "to develop practical and inexpensive solutions to counter the decline in the quality of lowland farmed landscapes of England and Wales".

Subsequently, we undertook a six year study of Hopewell House Farm, Knaresborough (grid ref. SE 374 577).

The main focus of our attention was the 'plantation' or 'grid' area: a SE facing slope which was bordered by a ditch and pond. This was cleared and replanted in 1981-82 with a mixture of coniferous and deciduous trees; at the same time, the drainage was improved.

Two smaller surveys were conducted, of three hedgerows with contrasting features and of 2 wet areas. These were relevant to the Demonstration Farms Project, as hedgerow maintenance and drainage were modern features which concern conservationists.

The farm has great natural beauty and was a haven of interest for local naturalists. From an early point, we were pleased to be assisted by the Harrogate and District Naturalist's Society: their support and enthusiasm were always invaluable!

As the study period progressed, we were always aware that events at Hopewell House Farm would be unpredictable but rewarding. In total, over the six years of study, eight small mammal species were trapped - a surprisingly high number.

Methods

Plantation/grid area

96 Longworth traps were laid in pairs on a grid measuring approximately 70x50 metres. The grid was not permanently marked but always covered the same area. The bait used was rolled oats and maize; from 1983 onwards, blowfly pupae were used consistently as a very successful shrew bait.

The traps were usually prebaited for three days before setting and then the trap would last from 1½-4 days, depending on the available resources.

Animals were weighed and sexed, and marked by fur-clipping. Reproductive condition and other features of interest (eg ticks) were also noted.

From 1983 onwards traps were held in March as well as September each year.

Hedgerows

The hedgerow sites were trapped differently. A line of 24 Longworth traps, set in pairs at 10 metre intervals was trapped for three days. An old, well established hedge, a re-laid hedge and a poorly kept hedge were chosen as contrasting sites.

This type of sampling could compare numbers of species and individuals at each site.

Botanical Surveys

On the grid area a crude botanical map was made each September. At each trap site the most obvious species close to the traps were listed. A diagram of the trap sites and species present was then constructed.

This could be used to provide a comparison of species present over the study period. It was most useful to total the species noted each year: grasses being included together.

A survey was carried out of the hedgerows in an effort to establish their age. In fact the 'old' hedgerow was estimated to be 600 years old by botanical means; subsequent archaeological finds at the hedgerow supported this estimate.

Results

Weather

The most remarkable conditions were heavy rain and wind in September 1982 and snow in March 1985.

Grid area

Botanical Survey

The number of species noted each year is shown in Figure 1. This shows how the clearing and re-planting in 1981-82 severely reduced the number of species present. At many trap sites in 1982, 'bare ground' was one of the most predominant features!

Before the grid was cleared, rosebay willow herb, *Epilobium angustifolium* was present in large numbers. By 1986, it was again a dominant feature.

Major species

The three common small mammals of the plantation area were the woodmouse *Apodemus sylvaticus*, the bank vole *Clethrionomys glareolus* and the field vole *Microtus agrestis.* The numbers trapped for each species are shown in Figures 2, 3 and 4 respectively. The most remarkable catch was 104 woodmice in September 1982, but the 2 vole species have also shown marked fluctuations.

Population estimates

Two formulae were used: Lincoln(1930) and Haynes(1949). Both are quoted by Delany(1974). They can be used to analyse data like ours where individuals are not specifically marked. Although in 1984 an attempt was made to mark individual captures by snipping different parts of the fur, this did not lead to useful data.

As Figure 5 shows, the two estimates coincide quite closely when small numbers (<50) were trapped. In this case, the estimate was quite often less than the actual number trapped! When larger numbers (>50) were caught, the Lincoln Index tended to give low estimates whereas Haynes gave acceptable higher estimates. It must be appreciated that Lincoln can only be estimated from the first two days' data whereas Haynes relied on data accumulated over four days. Collecting data over four days relied on using students from St John's College, York: unfortunately, after 1984, these students were not available.

Quite often, it seems just as useful to use the actual numbers trapped as an estimate of population than to use either of these indices.