Minor Species

There were four other species of small mammal trapped in the plantation area. These were the common shrew *Sorex araneus*, the pygmy shrew *Sorex minutus*, the harvest mouse *Micromys minutus* and the water shrew *Neomys fodiens*. The common shrew was trapped at each session and, particularly after the introduction of blowfly pupae as bait, was trapped in large numbers. The common shrew was not marked on capture, so the totals recorded could be misleading.

The other three species occurred more rarely: the water shrew only in September 1985. It is interesting that this seemed to coincide with the grid area itself seeming 'wetter' - as I judged by the distribution of creeping buttercups and tufted hair grass. The appearance of minor species is summarised in Figures 6, 7, 8 and 9.

Hedgerow

The botanical formulae to estimate the age of the hedge is included and gives the age of each hedge studied. The hedge in poor condition was becoming thin at the bottom and had too much elder present.

The survey of hedgerows could only take place over the four years 1981-84 due to lack of manpower. Over this time, the poorly kept hedge seemed to improve its condition! This made it difficult to assess how much real difference there was between the hedgerows for the small mammal species concerned.

In 1981 the house mouse *Mus musculus*, was trapped in the old hedgerow. An individual had previously been trapped by a stone wall in a field, in 1980.

The results are summarised in Table 1 and Figure 10.

Wet areas

In 1981 and 1982, an area away from the plantation area and hedgerows was also trapped (see Fig.1) with 24 Longworth traps set in pairs. This was an area near a pond, with a stand of *Philaris* grass: it was hoped to trap harvest mice there. However, no harvest mice were trapped although subsequently nests were found.

In 1985, it was decided to look for harvest mice nests nearer to the grid area and a stand of tall grasses containing several nests was found (see Fig. 1). Longworth trapping over a short period did not catch any harvest mice there and the trap was stopped.

One nest containing seven baby harvest mice was examined and was later found abandoned.

Discussion

The Demonstration Farms Project achieved its objective of showing that modern farming and the needs of wildlife are not incompatible. There is a healthy fauna at Hopewell House Farm of a surprising variety of small mammals. As long as it is possible for some corners to be left undisturbed, there seems no reason why these animals should not survive and flourish.

Looking at the results from the plantation area first, a number of features can be seen. The woodmouse *Apodemus sylvaticus*, recolonised the grid area with a vengeance in 1983 when 104 individuals were trapped. It is

recognised that woodmice have this ability to recolonise areas quickly: they do not require as much ground cover as bank voles *Clethrionomys glareolus* (Whiteley and Yalden 1976). It is interesting that in the following March, not a single woodmouse was trapped in the grid. In their 1984 study, Gibson and Delany commented that woodmice do have peaks in September and troughs in March: what a vivid confirmation these figures give.

The bank vole and field vole *Microtus agrestis*, did seem to show cyclic fluctuations, and it is interesting that both were at a high level in 1981, although in the following years the bank vole population peaked in 1983 and 1986 and the field vole in 1984 - almost as if they were orchestrated. This is a possibility, as outlined by Delany (1974).

Wiger, 1979, commented that bank voles can show peaks on 3-4 year cycles. Our figures seem to confirm this, but it must be remembered that at Whytham Wood, no cyclic fluctuations were observed over a 28 year period (Southern 1979). Perhaps the cycles occur when a population is establishing itself, and not in stable situations.

Kikkawa (1964) noted that voles can show a social hierarchy in entering traps. In 1984, we modified the survey by marking individuals every time they were caught. One memorable, large male ended up with 7 marks on his back - he had entered the traps at every session! This gives more evidence of a social hierarchy in voles.

The common shrew *Sorex araneus* were caught in high numbers as can be seen from Figure 6. They were not sexed or marked. Blowfly pupae make a good shrew bait, although they may increase the numbers captured. I have seen a shrew turn around and re-enter a trap on being released, presumably because the pupae were attracting it. Common shrews are vulnerable to trap death because of cold and starvation; we were able to achieve 97% success in trapping live shrew in September 1984 - but a few days later, the temperature dropped and survival also fell to 74%. However, on the grid the numbers of common shrew were high and there seemed no threat to this resilient population.

The most important minor species for us was the harvest mouse *Micromys minutus*. According to mammal distribution maps this beautiful creature is relatively rare in Yorkshire. We were most surprised to trap it in 1983, and pleased to see it maintain its presence over the next 3 years. It was caught more readily in March than in September: could this be due to competition for sites, of for traps? Perhaps it changes its home range during the year. Having found nests in 1985, it was a source of deep regret when the nests were found abandoned.

The pygmy shrew *Sorex minutus* was caught regularly though never in large numbers. This delightful animal always seems hardy: rarely have they died in traps, even before suitable bait was introduced.

In 1985, the plantation area seemed wetter than before: creeping buttercup, *Ranunculus repens* and tufted hair grass *Deschampsia caespitosa* were well represented. Perhaps it was only coincidence that at this time the water shrew *Neomys fodiens* was trapped, for the only time during our survey. Three individuals were caught and one was killed by a common shrew trapped with it.