



### Practical guidelines

The results of the Lowland Game Shooting Study support the concept that lowland game shooting does maintain biodiversity in lowland farmland. Also that great potential exists to increase this contribution through harnessing the incentive and motivation provided by game shooting for habitat management and creation. Some simple steps and actions can be taken on the ground to help realise this potential and maximise the effects alongside game shooting and agricultural objectives.

#### 1. Make an inventory of the biodiversity resource

It is essential to know the wildlife resource, just as it is to know the agricultural resource. Patches of species-rich hedgerow, crop edge and woodland vegetation should be identified, including scrub and wasteland. The presence of rare and Biodiversity Action Plan listed species must be known. The habitats of the farm should be mapped and threats to them identified, and obvious sources of action considered.

#### 2. Re-assess the management of the habitats

Much can be gained by simple measures such as re-assessing the timing of hedge trimming and ground flora cutting, preventing spray drift, encouraging wild flowers and birds and putting up bat boxes. Vegetation should be allowed to develop alongside watercourses and ditches. Ponds should be created and maintained. Many of these measures will also increase the productivity of the shoot.

#### 3. Plant at least 2ha of new woodland per km<sup>2</sup>

New woodland should be managed to mature into broadleaved woodland, but there is no harm in using conifers to establish structure quickly. Ideally, for wildlife, it should be placed next to adjacent woodland, especially if this is species-rich, but this consideration must be balanced with the desirability of smaller woods for game shooting. Rides and cover need to be planned. For further information see *Woodlands for Shooting and Conservation*, published by BASC.

#### 4. Restore the hedgerow network

Plant up gaps with native species appropriate to the location. Ideally hedgerows should be managed for diversity, with a rotation of late-winter trimming, generating hedge height (to the point where it is appropriate for the shoot) and width. Hedge bottom cover should be thick, perennial in nature, and protected from spray and fertiliser drift. Local traditions should be respected when considering management options, including using walls and ditches rather than hedgerows. For further information see *Hedges for Field Margins and Conservation*, published by BASC.

#### 5. Create good gamebird habitat

The measures developed by the Game Conservancy Trust should be considered, including conservation headlands, beetle banks, set-aside management and buffer strips to protect hedges from spray drift and fertiliser run-off. Such actions form a substantial part of integrated crop management, as promoted by LEAF (Linking Environment and Farming) and supported by a range of retailers. They will go a long way towards restoring the biodiversity of the farmland itself, while still showing the potential to be profitable, and adding to the value of the shoot.

#### 6. Develop a whole farm biodiversity action plan

All of these actions are best served within a whole farm plan that gives clear targets and priorities. In turn this can reveal opportunities for aid through Countryside Stewardship and related schemes.

Through *Green Shoots*, a biodiversity action plan for shooting, BASC is pursuing actions and initiatives to encourage the implementation of these guidelines and the assimilation of lessons to be learned from the Lowland Game Shooting Study for the benefit of wildlife and game.

### Lowland Game Shooting Study, 1999 - a report by ITE to the British Association for Shooting and Conservation.

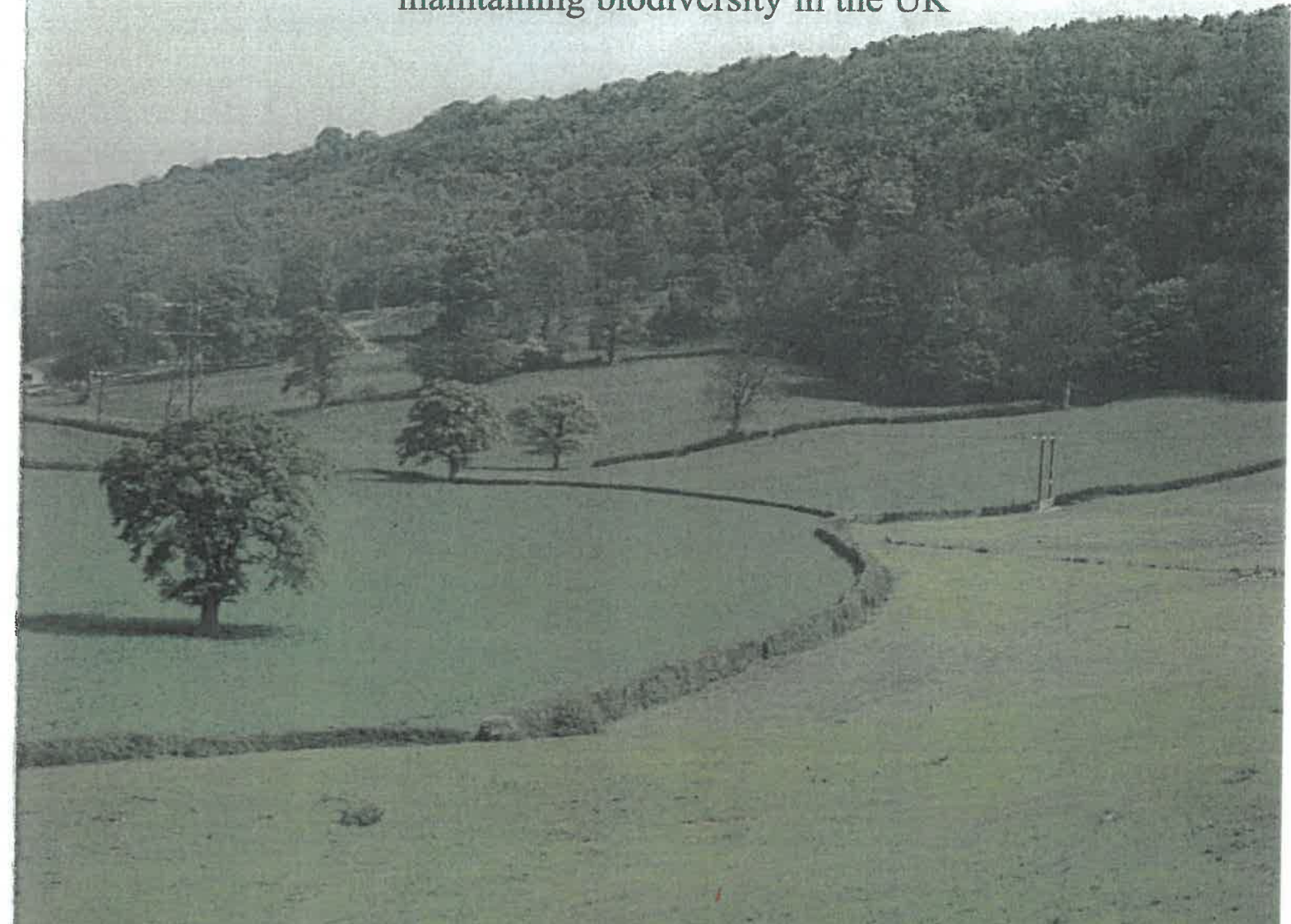
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## LOWLAND GAME SHOOTING STUDY

A study to establish the role that lowland game shooting plays in maintaining biodiversity in the UK





# LOWLAND GAME SHOOTING STUDY

Biodiversity on lowland farm landscapes has been in decline since before the middle of the last century, largely as a result of agricultural intensification. However a number of demonstration projects and studies on specific habitats have shown that management for shooting has the effect of slowing or even reversing such declines. But are these effects general and widespread?

The purpose of the Lowland Game Shooting Study was to establish the importance of shooting in maintaining rich wildlife and a diverse countryside throughout the British Isles and not just at sites where best practice is actively promoted.

The study was undertaken by the Institute of Terrestrial Ecology (ITE, now the Centre for Ecology and Hydrology) under contract to the British Association for Shooting and Conservation (BASC). The project steering group comprised BASC, ITE and English Nature.

## THE STUDY

The 2-year study (1997-1998) examined the influence of game shooting on the management of arable and pasture areas of lowland Britain.

The first element assessed land cover and woodland habitats, comparing areas managed for game with areas not so managed. Data were analysed from the latest ITE Countryside Survey (1990), a national survey of land cover and vegetation based on sampled 1km squares.

The second element studied the history of woodlands within a subsample of these squares. Maps were used that went back over a century, supplemented by discussions with landowners and managers.

The third element was a field study of habitats, flora and fauna on a random sample of paired 1km squares. Each pair consisted of a 'game square' i.e. with evidence of game management and a 'non-game square' i.e. with no such management. Each pair was selected to be as similar as possible in terms of environmental conditions and landscape structure.

The fourth element considered how habitat area and landscape composition differed between game and non-game squares and the implications for biodiversity. The results were used in a computer model to evaluate the effects of landscape change on game squares that would improve biodiversity and be compatible with game shooting and agricultural interests.

Unlike many other studies, the study sites were selected at random and not 'cherry-picked' to represent the best. Comparisons were therefore designed to be conservative, tending to underestimate, rather than overestimate, any effects.

The results were brought together to suggest guidelines to landowners and shoot managers for improving the benefits to biodiversity from landscapes managed for game.

## RESULTS

### WOODLANDS AND HEDGES



Woodland area had increased in game squares since the 1960s largely as a result of planting new woodland blocks. The major reason for such planting was game shooting. Areas without game shooting were more likely to have lost woodlands.



### OTHER PLANTS

The vegetation of game and non-game squares was similar but the greater amount of woodland on areas managed for game provides a better foundation for vegetation restoration than in comparable non-game areas.



### INVERTEBRATES

Game areas had more habitat for woodland and hedgerow butterflies, e.g. speckled wood; they had slightly more butterflies per unit area than comparable non-game areas. The potential for greater invertebrate diversity was identified.



### BIRDS

Woodland and hedgerow breeding birds, e.g. song thrush were 10% more abundant in game areas per unit habitat. Woodland birds were, in general, more frequent when the woodland canopy was open with a dense shrubby layer.

The widespread use of cover crops in game areas would have benefited wintering birds, e.g. linnet and other seed eaters, by providing a source of food.

Hedges tended to support more birds on game areas.



### MAMMALS

In general, the landscape features found in game areas would be expected to favour a range of mammals including bats, hares and badgers.

## MANAGING GAME LANDSCAPES FOR BIODIVERSITY



The results of the study suggest that game areas have maintained the framework of a rich habitat structure of hedges, fields and woodlands. This is especially so in the arable areas where it has often been lost.

The report identified game areas that represent poor, median and high quality for biodiversity in terms of habitat and landscape structure and suggested that each game area can be raised from one quality level to the next without compromising agricultural productivity.

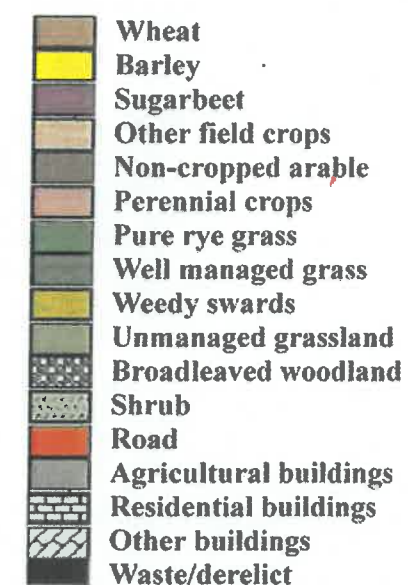
The three selected 1km squares shown range from arable prairie (top) to a more varied landscape (middle) with thin and gappy hedgerows, to a 'high' quality landscape with more complete hedgerow and greater woodland area. While they look very different from the air, the actual difference in woodland cover per km<sup>2</sup> is small. The total area is 0.5ha in the poor quality landscape, 1.1ha in the median and 2.9ha in the high quality

landscape. Thus an increase in the order of 0.6 - 1.8 ha (per km<sup>2</sup>) is enough to raise the standard of the landscape to a point higher than a quarter of all other game landscapes. These figures amount to the conversion of only an extra 0.6 - 1.8% of land cover.

It is estimated that each extra 1ha block of woodland would support an extra 20 or so pairs of breeding birds. Restoring existing hedges and adding new ones could increase the expected present total of around 70 pairs of nesting hedgerow birds to over 200 pairs per km<sup>2</sup>. These are substantial increases. If they were to be achieved by a large number of farms the overall benefit to biodiversity would be great. Farmland wildlife, that has declined so much in recent years, has been identified by the UK Biodiversity Action Plan as requiring particular and urgent action to restore numbers and distribution.

Left: Aerial photographs of typical game landscapes from poor to high quality, in terms of woodland and hedgerow habitats

The changes needed to raise the amount of woodland habitat to a higher quality level are actually very small. In this typical median quality game area, it is enough to replant the indicated field of wheat with woodland.



### Replant this small field of wheat with woodland

