

## 1 INTRODUCTION

Arable land can be defined as all regularly cultivated land. This includes short-term ley grassland and horticultural systems from field vegetable crops to allotments. Greenhouse crops are excluded.

The biodiversity of arable land has declined more than that of any other habitat. This is largely due to massive changes in agricultural practice, particularly since 1945. The decline of the grey partridge<sup>1</sup> and the plight of other farmland birds<sup>2,3</sup> is well known. However declines of other groups, including vascular plants, lower plants and invertebrates, is still poorly understood.

The conservation of biodiversity in arable land is unique for several reasons:

- virtually all arable land is in private ownership
- farmland is intensively managed for food production and commercial considerations are paramount
- the majority of plants and animals associated with the habitat have been considered widespread and common, with many perceived as pests
- knowledge of the distribution of many organisms of arable land is poor – we lack the information with which to accurately assess its importance for biodiversity.

Many species utilise arable land in conjunction with other features that are part of the farm complex: hedgerows, field boundaries, watercourses, and other habitats such as veteran trees that are relics of former wood pasture. Management of arable land can affect these associated habitats through spray drift, fertiliser run-off, pesticide and nitrogen leaching, and soil erosion.

This Action Plan should be considered in combination with other habitat action plans for farmed habitats.

## 2 CURRENT STATUS

### 2.1 Description of Habitat

Hampshire contains some of the most biologically diverse arable land in Britain<sup>9,10</sup>.

Some parts of the county still retain the basis of the mixed farmland landscape which was widespread before 1945: a variety of crops are grown, and grass leys form part of the more traditional and diverse arable systems. Species-rich arable plant communities are present in a number of places, particularly on calcareous soils.

Each arable crop supports particular farmland flora and fauna. The diversity of crops in an area is particularly important for mobile vertebrate species that require a range of habitats and crop types in order to flourish.

Apart from farmland birds, the biodiversity of arable land in Hampshire (and Britain as a whole) is poorly researched. It is therefore impossible to accurately describe the distribution of arable land of conservation importance. However the chalk of mid-Hampshire between Basingstoke, Winchester and the Wiltshire border, and the isolated corner of Cranborne Chase are of national importance for their surviving arable plant communities<sup>9</sup> and populations of farmland birds<sup>10</sup>.

Priority species found in arable habitats are listed in Tables 1 to 3 in Appendix 1.

### 2.2 Distribution and Extent

Arable farmland is the most widespread and abundant habitat in the British Isles. In 1988, 29% (almost 7 million ha) of the total British land area was arable land<sup>8</sup>. In Hampshire, arable farmland occupies some 198,352 ha (51.9%) of the land area<sup>8</sup>.

Chalk dominates the central part of Hampshire, and arable farming is the major land-use<sup>11</sup>. Arable farming has been practised here for several thousand years<sup>6</sup>, and the landscape comprises large fields and relatively few trees on the extensive downlands. Older arable land here may be associated with more diverse arable plant communities<sup>7</sup>.

The south and north-east of the county are situated over Tertiary sands, gravels and clays, giving rise to neutral and acidic soils. Large areas are now urbanised but there are zones of cereal farming and horticulture,

some of which support a diverse range of arable flora and fauna.

### 2.3 Legislation and Site Designation

No arable land in Hampshire has been designated as a Site of Special Scientific Interest. However, two scarce arable plants – cut-leaved germander and red hemp-nettle (see Table 1, Appendix 1) – occur on the Micheldever Spoil Heaps SSSI.

There are four arable SINs in Hampshire: one in recognition of a breeding population of stone curlews, and three of importance for arable flora.

The East Hampshire Area of Outstanding Natural Beauty (AONB) covers extensive tracts of arable land on the chalk east of Winchester. The Wessex Downs AONB includes similar expanses in the north of the county.

Schedule 8 of the Wildlife and Countryside Act (1981) lists three arable species that occur in Hampshire – ground pine, red-tipped cudweed and cut-leaved germander – but only offers protection against deliberate collection.

many arable plants<sup>7</sup> with knock-on effects, causing population declines in insects and their predators<sup>1,2</sup>. Insecticides have also had considerable direct and indirect effects on invertebrate fauna and non-target organisms on farmland<sup>2</sup>.

- The development of more competitive crop varieties and increases in nitrogen applications. Modern crop varieties are highly competitive, and a highly fertilised, vigorous crop can be as effective as a herbicide in reducing numbers of non-crop plants. The use of nitrogen in arable crops has risen by up to 900% since 1945<sup>18</sup> and had consequent effects on the arable food-chain.

- Simplification of crop rotations. Crop diversity on many farms has been reduced. Where different crops are grown on the same farm, large uniform blocks are common.

- Change from spring-sown to winter-sown barley. Spring barley provides a particularly good habitat for many farmland birds such as the skylark and lapwing. Winter barley varieties developed in the 1960s and the expansion of winter wheat have largely displaced this crop<sup>20,21</sup>.

- Adoption of new crop types and earlier sowing and harvesting. Some new crop types, such as oil seed rape and linseed, support little wildlife. For example, autumn-drilled rape is drilled and harvested earlier than traditional cereals; it forms a dense canopy soon after sowing, and provides lower value habitat for farmland birds such as skylark. Earlier harvesting of crops generally has been a particular problem to late-nesting birds such as the corn bunting. It is also detrimental to plants such as spreading hedge-parsley and red hemp-nettle that set seed late in summer.

- Early ploughing of stubble. Crop and weed seeds in stubble left over winter are an extremely important source of food for birds<sup>22</sup>. Undisturbed stubble is also essential for some late-flowering arable plants. Changes in the timing of arable farming operations include a trend towards the ploughing of stubble soon after harvest, and the subsequent loss of stubble left over the winter.

- Mechanisation. Bigger machinery has led to field enlargement and removal of field boundaries resulting in:
  - loss of bird breeding habitat and winter food sources<sup>3</sup>
  - removal of habitat corridors
  - loss of over-wintering habitat for invertebrates

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### 3 CURRENT FACTORS AFFECTING THE HABITAT

The biodiversity of arable land depends on many factors linked to the economics of farming<sup>11</sup>. Current agricultural policy and practice in Britain is largely determined by the Common Agricultural Policy (CAP), which encourages intensification of agriculture through production subsidies. Changing retail patterns have also had profound effects, stimulating the use of fast-growing varieties, fertilisers and pesticides to maintain product uniformity.

Other factors such as Bovine Spongiform Encephalopathy (BSE) and Bovine Tuberculosis (TB) have reduced stock numbers, and subsequently the need for ley grassland and the extent of mixed farming. The introduction of genetically modified crops may have far-reaching consequences for agriculture and arable biodiversity in the 21st century.

Many of the current factors affecting the biodiversity of arable land are related to intensive methods of agricultural production.

- Pesticide use. Herbicides are probably the major cause of the increasing rarity of

- reduction in small mammal habitat (a food source for avian predators)
- removal of field edge refuges for arable plant communities<sup>25</sup>
- Farm cleanliness/assurance schemes. The combine-harvester has increased efficiency at harvest, leaving less grain in the fields and reducing a source of food for birds and small mammals. Through increased tidiness and hygiene regulations, farmyards offer less grain for birds such as the tree sparrow.
- Seed cleaning. The Seeds Regulations (1922) laid down strict standards for the purity of crop seed, reducing a significant means of colonisation and re-colonisation. Some plant species were completely reliant on being accidentally re-sown as contaminants in the crop seed and are now virtually extinct in Europe<sup>26,27</sup>.
- Drainage. Improved field drainage, especially on heavier soils, has had adverse effects on plants that require seasonal water-logging and associated birds such as lapwing.
- Soil degradation. Traditional arable farming practices retained soil structure through addition of farmyard manure and the rotation of crops<sup>20,21</sup>. The decline of mixed farming has led to the impoverishment of soil invertebrate communities and, in some places, severe soil erosion<sup>20,36</sup>.
- Land-use changes. Since the mid-1980s, many areas marginal to arable use have been converted to species-poor pasture and urban land. Such areas tend to be those that are least profitable, most difficult to farm, and frequently are of most value for biodiversity. Several important arable areas in Hampshire are currently threatened by urban development.
- Set-aside. Under the set-aside scheme, farmers take a certain amount of land out of production each year. This is beneficial to some species. The scheme offers opportunities to provide additional habitats<sup>3</sup> such as rough grassland for barn owls and small mammals, and wild bird cover and stubble for wintering finches. Nevertheless, long-term set-aside that converts arable land to permanent grassland may have detrimental effects on arable plants that rely on regular soil disturbance for germination each year.
- Agri-environment schemes. Agri-environment schemes such as Environmentally Sensitive Areas and the Countryside Stewardship Scheme can produce positive benefits for farmland

biodiversity. For example, these schemes can encourage the creation of field margins and improved hedgerow management, providing valuable habitat for a wide range of plants, birds and mammals. They may also make farmland more diverse by encouraging the reversion of arable land to grass. However, such reversion may occasionally jeopardise arable flora in the same way as long-term set-aside (see above).

- Genetically modified crops. Although currently grown only on a trial basis, genetically modified crops may become more widespread. The development of herbicide-resistance offers flexibility in herbicide application and even reduction in use. However the promise of completely weed-free crops, while attractive to the farmer, has implications for biodiversity. Other potential impacts on arable biodiversity include the accidental creation of herbicide-resistant weeds. Control of these would require the development of new herbicides, which could further threaten remaining arable flora.

## 4 CURRENT ACTION

### 4.1 Site and Species Protection

- The current situation regarding statutory protection is discussed in section 2.3. There are no SSSIs that include arable land in Hampshire, although some arable vascular plants are protected on Schedule 8 of the Wildlife and Countryside Act.
- Important arable sites are currently being considered as additional SINCS.

### 4.2 Habitat Management and Programmes of Action

- The Countryside Stewardship Scheme (CSS). Countryside Stewardship provides grant-aid for environmentally beneficial management practices throughout Hampshire, primarily outside the Test Valley, Avon Valley and South Downs ESAs (see below). Target areas for arable habitats are the East Hampshire AONB and the valleys of the Itchen, Loddon and Western Rother.
- In Hampshire, grants have been given for the management of field margins for arable plants, and the creation of favourable conditions for ground-nesting birds such as the stone curlew. One of scheme's options is to fund the conversion of existing arable land back to permanent grassland. This is not always consistent with the conservation of arable flora, as arable plants require regular

disturbance of the soil through cultivation in order to survive.

- Environmentally Sensitive Areas (ESAs). There are three ESAs in Hampshire: South Downs, Test Valley and Avon Valley. Five management 'tiers' in the South Downs scheme are concerned with arable land: two aimed at the conversion of arable to permanent grassland; two for the restoration of winter stubble; and one for the creation of conservation headlands along the crop margin.

- The Test and Avon Valley ESAs contain little arable land. The two arable management tiers are aimed at recreating permanent grassland and establishing grass margins in arable fields adjacent to watercourses.

- East Hampshire AONB. The East Hampshire AONB contains extensive areas of arable land, including a broad belt on the chalk running east from Winchester. Management guidelines for the AONB include several measures to promote farmland biodiversity: the use of uncultivated headlands, restoration of key hedgerows, the promotion of less intensive farming and entry into agri-environment schemes.

- The Organic Farming Scheme. The Organic Farming Scheme is available to farmers who wish to convert to organic production in accordance with the rules of the UK Register of Organic Food Standards (UKROFS). Evidence is accumulating that organic arable systems are beneficial to farmland biodiversity<sup>29,30</sup>: organic farms have higher crop diversity than conventional farms, weed and pest control is often less efficient, and there are often positive efforts to attract natural predators for pest organisms.

- Weed control in organically managed crops can involve operations that may be detrimental to some species – for example mechanical weeding can disrupt ground-nesting birds. Further research and specific advice on nature conservation in organic systems is required.

- Set-aside. Set-aside can provide benefits for arable wildlife. For instance spring-cultivated areas for stone curlew and lapwing can be created, strips of land can be cultivated specifically for arable flora, and mixed crops can be planted as 'wild bird cover'<sup>31</sup> to provide food for farmland birds such as skylark in winter.

- Management for Game Production. Management for game is widely practised in Hampshire and such management can also

benefit farmland wildlife.. The benefits of conservation headlands, well-established hedge-bottoms, game cover crops and 'beetle-banks', have been extensively documented<sup>31,32,33</sup>. Farmers are often willing to create these features as they improve their shoot.

#### 4.3 Action for Species

Table 1 (Appendix 1) gives details of priority species in Hampshire found primarily in arable land. Action proposed in this Plan will be the principal means of conserving most of these species, although three species – skylark, stone curlew and red-tipped cudweed – will have their own species action plans (SAPs). In some cases additional action plans and programmes will also contribute to conserving priority species: for example, UK Species Action Plans (SAPs) or Butterfly Conservation Regional Action Plan (BC RAP).

Table 3 (Appendix 1) lists those Hampshire priority species that occur in arable land but whose main habitat is **not** arable land. Although action in this Arable HAP may contribute to the conservation of these species, other HAPs have key responsibility for their conservation. Four of the species on Table 3 have been identified as requiring a SAP.

There are several additional initiatives relevant to arable species:

- In western Hampshire, the RSPB with MAFF/FRCA are promoting the use of the Countryside Stewardship and set-aside schemes specifically for conservation of stone curlew. This management also benefits other wildlife of arable land.

- Plantlife has published a UK action plan for ground pine.

- The Habitat Management Advisory Project (HMAP) is working with the Hampshire Flora Group to encourage the appropriate management of sites supporting rare arable flora. MAFF have issued a derogation to permit the cultivation of set-aside land near Andover, and this has been successful in encouraging ground pine and cut-leaved germander.

#### 4.4 Survey, Research and Monitoring

- The ecology and distribution of arable biodiversity is less well-known than that of any other British habitat: birds are the only

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group for which there is any comprehensive information<sup>35</sup>. Most of the available data has been obtained through survey and monitoring of specific projects.

- Work for the Hampshire Flora<sup>33</sup> has resulted in a considerable body of data on the distribution of arable plants. Much of this information will be very useful for identifying species-rich sites. The Hampshire Flora Group have conducted surveys of individual arable plants and are following up historical records of relevant sites.
- Members of the Hampshire Ornithological Society collect data on birds and monitor numbers of some species<sup>10</sup>.
- The Game Conservancy Trust (GCT) carries out annual grey partridge counts at several sites. These counts are of particular value as they provide a long run of data on a single species. The GCT has also been

monitoring insect numbers on the Manydown Estate for several years, and carried out botanical and butterfly surveys on several farms during the mid-1980s. They are soon to start research work on the Conholt Estate near Andover.

- The RSPB have information on stone curlew populations, and have studied the ecology of this species in great depth.
- Southampton University have carried out a considerable amount of research into the ecology of arable farmland during the 1980s and 1990s. Much of this work has been conducted in collaboration with the Game Conservancy Trust. Recent collaborative work has included work on the MAFF/LINK Integrated Farming Systems Project on the Manydown Estate near Basingstoke<sup>36</sup>.



**5 OBJECTIVES**

The overall aim of this Plan is to protect and enhance the biodiversity of arable land in Hampshire. This broad aim translates into the specific objectives set out below. Where feasible, objectives have been allocated targets against which progress can be measured: for example total areas to be restored or dates for completion. The 'Proposed Action' table in section 6 identifies the action to be taken to meet these objectives.

|          | <b>OBJECTIVE</b>   | <b>PROPOSED ACTIONS</b> |
|----------|--|-------------------------|
| <b>A</b> | <b>Ensure no further loss or degradation of sites important for arable biodiversity.</b>   | <b>1-6</b>              |
| <b>B</b> | <b>Increase the extent of arable land managed to benefit arable biodiversity.</b>  | <b>9-16</b>             |
| <b>C</b> | <b>Achieve favourable management of all known sites of importance for arable biodiversity by 2010.</b>                                   | <b>7-12</b>             |
| <b>D</b> | <b>Ensure that the needs of priority species associated with arable habitats are met.</b>  | <b>17-21</b>            |
| <b>E</b> | <b>Improve knowledge of arable biodiversity in Hampshire through survey, research and monitoring.</b>                                    | <b>21-30</b>            |
| <b>F</b> | <b>Raise awareness of the importance of arable land for biodiversity among agencies, advisors, land managers and the general public.</b> | <b>31-41</b>            |

## 6 PROPOSED ACTION

The following table lists the actions required to achieve the objectives set out in this Plan. Each action has been assigned to one or more 'Key Partners'. Key Partners are those organisations that are expected to take responsibility for the delivery of the actions assigned to them, according to the targets set in this Plan. Other organisations may also be involved in the delivery of action, and they have been indicated in the 'Others' column of the table.

Key to symbols in Action Table:

- ◆ To be completed by the indicated year. Work can commence at any time before the due date, at the discretion of the Key Partner.
- ◆⇨ Design or production of a plan/strategy to be completed by this year and then followed by its implementation.
- To start by the indicated year and usually followed by ongoing work. A start arrow in year 2000 can indicate a new action or a new impetus to existing work.
- ⇨ Work that has already begun and is ongoing.

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|  | ACTION   | DELIVERY BY       |                                | YEAR |      |      |      |      |      | MEETS OBJ. |
|--|--|-------------------|--------------------------------|------|------|------|------|------|------|------------|
|  |  | Key Partner       | Others                         | 2000 | 2001 | 2002 | 2003 | 2004 | 2010 |            |
| ◆ = complete by    ◆⇨ = design by and implement<br>➤ = start by    ⇨ = ongoing |  |                   |                                |      |      |      |      |      |      |            |
| <b>Habitat Protection</b>  |  |                   |                                |      |      |      |      |      |      |            |
| 1  | Establish criteria for the selection of important arable sites as SINCs.   | HCC               | EN, HWT<br>DCs                 |      | ◆    |      |      |      |      | A          |
| 2  | Record all sites that meet criteria as SINCs.  | HCC               | EN, HWT<br>DCs                 |      | ➤    |      |      |      |      | A          |
| 3  | Consider SSSI scheduling of important arable sites where appropriate.  | EN                |                                | ⇨    | ⇨    | ⇨    | ⇨    | ⇨    | ⇨    |            |
| 4  | Seek to prevent the degradation of sites identified as important for arable biodiversity.  | HCC               | EN, HWT<br>MAFF/FRCA           | ➤    |      |      |      |      |      | A          |
| 5  | Review/develop site acquisition policies and consider acquisition of sites where appropriate   | HWT, PL           | All                            | ➤    |      |      |      |      |      | A          |
| 6  | Ensure that important arable sites and associated species are safeguarded from development through forward planning and development control. | LAs               | EN, HWT                        | ⇨    | ⇨    | ⇨    | ⇨    | ⇨    | ⇨    | A          |
| <b>Habitat Management, Incentive Schemes and Other Resources</b>               |  |                   |                                |      |      |      |      |      |      |            |
| 7  | Seek to ensure suitable management of all arable SINCs.  | HMAP              | HCC, HWT,<br>MAFF/FRCA<br>FWAG |      |      |      |      | ◆⇨   |      | C          |
| 8  | Seek to ensure suitable management of all other sites supporting arable species of conservation concern.                                     | MAFF/FRCA<br>FWAG | EN, HCC,<br>HWT                |      |      |      |      | ◆⇨   |      | C          |

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| 9                                      | Encourage appropriate management of areas adjacent to arable land of conservation importance.  | MAFF/FRCA              | HWT, HCC, FWAG                 | ➔ |   |   |   |   |    |   | C   |
| 10                                     | Endeavour to take account of the conservation requirements of arable land and its associated priority species when reviewing and adjusting agri-environment schemes.   | MAFF/FRCA              |                                | ➔ |   |   |   |   |    |   | C   |
| 11                                     | Lobby for introduction of Arable Stewardship options to Hampshire.   | HCC, HWT, GCT          | RSPB, PL                       | ➔ |   |   |   |   |    |   | B   |
| 12                                     | Improve the management of sites of importance for arable biodiversity through the promotion of appropriate incentive schemes.  | MAFF/FRCA              | HCC, HWT, FWAG, EHAONB         | ↔ | ↔ | ↔ | ↔ | ↔ | ↔  | ↔ | B C |
| 13                                     | Promote and encourage sensitive management of set-aside land to provide benefits for arable biodiversity (eg. wild bird cover)   | MAFF/FRCA<br>FWAG, GCT | HCC, HWT                       | ↔ | ↔ | ↔ | ↔ | ↔ | ↔  | ↔ | B   |
| 14                                     | Promote and encourage environmentally sustainable farming practices including: <ul style="list-style-type: none"> <li>▪ the retention of winter stubble</li> <li>▪ continuation of spring-cropping</li> <li>▪ integrated crop management</li> <li>▪ 'buffer zones' and conservation headlands.</li> <li>▪ appropriate use of (selective) pesticides</li> </ul> | MAFF/FRCA<br>FWAG, GCT | LEAF, HWT, EHAONB              | ↔ | ↔ | ↔ | ↔ | ↔ | ↔  | ↔ | B   |
| 15                                     | Seek to double the number of registered organic farms in the county.   | SA                     | MAFF/FRCA                      |   |   |   |   |   | ◆  |   | B   |
| 16                                     | Promote environmentally friendly game management.  | GCT                    | FWAG, BASC                     | ↔ | ↔ | ↔ | ↔ | ↔ | ↔  | ↔ | B   |
| <b>Species Action</b>                  |  |                        |                                |   |   |   |   |   |    |   |     |
| 17                                     | Prepare species action plans (SAPs) for species associated with arable land which are not adequately covered by this Plan or others as identified in Appendix 1.   | HWT                    | HCC, EN                        |   |   |   |   |   | ◆  |   | D   |
| 18                                     | Encourage land managers and advisors to ascertain which priority species (if any) are found on the sites with which they are involved.   | HCC                    | MAFF/FRCA<br>HWT, FWAG, EHAONB | ➔ |   |   |   |   |    |   | D   |
| 19                                     | Promote favourable management for priority species of arable land.   | MAFF/FRCA              | HMAP, FWAG                     | ➔ |   |   |   |   |    |   | D   |
| 20                                     | Select priority species that can used to highlight specific adjustments to standard management regimes and produce appropriate guidance.   | HWT, EN                | PL, RSPB                       |   | ➔ |   |   |   |    |   | D   |
| 21                                     | Devise and implement monitoring schemes for priority species of arable habitats.   | EN <sup>N</sup> , PL   | RSPB, BSBI, HWT                |   |   |   |   |   | ◆↔ |   | D E |
| <b>Survey, Research and Monitoring</b> |  |                        |                                |   |   |   |   |   |    |   |     |
| 22                                     | Collate existing data on arable biodiversity in  | HCC, GCT               | HWT, HFG,                      |   |   |   |   |   | ◆  |   | E   |

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|  |  |                              | RSPB                                  |      |      |      |      |      |      |            |
|--|--|------------------------------|---------------------------------------|------|------|------|------|------|------|------------|
| 23   | Produce a targeted, systematic survey strategy for assessing biodiversity of arable land in Hampshire.                                 | HCC/HWT                      | HFG, RSPB, GCT                        |      | ◆    |      |      |      |      | E          |
| ACTION   |  | DELIVERY BY                  |                                       | YEAR |      |      |      |      |      | MEETS OBJ. |
|  |  | Key Partner                  | Others                                | 2000 | 2001 | 2002 | 2003 | 2004 | 2010 |            |
| ◆ = complete by    ◆⇄ = design by and implement<br>➡ = start by    ⇄ = ongoing |  |                              |                                       |      |      |      |      |      |      |            |
| <b>Survey, Research and Monitoring (continued)</b>                             |  |                              |                                       |      |      |      |      |      |      |            |
| 24   | Carry out above survey (Action 23) to establish a base line for arable biodiversity in Hampshire.                                      | HCC/HWT                      |                                       |      |      |      |      | ◆    |      | E          |
| 25   | Develop and implement monitoring schemes for sites at which conservation management is being practised                                 | GCT                          | HWT                                   |      |      | ◆⇄   |      |      |      | E          |
| 26   | Identify key indicators of arable biodiversity in Hampshire for use in monitoring programmes.  | HWT                          | HCC, FWAG, MAFF/FRCA                  |      |      |      | ◆    |      |      | E          |
| 27   | Design and implement a monitoring programme for arable biodiversity in Hampshire including a re-survey programme for arable SINCS.     | HCC                          | HWT, FWAG, MAFF/FRCA                  |      |      |      |      | ◆⇄   |      | E          |
| 28   | Ensure that data on arable biodiversity are incorporated into the Hampshire Biological Record and passed to the NBN.                   | HCC                          | HWT                                   | ➡    |      |      |      |      |      | E          |
| 29   | Monitor the impacts of agri-environment measures, levels of compliance and up-take of schemes on arable biodiversity.                  | MAFF/FRCA                    |                                       | ➡    |      |      |      |      |      | E          |
| 30   | Review need for research into management of arable farmland for biodiversity conservation and encourage appropriate studies.           | RSPB, GCT, ADAS              | PL, HCC                               |      |      | ◆⇄   |      |      |      | E          |
| <b>Communication and Publicity</b>   |  |                              |                                       |      |      |      |      |      |      |            |
| 31   | Develop and implement training programme to inform advisory staff of importance of arable biodiversity.                                | GCT, RSPB                    | FWAG, EN                              |      |      | ◆⇄   |      |      |      | F          |
| 32   | Increase awareness of the conservation requirements of arable land and its associated species amongst advisory staff and land managers | MAFF/FRCA<br>FWAG            | GCT, RSPB, PL, EHAONB                 | ➡    |      |      |      |      |      | F          |
| 33   | Raise awareness of farmland biodiversity issues among the farming community.   | FWAG, GCT, HMAP              | NFU, CLA, HWT, HCC, EHAONB, MAFF/FRCA | ⇄    | ⇄    | ⇄    | ⇄    | ⇄    | ⇄    | F          |
| 34   | Publicise incentive schemes  | MAFF/FRCA<br>FWAG, GCT, HMAP | HWT, PL, RSPB                         | ⇄    | ⇄    | ⇄    | ⇄    | ⇄    | ⇄    | F          |

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|----|---|--------------|--------------------|---|--|--|--|--|--|---|
| 35 | Raise awareness of the importance of arable farmland among conservationists and ecologists. | EN, BES, GCT | HWT, RSPB, PL      | ➡ |  |  |  |  |  | F |
| 36 | Raise awareness of farming and biodiversity issues among the public.                        | HCC          | HWT, RSPB, PL, GCT | ➡ |  |  |  |  |  | F |

|    |  |                             |                   |   |   |   |   |   |   |  |   |
|----|--|-----------------------------|-------------------|---|---|---|---|---|---|--|---|
| 37 | Ensure that supermarkets, other retailers and the catering trade are aware of the impacts of their buying policies on farmland biodiversity. | NFU                         | RSPB, PL          | ➔ |   |   |   |   |   |  | F |
| 38 | Promote the sale of local produce from sustainable farming systems.  | HCC, DCs                    | HF                | ➔ |   |   |   |   |   |  | F |
| 39 | Compile an index of information sources and guidance on good practice on the management of arable land for biodiversity,                     | HCC                         |                   |   |   |   |   | ◆ |   |  | F |
| 40 | Raise awareness of projects and schemes relevant to the habitat among land managers, advisors and others.                                    | HCC, HWT, MAFF/FRCA<br>FWAG | EN, GCT, NFU, CLA | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ |  | F |
| 41 | Support actions identified in the Education and Awareness Action Plan relevant to this habitat.  | All                         |                   | ➔ |   |   |   |   |   |  | F |

**KEY TO ORGANISATIONS**

|        |  |      |   |
|--------|--|------|---|
| ADAS   | Agricultural Development and Advisory Service            | HCC  | Hampshire County Council                    |
| BASC   | British Association for Shooting and Conservation        | HF   | Hampshire Fare                              |
| BES    | British Ecological Society                               | HFG  | Hampshire Flora Group                       |
| BSBI   | Botanical Society of the British Isles                   | HGP  | Hampshire Grazing Project                   |
| CLA    | Countryside Landowners Association                       | HMAP | Habitat Management Advisory Project         |
| DCs    | District Councils  | HWT  | Hampshire Wildlife Trust                    |
| EHAONB | East Hampshire AONB                                      | MAFF | Ministry of Agriculture, Fisheries and Food |
| EN     | English Nature (EN <sup>N</sup> denotes national office) | NFU  | National Farmers Union                      |
| FRCA   | Farming and Rural Conservation Agency                    | PL   | Plantlife                                   |
| FWAG   | Farming and Wildlife Advisory Group                      | RSPB | Royal Society for the Protection of Birds   |
| GCT    | Game Conservancy Trust                                   | SA   | Soil Association.                           |



## APPENDIX 1

Key to abbreviations in Tables 1 and 2 – see 'Action in addition to HAP' and 'Status/Protection'

| Abbreviation   | Definition  |
|--|---|
| <b>ACTION IN ADDITION TO HAP (Other Plans Relevant to Priority Species)</b>              |   |
| UK SAP   | Species Action Plan prepared under UK Biodiversity programme  |
| UK Grouped SAP   | Species catered for by a grouped Species Action Plan prepared under UK Biodiversity programme   |
| UK Species Statement   | Conservation of species generally achieved through HAPs. Statement prepared under UK Biodiversity programme to link the relevant Plans.   |
| No Plan  | Species removed from revised UK priority list. No Action Plan / Species Statement produced  |
| BC RAP   | Butterfly Conservation Regional Action Plan   |
| BC NAP   | Butterfly Conservation National Action Plan   |
| <b>PROTECTION: European (EC Habitats Directive)</b>                                      |   |
| Annex II   | Designation of protected areas for animals and plants listed  |
| Annex IV   | Special protection for animals and plants listed  |
| Annex V  | Control of exploitation of animals and plants listed  |
| <b>PROTECTION: British (Wildlife and Countryside Act 1981)</b>                           |   |
| Sch. 1   | Special protection for birds listed   |
| Sch. 5   | Special protection for animals listed   |
| Sch. 5 (sale)  | Protection against sale for animals listed (Schedule 5 section 9 (5))   |
| Sch. 8   | Special protection for plants listed  |
| <b>STATUS: International (International Union for the Conservation of Nature)</b>        |   |
| IUCN VU  | Vulnerable – Species facing high risk of extinction   |
| IUCN LR/cd   | Lower Risk / conservation dependent species – Species that do not satisfy the criteria for 'Critically Endangered', 'Endangered' or 'Vulnerable'. They are 'conservation dependent' if they are the focus of specific conservation programmes, which if stopped, would result in the taxon qualifying for one of the threatened categories within a period of five years. |
| IUCN LR/nt   | Lower Risk / near threatened species – Species that do not qualify for 'conservation dependent' but are close to 'Vulnerable' status  |
| IUCN DD  | Data Deficient – Insufficient data to make a direct or indirect assessment of a species status, based on its distribution and/or population status.   |
| <b>STATUS: British – Mammals (Red Data Book)</b>   |   |
| RDB  | Mammal species listed in the British Red Data Book  |
| <b>STATUS: British – Plant and Fungi (Red Data Book and associated)</b>                  |   |
| RDB Cr   | Critically Endangered – Extremely high risk of extinction in the near future  |
| RDB En   | Endangered – Very high risk of extinction in the near future  |
| RDB V  | Vulnerable – High risk of extinction in the medium-term future  |
| RDB K  | Insufficient data to assess status  |
| NS   | Nationally Scarce – Plants not on red list but occurring in 16 to 100 10x10 km squares  |
| NT   | Near Threatened – Plants not on red list but occurring in 15 or fewer 10x10 km squares  |
| <b>STATUS: British – Invertebrates (Red Data Book and associated)</b>                    |   |
| RDB En   | Endangered – In danger of extinction  |
| RDB V  | Vulnerable – Declining or occurring in a vulnerable habitat. Usually occurs in less than 16 10x10 km squares  |
| RDB R  | Rare – Not declining but occurring in less than 16 10x10 km squares   |
| RDB K  | Insufficiently known – Suspected, but not definitely, Endangered, Vulnerable or Rare  |
| NS (a)   | Nationally Scarce – Occurring in 16 to 30 10x10 km squares (for well recorded species)  |
| NS (b)   | Nationally Scarce – Occurring in 31 to 100 10x10 km squares (for well recorded species)   |
| <b>STATUS: Royal Society for the Protection of Birds (Birds of Conservation Concern)</b> |   |
| Red List   | Various criteria, including a 50% decline in breeding population or range over last 25 years  |
| Amber List   | Various criteria, including a 25-49% decline in breeding population or range over last 25 years   |

Table 1 – Hampshire priority species found primarily on arable land

| Scientific name            | Common name    | Group      | Status/Protection     | Habitat/Ecology  | Hants Distribution   | Specific management requirements  | Action in addition to HAP | Hants SAP? |
|----------------------------|----------------|------------|-----------------------|--|--|---|---------------------------|------------|
| <i>Alauda arvensis</i>     | skylark        | Birds      | RSPB Red List         | Farmland, temporary grassland, heathland   | Widespread resident, passage migrant and winter visitor                        | Benefits from stubble left over winter  | UK SAP                    | yes        |
| <i>Burhinus oedicnemus</i> | stone curlew   | Birds      | Sch. 1, RSPB Red List | Arable and semi-natural grassland, often on chalk; nests on the ground   | Particularly Porton Down and outlying sites on Wessex Downs                    | Nests and young are vulnerable to destruction through agricultural operations       | UK SAP                    | yes        |
| <i>Carduelis cannabina</i> | linnet         | Birds      | RSPB Red List         | Arable land with weeds, grassland, hedgerows; requires a plentiful source of seeds as a winter food source; favours scrub, e.g. gorse. | Widespread   | Essential to provide winter food source and wildflower seeds during breeding season | UK SAP                    | no         |
| <i>Coturnix coturnix</i>   | quail          | Birds      | Sch. 1, RSPB Red List | Hay meadows, cereal crops (esp. barley), grazing marsh. Prefers calcareous conditions.   | Mainly Porton Down   | Timing of mowing/harvesting critical to breeding success.                           | no                        | no         |
| <i>Miliaria calandra</i>   | corn bunting   | Birds      | RSPB Red List         | Farmland and hedgerows esp. on chalk   | Hampshire populations have probably crashed more than elsewhere                | Particularly linked with barley crops and may require access to water.              | UK SAP                    | no         |
| <i>Perdix perdix</i>       | grey partridge | Birds      | RSPB Red List         | Farmland and hedgerows, especially on chalk.   | Widespread and common, especially on chalk                                     | Buffer strips as invertebrate habitats around field margins would benefit.          | UK SAP                    | no         |
| <i>Pluvialis apricaria</i> | golden plover  | Birds      | RSPB Amber List       | Grassland, farmland, playing fields  | Winter visitor to scattered inland and coastal sites                           | -   | no                        | no         |
| <i>Streptopelia turtur</i> | turtle dove    | Birds      | RSPB Red List         | Farmland, woodland, wood pasture and hedgerows   | Widespread but patchy  | Benefits from growth of spring sown cereal and retention of winter stubble.         | UK SAP                    | no         |
| <i>Ephemerum stellatum</i> | a moss         | Bryophytes | RDB En                | Stubble fields and rides.  | Only two records: Hayling Island, Cheriton Wood                                | -   | UK SAP                    | no         |
| <i>Adonis annua</i>        | pheasant's eye | Flw Plants | RDB V                 | Chalky, arable field margins   | National stronghold, handful of records from central Hampshire                 | Needs disturbance, poor competitor, vulnerable to herbicide use                     | no                        | no         |
| <i>Ajuga chamaepitys</i>   | ground pine    | Flw Plants | Sch. 8, RDB V         | Open chalk downland and arable field margins   | National stronghold; only two or three sites including Micheldever Spoil Heaps | Benefits from activity of rabbits, needs disturbance                                | no                        | no         |

**Arable Land**

| Scientific name               | Common name              | Group      | Status/Protection | Habitat/Ecology  | Hants Distribution   | Specific management requirements   | Action in addition to HAP | Hants SAP? |
|-------------------------------|--------------------------|------------|-------------------|--|--|--|---------------------------|------------|
| <i>Althaea hirsuta</i>        | rough marsh mallow       | Flw Plants | Sch. 8, RDB En    | Field borders, scrub and wood margins; on bare, crumbling chalky ground  | Very rare possibly only one site, Plaitford                        | Requires disturbance   | no                        | no         |
| <i>Briza minor</i>            | lesser quaking grass     | Flw Plants | -                 | Unsprayed cornfields and bare, disturbed ground; on rather acid sandy or gravelly soils  | National stronghold, rare in Hampshire, few sites                  | Requires regular disturbance for seedling establishment; vulnerable to herbicide use | no                        | no         |
| <i>Centaurea cyanus</i>       | cornflower               | Flw Plants | RDB En            | Formerly weed of arable land on sandy acid soils; now in disturbed ground in marginal areas                                      | Very rare  | Requires regular disturbance; threatened by intensive agriculture                    | UK SAP                    | no         |
| <i>Euphorbia platyphyllos</i> | broad-leaved spurge      | Flw Plants | NS                | Cultivated and waste land; on calcareous, clay and lighter chalky soils  | National stronghold; two main localities Martin Down and Selbourne | Requires regular disturbance   | UK SAP                    | no         |
| <i>Filago lutescens</i>       | red-tipped cudweed       | Flw Plants | Sch. 8 RDB V      | Field margins, disturbed ground on sandy soils   | One site only, Broomhurst Farm                                     | Requires regular disturbance for seedling establishment                              | UK SAP                    | yes        |
| <i>Galeopsis angustifolia</i> | red hemp-nettle          | Flw Plants | NS                | Arable fields on calcareous soils; also coastal sands and shingle  | Few sites including Micheldever Spoil Heaps, Old Burghclere        | Vulnerable to herbicide use, requires disturbed soil                                 | UK SAP                    | no         |
| <i>Lathyrus aphaca</i>        | yellow vetchling         | Flw Plants | NS                | Field margins, roadside verges, grassy waysides, low earthy cliffs by sea, sea walls, ungrazed or lightly grazed chalk grassland | Rare, few scattered sites  | Short turf with trampled soil  | UK SAP                    | no         |
| <i>Lithospermum arvense</i>   | corn gromwell            | Flw Plants | -                 | Borders of cornfields and other arable land on chalk   | Widespread but local on chalk, including Broughton Down, Tidworth  | Disturbed soil   | no                        | no         |
| <i>Ranunculus arvensis</i>    | corn buttercup           | Flw Plants | NS                | Cultivated and heavily calcareous land, especially cornfields  | Mainly on the Downs  | -  | UK SAP                    | no         |
| <i>Scandix pecten-veneris</i> | shepherd's-needle        | Flw Plants | NS                | Calcareous clays that dry out in summer.   | Possibly a national stronghold, but very rare                      | Threatened by herbicide use on crops.  | UK SAP                    | no         |
| <i>Silene gallica</i>         | small-flowered catchfly  | Flw Plants | NS                | Waste places, cultivated ground, open sandy ground.  | National stronghold, mainly SW and NE Hampshire                    | Needs periodic disturbance of soil.  | UK SAP                    | no         |
| <i>Torilis arvensis</i>       | spreading hedge-parsley  | Flw Plants | NS                | Heavy calcareous clays in winter sown cereals  | Possibly a national stronghold, but very few sites                 | -  | UK SAP                    | no         |
| <i>Valerianella ramosa</i>    | broad-fruited corn salad | Flw Plants | RDB CR            | Annual cornfield weed  | Very rare, few sites, Compton Down, Overton                        | -  | UK SAP                    | no         |

## Arable Land

| Scientific name         | Common name            | Group   | Status/Protection | Habitat/Ecology  | Hants Distribution          | Specific management requirements    | Action in addition to HAP | Hants SAP |
|-------------------------|------------------------|---------|-------------------|--|-----------------------------|-------------------------------------|---------------------------|-----------|
| <i>Lepus europaeus</i>  | brown hare             | Mammals | RDB               | Farmland and grassland   | Widespread                  | -                                   | UK SAP                    | no        |
| <i>Micromys minutus</i> | harvest mouse          | Mammals | IUCN, LR/nt       | Farmland and hedgerows   | Scattered                   | Threatened by habitat fragmentation | no                        | no        |
| <i>Oria musculosa</i>   | Brighton wainscot moth | Moths   | NS (a)            | Farmland with cereal crops and grassland; feeds in stems of wild grasses and cereals | Very rare, possibly extinct | -                                   | UK SAP, BC RAP            | no        |

**Table 2 – Priority species, thought to be extinct in Hampshire, which are primarily associated with arable land**

| Scientific name           | Common name          | Group      | Status/Protection     | Habitat/Ecology   | Hants Distribution                            | Specific management requirements                                       | Action in addition to HAP |
|---------------------------|----------------------|------------|-----------------------|---|---|--|---------------------------|
| <i>Emberiza cirlus</i>    | cirl bunting         | Birds      | Sch. 1, RSPB Red List | Farmland and hedgerows. Calcareous environments           | Extinct as breeding species since 1985.       | Benefits from spring sown cereal and the retention of winter stubbles. | UK SAP                    |
| <i>Bromus interruptus</i> | interrupted brome    | Flw Plants | -                     | Clover and sainfoin meadows                               | Extinct, several former sites                 | -  | UK SAP                    |
| <i>Filago pyramidata</i>  | broad-leaved cudweed | Flw Plants | Sch. 8, RDB En        | Field margins, disturbed ground on sandy and chalky soils | Former sites now destroyed. Possibly extinct. | Requires regular disturbance for seedling establishment                | UK SAP                    |
| <i>Galium tricorutum</i>  | corn cleavers        | Flw Plants | RDB CR                | Disturbed limestone grassland; chalky field margins       | Extinct, last record 1966                     | decline is probably due to use of herbicides.                          | UK SAP                    |

**Table 3 – Priority species, found primarily in other habitats, but which occur on arable land**

| Scientific name                          | Common name              | Group      | Primary HAP  |     |
|--|--------------------------|------------|--|-----|
| <i>Tomoxia bucephala</i>                 | a tumbling flower beetle | Beetles    | Ancient semi-natural woodland                        | no  |
| <i>Circus pygargus</i>                   | Montagu's harrier        | Birds      | Dependent on many habitats, mosaic/landscape species | no  |
| <i>Emberiza schoeniclus</i>              | reed bunting             | Birds      | Fen, carr, marsh, swamp, reedbed                     | no  |
| <i>Passer montanus</i>                   | tree sparrow             | Birds      | Hedgerows  | yes |
| <i>Pyrrhula pyrrhula</i>                 | bullfinch                | Birds      | Hedgerows  | no  |
| <i>Turdus philomelos</i>                 | song thrush              | Birds      | Dependent on many habitats, mosaic/landscape species | yes |
| <i>Vanellus vanellus</i>                 | lapwing                  | Birds      | Lowland wet grassland                                | no  |
| <i>Asilus crabroniformis</i>             | hornet robberfly         | Flies      | Lowland calcareous grassland                         | yes |
| <i>Arabis glabra</i>                     | tower mustard            | Flw Plants | Heathland, acid grassland, bog                       | no  |
| <i>Hypochaeris glabra</i>                | smooth cat's-ear         | Flw Plants | Heathland, acid grassland, bog                       | no  |
| <i>Minuartia hybrida</i>                 | fine-leaved sandwort     | Flw Plants | Lowland calcareous grassland                         | no  |
| <i>Polydesmus coriaceus (inconstans)</i> | a millipede              | Millipedes | Lowland wet grassland                                | no  |
| <i>Cucullia lychnitis</i>                | striped lychnis          | Moths      | Road verges  | yes |
| <i>Heliothis viriplaca</i>               | marbled clover           | Moths      | Lowland calcareous grassland                         | no  |
| <i>Tyta luctuosa</i>                     | four-spotted             | Moths      | Lowland calcareous grassland                         | no  |

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This Plan is one of many Habitat, Species and Topic Action Plans being prepared by the Hampshire Biodiversity Partnership. It will be monitored by the Partnership and fully reviewed and updated in 2004.

This habitat action plan has been prepared by Phil Wilson and the Arable HAP Working Group on behalf of the Hampshire Biodiversity Partnership.

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