The decline of the Corn Bunting

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The Corn Bunting *Miliaria calandra* is one of a number of open-country species likely to have benefited greatly from landscape changes brought about by agricultural man (Harrison 1988). Cereal cultivation, developed in the ‘Fertile Crescent’ of the Middle East around 8000 BC, reached Britain around 5000 BC (Edwards & Hirons 1984). Permanent cultivation necessitated the clearance of large tracts of the dense forests which had covered most of central and northern Europe since the retreat of the Weichselian glaciation around 8000 BC. This felling accelerated during the Iron Age so that by the time of the Roman Conquest the woodland cover in parts of southern Britain had been reduced to levels similar to those found today (Rackham 1976). The agricultural landscape thus predated other open-country systems such as heather moorland and, possibly, chalk grassland (Potts 1991), and the creation of treeless areas enabled many open-country species whose ranges were previously centred around the steppe areas of southern Europe and Asia to expand northwards and westwards. The huge increase in the area of arable land following agricultural improvements from the late eighteenth century onwards may have further aided the range expansion of certain species.

The Corn Bunting is confined to the Western Palearctic, largely between 30°N and 60°N and west of 45°E (Harrison 1982). The European population comprises 26-50% of the world population (Tucker 1991). The species inhabits a wide range of dry, open-country habitats at up to 2,600 m, although in central and western Europe it is confined mostly to agricultural land, particularly cereal and grassland areas (Dolman 1992). In parts of northern and western Britain and in Ireland, the present distribution is further confined to coastal areas and land below 200 m. The species is present all year throughout most of its breeding range, but truly migratory populations are found in parts of northeastern Europe (Gliemann 1973; Hegelbach & Ziswiler 1979). The diet consists of weed seeds, grasses, cereal grain, berries and invertebrates, the latter constituting up to 30% of food intake (Witherby et al. 1938). Young are fed on invertebrates (particularly insect larvae) and also on unripe grain (Watson 1992a). The unusual breeding biology of Corn Buntings has been intensively studied (e.g. Ryves & Ryves 1934; McGregor 1986; Shepherd 1992).

The British Trust for Ornithology’s Common Birds Census (Marchant *et al.* 1990) and the two Atlases of breeding birds in Britain and Ireland (Sharrock 1976; Gibbons *et al.* 1993) have shown that there was a severe decline in
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numbers and a contraction in the range of the Corn Bunting in Britain during
the 1970s and 1980s. The CBC index (fig. 1) records a decline in numbers
which started during the mid 1970s and accelerated after 1980. By 1992, the
index stood at less than one-third of that in 1970, although even this might
underestimate the decline, owing to the southerly bias in the distribution of
CBC plots. During the 1968-72 Atlas fieldwork period, the Corn Bunting was
recorded in 1,426 10-km squares in Britain and Ireland (Sharrock 1976),
whereas during the 1988-91 period this had fallen to 932 (Gibbons et al.
1993), representing a range contraction of around 35% between the two Atlas
periods. It is apparent, however, that this decline is not the first to have
occurred this century (e.g. Parslow 1973). This paper reviews changes in the
status of the Corn Bunting in Britain and Ireland during the twentieth century
and relates these changes to trends elsewhere in Europe. Possible reasons for
the observed changes are discussed.

![Fig. 1. CBC Index for Corn Bunting *Miliaria calandra*. The index is given an arbitrary value of 100 in the datum year (1980). Further information on the interpretation of indices is given in Marchant et. al. (1990)](image)

**Regional accounts**

County and regional avifaunas, annual bird reports and journals were
examined to identify changes in regional distributions and populations of the
Corn Bunting throughout this century. In addition, all BTO Regional
Representatives and County Bird Recorders were invited to provide details of
changes in the status of the Corn Bunting in their areas. Specific locations of
breeding sites which were abandoned before the 1968-72 Atlas were mapped
(fig. 2). Additional information on distribution was obtained from BTO Nest
Record Scheme cards and from collection locations of skins and eggs in the
Natural History Museum bird collection in Tring and in Liverpool Museum.
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Fig. 2. Location of 10-km squares holding specifically named sites where breeding by Corn Buntings *Miliaria calandra* was recorded before but not during or since the 1968-72 Atlas

This information was used to establish the likely range of the Corn Bunting in Britain at the beginning of this century and to chart any changes in distribution and abundance that have occurred since then. The extent of available information differed greatly between regions.

37 & 38. Corn Buntings *Miliaria calandra*: top, Spain, May 1988 (Rene van Rossum); bottom, on barley with caterpillar for nestlings, Suffolk, June 1989 (Roger Tidman)
Several European ornithological organisations provided information on changes in the status and distribution of the Corn Bunting in their respective countries. This information was used to identify patterns of population change across Europe and to relate these to those in Britain.

The decline in number of occupied 10-km squares between the two Atlas periods in each of the regions described below is given in table 1.

The following regional accounts use a mixture of old and new county names, which vary according to the age of the literature cited.

Table 1. Number of 10-km squares occupied by Corn Buntings *Miliaria calandra* in each Breeding Atlas period and percentage decline in distribution

Regions follow those described in the regional accounts. The number of occupied 10-km squares given in this table is slightly higher than the actual number of occupied squares in each Atlas since a small number of 10-km squares (14) is split between regions used in this account and is therefore included twice.

<table>
<thead>
<tr>
<th>Region</th>
<th>1968-72 Atlas</th>
<th>1988-91 Atlas</th>
<th>% decline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shetland</td>
<td>7</td>
<td>0</td>
<td>100.0</td>
</tr>
<tr>
<td>Orkney</td>
<td>11</td>
<td>5</td>
<td>54.5</td>
</tr>
<tr>
<td>Outer Hebrides</td>
<td>29</td>
<td>19</td>
<td>34.5</td>
</tr>
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<td>Inner Hebrides</td>
<td>28</td>
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<td>73.0</td>
</tr>
<tr>
<td>N Scotland</td>
<td>40</td>
<td>14</td>
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<td>NW England</td>
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Scottland

During the 1920s, Corn Buntings were recorded breeding in every district of Scotland except for West Stirling, the Isle of May, Fair Isle and St Kilda, and were regarded as ‘resident, common around the coasts, local elsewhere’ (Baxter & Rintoul 1928). Some 25 years later, however, the species had ‘noticeably decreased of late in many parts’, but this was not correlated with ‘any change in agriculture or territorial associations’ (Baxter & Rintoul 1953). The decline has continued throughout Scotland since then (Thom 1986) and the species has become extinct in many areas where it was once abundant. Although there is little doubt that Corn Buntings have decreased in range and numbers everywhere in Scotland during the course of this century, the available evidence suggests that the decline has been more severe in the north and particularly the west. The numbers of regions occupied by Corn Buntings throughout the century are given in fig. 3.
The Corn Bunting once reached the northern limit of its world range in Shetland. A number of local names ('Docken Sparrow', 'Cornbill') attest to its previous abundance, and at the end of the last century Evans & Buckley (1899) described it as 'resident and decidedly common throughout the islands'. It was common on crofting land on even the smallest and most isolated islands (including Uyea, Out Skerries and Foula). The species was still common in the larger areas of farmland in 1945 (Baxter & Rintoul 1953), but by the mid 1950s the population was much reduced. Although Venables & Venables (1955) found it on ten islands, they quoted the local opinion that numbers had ‘decreased within living memory’. By 1964, Corn Buntings had disappeared from Fetlar, Skerries and Bressay (fig. 4) and were scarce in Unst, North Roe and Dunrossness, although still present at three sites on Yell (R. J. Tulloch verbally, per M. G. Pennington). By the time of the 1968-72 Atlas, the Corn Bunting was scarce in Shetland. Extinctions on islands continued and the last confirmed breeding in Shetland was on Mainland in 1978, although there may have been occasional breeding until 1983 (M. G. Pennington in litt.). In less than 70 years, the Corn Bunting declined from being one of Shetland’s commonest songbirds (D. Okill in litt.) to extinction.

Orkney The earliest reference to the Corn Bunting in Orkney describes it as being a very common resident, congregating ‘in great numbers’ in farmyards during the winter, when many were shot for the table (Low 1813). Around the turn of the century, it was common on all crofting land (Buckley & Harvie-Brown 1891), although less common on North Ronaldsay, where there were 15 singing males in 1892 (Briggs 1893). During the late 1920s the species was still common on Sanday, Stronsay and Westray, but had decreased on Mainland (Baxter & Rintoul 1953). As late as the mid 1940s, Corn Buntings were still common on all cultivated islands (Lack 1943), but during the next 25 years declined rapidly, numbers of singing males falling to single figures on all islands except Sanday (Balfour 1971). Since 1982, breeding has been confined to Sanday and Stronsay, with around ten pairs on each island, although a few have been reported singing elsewhere (Booth et al. 1984). The decline of the Corn Bunting in Orkney appears to have started slightly later than that in Shetland, with dates of island extinctions reflecting this (fig. 4). Between 1979 and 1991 there was no apparent decrease in what is now the world’s most northerly breeding population of Corn Buntings (C. Booth in litt.).
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Fig. 4. Approximate year of extinction of the Corn Bunting *Miliaria calandra* as a regular breeding bird on Scottish islands. Islands still occupied in 1992 are shown in black.

**Outer Hebrides** During the latter half of the nineteenth century, the Corn Bunting was one of the most abundant birds on farmland throughout the Outer Hebrides, even reaching as far west as St Kilda, where it was common. The species was still increasing at the end of that century as a result of the conversion of peatlands into farmland (Harvie-Brown & Buckley 1888), and Corn Buntings were probably more abundant on the Outer Hebrides than anywhere else in Scotland (Baxter & Rintoul 1953). Despite its disappearance from St Kilda prior to 1910, Baxter & Rintoul (1953) considered that 'the species continues to be abundant in these islands and it is well distributed in the crofting areas'. Since then, the population has declined throughout, particularly on Harris and Lewis, where there were very few pairs left by 1971 (Cunningham 1990). By the early 1980s, the species had ceased breeding on Harris and was reduced to a handful of individuals on Lewis, where it may already have become extinct as a breeding bird (Cunningham 1990 & in litt.). On the Uists and Benbecula, the species is still relatively common in certain areas, although even there the population has declined. In 1988, there were around 100 singing males on North Uist (M. Shepherd, pers. obs.) compared with an estimate of 117-149 in 1983 (Williams *et al.* 1986). Between 1988 and 1991, the population declined by a further 30% (M. Shepherd, pers. obs.).

**Inner Hebrides and Southwest Coast (Argyll & Bute, Kintyre, Ayrshire)** One of the most dramatic losses of Corn Buntings in Britain has taken place on the Inner Hebrides and the southwest coast of Scotland. The extraordinary abundance of the species on some islands in the Inner Hebrides was noted by several authors. On Iona and Mull 'all the stackyards and stubble fields abound with the corn bunting in winter and in summer his . . . song is heard from every stone dyke and thatch roof shieling' (Graham 1890). The species was 'abundant on Eigg as in most of the islands' (Harvie-Brown & Buckley 1892). Numbers began to decline, however, soon after these accounts were written, with the first of the many island extinctions (fig. 4) occurring during the early 1930s. Corn Buntings became extinct as regular breeding birds on Arran around 1930 and, despite subsequent irregular breeding, were not recorded during the 1988-91 Atlas. The species now survives on the Inner Hebrides only on Tiree, where there was a sharp decline in numbers between 1979 and 1983 (Cadbury 1989).
During the mid nineteenth century, Corn Buntings were ‘nowhere more plentiful than Argyllshire, Ayrshire and Wigtownshire’ (Gray 1871). Some 20 years later, the situation may have altered, since Corn Buntings were ‘generally less abundant [on the mainland] than in the Isles’ (Harvie-Brown & Buckley 1892). A substantial decline in the large numbers reported in Ayrshire at the beginning of the century was already apparent by 1929 (Palton & Pike 1929), with the species confined mainly to the coast, whilst farther south, in Wigtown and Kirkcudbright, it had become scarce and local by 1935 (Baxter & Rintoul 1953). In Argyll, the species bred throughout Kintyre during the first half of this century (Gibson & Colville 1975), with a few persisting until the 1950s (B. Zonfrillo in litt.). By the time of the 1968-72 Atlas, Corn Buntings had disappeared from Argyll and Bute, but were still present in Ayrshire, where they extended up to 40 km inland. This latter population has since declined, however, and the species is probably lost as a regular breeder in Ayrshire. By the time of the 1988-91 Atlas, breeding was recorded in western Scotland only on the Uists and Tiree, at a few scattered sites in Dumfries & Galloway and in a single 10-km square in Ayr. The extent of the species’ former range on the Inner Hebrides and the southwest coast of Scotland is apparent from fig. 2.

Northern Scotland (Highland Region excluding Skye) A description of the Corn Bunting as a ‘numerous resident’ in the northwest Highlands and Skye around the turn of the century (Harvie-Brown & Macpherson 1904) is the only available information on the status of the species on the northwest coast of Scotland before the 1950s. In 1848, the species was found in Sutherland, where it ‘haunts the cornfields . . . never far from cultivation’ (St John 1891). Although Corn Buntings occurred all along the northwest and north coasts of Scotland, they were local and confined to the coastal agricultural fringe. The species was also restricted in northeast Scotland to the east coasts of Caithness, Sutherland and Ross & Cromarty, where it was often abundant (Harvie-Brown & Buckley 1887). Population trends in these remote areas are not well recorded, although in western parts the species had become scarce by 1936 (Baxter & Rintoul 1953) and was recorded from few areas during fieldwork for the 1968-72 Atlas. An account of the extinction of a small local population in southeast Sutherland is given by McDonald (1985). In north and west Sutherland, Corn Buntings had probably disappeared by 1961 (Angus 1983) and the species is now probably extinct as a breeding bird throughout Caithness and Sutherland. Farther south, the few breeding in western Ross & Cromarty during the 1968-72 Atlas had disappeared by the time of the 1988-91 Atlas. In Badenoch & Strathspey, the species probably bred in small numbers earlier this century, but had disappeared before 1960, whilst in Inverness-shire a few survive in the east of the county, where declines accelerated during the 1970s (R. H. Dennis in litt.). Corn Buntings were relatively common on the Black Isle and in the Easter Ross lowlands until the mid 1970s, since when they have disappeared from the Black Isle and are now rare throughout Easter Ross (R. H. Dennis in litt.). In Lochaber, the species was described as ‘very scarce’ in 1936 (Baxter & Rintoul 1953) and had disappeared by the time of the 1968-72 Atlas. One of the few detailed accounts of population declines in northeast Scotland since the 1940s indicated the localised effects of the decline of the species, with some local populations showing few signs of decline and others disappearing completely (Watson 1992b).

Eastern Scotland (Grampian & Tayside) Despite being considered to be more local in eastern Scotland than in the west in the last century, eastern populations fared better than those in western districts. Sim (1903) described the Corn Bunting in Aberdeenshire as ‘one of our most plentiful birds’ to be seen ‘in all cultivated tracts’. In 1936, Corn Buntings were still common throughout the county (Baxter & Rintoul 1953) and extended farther inland there than anywhere else in Scotland. In the 1950s, the species was ‘abundant’ in many coastal districts, although confined inland to sites below 400 feet (120 m) (Goodbody 1955). The Buchan Plain remains the Scottish stronghold of the Corn Bunting despite the slight reduction in range noted between the two Atlas periods. Population densities remain fairly high across the Buchan Plain and the lower Deveron Valley, but decreased during the 1980s at some inland sites and south of Aberdeen. The species has declined generally since the 1968-72 Atlas (Buckland et al. 1990), although in Moray the population appears to have stabilised, with some local increases during the late 1980s (Cook 1992). In parts of Tayside, Corn Buntings may have been in decline as early as 1906 (Harvie-Brown 1906), when the species was ‘rarer than formerly in many parts’, although Boase (1953) did not include the Corn Bunting in his list of species which had declined since 1900. Atlas data show that the Corn Bunting’s distribution contracted between 1968 and 1988, although the
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species survives in reduced numbers along the coast of Angus. Farther inland, the species is on the verge of extinction in Perth and Kinross, where it was locally common until the mid 1970s (W. A. Mattingley in litt.).

Central Scotland (Central, Fife, Lothian and inland areas of Strathclyde) Corn Buntings were always scarce or local in Central Region and inland areas of Strathclyde. In the 1840s, the New Statistical Account for Alloa placed the Corn Bunting in a list of 'the more uncommon birds', whilst farther west the species was already declining rapidly around Callander during the 1870s (Rintoul & Baxter 1935). In southeast Central Region, Corn Buntings bred 'sparingly' in the 1930s. Since then, the range has contracted (C. J. Henty in litt.) and the species was recorded during the 1988-91 Atlas in just one 10-km square. It is on the verge of extinction in Central Region. There is less information on changes in the status of the Corn Bunting in inland areas of Strathclyde, although Baxter & Rintoul (1953) quoted a report that Corn Buntings had declined owing to the spread of the city of Glasgow in areas in which they had bred regularly. The 1968-72 Atlas showed the species to be well distributed throughout the old counties of Renfrewshire, Dumbarton, Stirling and Lanarkshire. A rapid range contraction followed, however, and none was recorded during the 1988-91 Atlas. This represents perhaps the most widespread decline in the distribution of Corn Buntings in any region of Britain between the two Atlas periods.

In Fife, the species was found locally in small numbers along the coast during the early 1930s (Rintoul & Baxter 1935). The 1968-72 Atlas recorded it in every 10-km square in the county, but since then there has been a decline in distribution, linked with a decline in numbers which probably started in the 1950s (Smout 1986). This has particularly affected western areas, which are now almost deserted. Eastern Fife still holds around 100 singing males and in this region the distribution does not appear to have contracted in recent years (Smout 1991).

Changes in the Corn Bunting population of Lothian have been particularly well documented. In the mid nineteenth century, the species was local in East Lothian, and remained so in the 1930s (Nash 1935; Rintoul & Baxter 1935), although it was apparently more widely distributed in coastal areas. It is unclear when Corn Buntings started to decline in Lothian, although counts of winter roosts made during the early 1970s were considerably lower than those in the 1950s (Brown et al. 1984). The decline in range and numbers was apparent even during the five years of fieldwork for the 1968-72 Atlas. A full breeding survey of Corn Buntings throughout Lothian in 1982 showed a decline from 25 occupied 10-km squares in the 1968-72 Atlas to ten in 1982 (Brown et al. 1984). This subsequently fell to six in the 1988-91 Atlas. The species was absent from many areas of apparently suitable habitat during the 1982 survey and one of the three population centres identified in that survey has since disappeared (P. R. Gordon in litt.; Lothian Bird Reports 1979-90). Corn Buntings are now on the verge of extinction as regular breeders in Lothian (C. McGuigan in litt.).

Southern Scotland (Dumfries & Galloway, Borders) In the western parts of Dumfries & Galloway (the old county of Wigtown), Corn Buntings were abundant during the late nineteenth century (Gray 1871), as they were along the southwest coast of Scotland (see above). In eastern areas of Dumfries & Galloway, the species was common along the coast during the late nineteenth century, but was rather more local inland, where its distribution followed the valleys of the Cairn, Nith and Annan. In 1901, the species was described as 'common' in the inland parish of Glencar (Martin 1901), although ten years later Corrie (1910) described it as 'local', indicating some decline during the intervening years. Gladstone (1910) considered that the distribution of the Corn Bunting in Dumfries & Galloway had not changed over the preceding 80 years, but in 1922 suggested that it had increased in coastal areas, and documented the colonisation of a previously unoccupied inland area (Hunter 1921; Gladstone 1922). This population established itself around 1901 and increased to over 20 singing males. Its fate is unfortunately not recorded, though the area was abandoned sometime before 1968. Despite being described as 'scarce and local' in Kirkcudbright and Wigtown in 1935 (Baxter & Rintoul 1953), declines before the early 1960s were confined primarily to inland areas. The species started to decline in Nithsdale during the late 1930s and may have disappeared from the upper reaches of the river valley by the early 1960s (North Solway Bird Report, no. 3, 1967-68). In the Annan Valley, the species was still present during the 1968-72 Atlas, but had disappeared by the time of the second, with local records suggesting declines during the late 1970s (R. Meams in litt.). The coastal lowland population declined
almost to extinction between the two Atlases, although the decline may have started during the early 1960s, or perhaps earlier in the west of the county (P. N. Collin in litt.). The species is now restricted to two coastal areas either side of the Nith (R. Mearns in litt.) and to a few scattered sites in Wigtown and Kirkcudbright, where populations appear stable (P. N. Collin in litt.).

During the first decade of the present century, Corn Buntings were ‘fairly abundant, though somewhat local’ throughout Borders, where they apparently favoured ‘barren spots covered with rough grass’ and fallow, rather than the more usual arable areas frequented elsewhere (Evans 1911). Although found throughout the region except in the extreme west, the species was more common in the east, and inland populations may have started to decline as early as the 1860s. The 1968-72 Atlas showed the species to be distributed along the coast and at a number of inland sites. A severe decline during the next 20 years resulted in virtual extinction, and the Corn Bunting is now found regularly only in three small areas of the Berwickshire coast, the total population numbering fewer than 15 singing males (R. Murray in litt.).

WALES

Although less well documented, the population decline in Wales has been as dramatic as that in Scotland and again appears to have started or accelerated during the 1930s, with a number of county extinctions during that decade.

North Wales (Gwynedd, Clwyd, northern areas of Powys) Around the turn of the century, Corn Buntings were common or abundant breeding birds in North Wales, with a pronounced preference for coastal areas. This was so marked that ‘if a line were drawn all round the coast at a distance of one mile inland, the narrow strip of country between this line and the sea would be found to contain about 90 per cent of all the Corn Buntings in North Wales’ (Forrest 1907). The same author believed that the bird was twice as common on the west coast as on the north, with particularly high numbers on Anglesey. Farther away from the coast, records were scarce (as suggested by fig. 2), but the species was recorded as far inland as Welshpool. In Merioneth, Corn Buntings were common in the coastal belt in 1919, but just ten years later were known from only a single site and became extinct as breeding birds in the county some time before 1935 (Hope Jones 1974), since when there have been only occasional records (R. Thorpe in litt.). On Anglesey, Corn Buntings were still common in the early 1900s, but had declined markedly by 1928 (Whitaker 1948). On the adjacent mainland, the species disappeared from Caernarvonshire some time between 1920 and 1950 (Hope Jones & Dare 1976) and by 1956 the species was ‘an uncommon summer visitor . . . no records recently of breeding’ throughout Gwynedd (Cambrian Ornithological Society records). On Bardsey, Corn Buntings declined from being one of the most abundant songbirds in the early years of the century (Aplin 1910) to a single pair in 1930 (Wilson 1930). Subsequent records on the west coast, including one during the 1968-72 Atlas, relate only to wandering individuals (J. Barnes in litt.). On the north coast, the species had disappeared by the time of the 1968-72 Atlas from all areas except Flint, where it was ‘very localised but fairly common where present’ (Birch et al. 1968). A breeding record from Flint in the 1988-91 Atlas was the only one in Wales.

South Wales (Dyfed, Glamorgan, Gwent, southern areas of Powys) As in the north, the Corn Bunting’s distribution at the turn of the century was concentrated along the coast. Inland, the species was ‘uncommon throughout the county’ of Breconshire (Cambridge Phillips 1899). Since then, there have been only occasional records and the species probably ceased breeding around the turn of the century (Massey 1976). There is only one authenticated record of the Corn Bunting from Radnor (Peers 1985) and the species has always been rare in Gwent, with breeding recorded only in 1903 and 1970 (Ingram & Morrey Salmon 1937; Ferns et al. 1977). It was found in most coastal areas of Glamorgan around the turn of the century, although far less commonly than in more western areas of Wales. The species vanished from most coastal areas of Glamorgan during the late 1920s and the 1930s (Heathcote et al. 1967), perhaps surviving on the Gower Peninsula until the early 1950s (Grenfell & Thomas 1982). Since then, the Corn Bunting has been a rare visitor to the county (P. Bristow & R. J. Howells in litt.). In Carmarthenshire and Cardiganshire the species was locally common in coastal districts around the turn of the century, extending up to ten miles (16 km) inland in some places. In Cardigan, it was in decline before 1925 and disappeared as a breeding bird during the late 1930s (Ingram et al. 1966), since when it
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has been recorded on just six occasions (P. Davies in litt.). In Carmarthen, it probably disappeared at about the same time (Ingram & Morrey Salmon 1954). Pembrokeshire was the only county in South Wales to retain a regularly breeding Corn Bunting population after the decline of the 1930s. The species was locally abundant in the county around the turn of the century (Mathew 1894) and maintained local populations in the westernmost peninsulas (Lockley 1949). These decreased during the 1950s, with one small population surviving until 1963. There have been no records of breeding since, despite recent reports of males holding territory (G. Rees in litt.).

IRELAND

Although poorly documented, the decline of the Corn Bunting in Ireland appears to have been even more severe than that in Wales or Scotland. In 1900, the species was common in all coastal areas, although usually scarce or local farther inland (Ussher & Warren 1900). Breeding was recorded in every county except Leitrim and possibly Fermanagh. The species may have started to decline in some areas as early as the end of the last century, and by the 1930s was scarce or absent in coastal Cork (Kennedy et al. 1954). In 1925 it was still common in Limerick, but had disappeared by the early 1950s.

By the beginning of the 1950s, the species had virtually disappeared from inland Ireland and was much reduced in numbers along most of the coastline, where it was confined to a number of headlands, particularly along the west coast (Kennedy et al. 1954). In Mayo and Galway, however, it was still common in 1945 and numbers there were apparently stable. There was even the suggestion of a recovery in Dublin during the 1950s (Hutchinson 1989).

By the early 1960s, however, even the stronghold populations were much reduced (Ruttleidge 1966) and by the time of the 1968-72 Atlas breeding records were confined to Waterford, Wexford, Mayo, Donegal and Northern Ireland, with scattered records in Cork and Kerry. The decline continued over the next 20 years, and during the 1988-91 Atlas the species was recorded from just a handful of sites in Mayo and Galway. Elsewhere in Ireland, the species is a vagrant or rare visitor to a number of coastal sites (Hutchinson 1989; G. Gordon and D. Knight in litt.).

The early distribution and pattern of decline of the Corn Bunting in Ireland correspond well with those in western Scotland and Wales. The predominantly coastal breeding population may have declined slightly before the 1920s, but the decline accelerated during the late 1920s and early 1930s, leading to the extinction of the species in many counties (fig. 3). Although poorly documented, the situation appears to have stabilised during the 1950s and 1960s, with a further decline between the two breeding Atlas periods. The species is now on the verge of extinction as a breeding bird in Ireland.

ENGLAND

In England, Corn Buntings have always been more widespread than in Scotland, Wales or Ireland, with less of a coastal bias in distribution in most areas. Despite this, it was recognised by many early authors that the frequently used name 'Common Bunting' was a misnomer, since, although often abundant, the species had a patchy distribution and was less common in most areas than the Yellowhammer Emberiza citrinella. Declines in population began around the same time as those noted elsewhere in Britain and, as in Scotland, affected mainly western and northern populations.
Southwest England (Wiltshire, Avon, Somerset, Dorset, Devon, Cornwall and Scilly)

Nineteenth-century avifaunas show that Corn Buntings were common in Cornwall and the Isles of Scilly and were fairly widespread (e.g. Rodd 1880). During the late eighteenth century, the species was so common in Scilly that it was considered a pest and attracted a bounty (Penhallurick 1978). It was 'not uncommon' on the islands in the early 1920s, but it appears to have declined to extinction as a breeding bird by 1939, with only a few subsequent records of individual birds (W. Wagstaff in litt.). In Cornwall, numbers appear to have been highest in the west, particularly along the coast (Rodd 1870, in Penhallurick 1978). Although difficult to date precisely, a population decline appears to have started around the turn of the century, although at one well-studied site the decrease became most apparent between the mid 1930s and the early 1940s (Ryves, in Penhallurick 1978). No clear trends in population levels emerge for the period between the 1950s and the time of the 1968-72 Atlas, when the distribution was centred along the north coast in the west of the county. The population may have increased during the late 1970s, but then collapsed during the early 1980s. The population on the Lizard did not recover, and had disappeared by the time of the 1988-91 Atlas, whilst the north-coast population had declined to around 50 singing males by 1991 (Cornwall Bird Reports). The present distribution is concentrated along the short stretch of coast between Newquay and Padstow. The decline in numbers shows no sign of abating, and the Corn Bunting may disappear as a breeding bird in Cornwall in the near future.

In Devon, Corn Buntings have never been common and were described at the end of the last century as 'local, . . . principally along coasts . . . nowhere numerous' (D'Urban & Mathew 1895), with evidence from named locations supporting this (fig. 2). This small population was recorded less frequently after the 1940s, suggesting that a decline took place during this or the previous decade (Price, in Sitters 1988). The Corn Bunting had become extinct as a regular breeding bird in Devon by the 1960s (Moore 1969), although there have been occasional breeding records along the south coast since (Price, in Sitters 1988).

During the latter part of the nineteenth century, the Corn Bunting was a 'common resident' in Dorset (Mansel-Pleydell 1888). There is no evidence that its status changed significantly throughout the first half of the present century, when Blathwayt (1933, 1940) described the species as breeding 'numerously, especially in coastal districts'. In the 1960s, central areas of the county were being colonised, and during the early 1970s the species was 'local but not uncommon' (Boys 1972), with the main centres of population in the east of the county and along the coast. The 1968-72 Atlas showed the species to be distributed throughout the county, but by the time of the 1988-91 Atlas the formerly well-populated eastern areas were deserted. Evidence from Portland Bird Observatory suggests that a population crash occurred during the 1980s, and numbers in the county as a whole during the early 1990s are much below those of the 1970s.

In Somerset and Avon, Corn Buntings were common during the latter half of the nineteenth century (Smith 1869). By the early 1950s, they had become local in Somerset, 'not common except in restricted localities' (Lewis 1953), and a large number of sites had been abandoned. The once-large breeding population of King's Sedgemoor had already declined significantly by 1934. By the late 1960s, the species was scarce (Palmer & Ballance 1968) and was recorded in Somerset in only a few widely scattered localities during the 1968-72 Atlas. The decline continued during the 1970s and 1980s and the species now breeds regularly at only a single site in Somerset (B. Rabbitts in litt.). A number of small populations became established during the early 1980s, but soon disappeared (Somerset Ornithological Society Reports). In Avon, around 200 singing males were recorded during the 1968-72 Atlas, falling to around 100 by 1975 and 70 in 1980, by which time the population in the Mendips had disappeared (R. L. Bland in litt.). Numbers continued to fall throughout the 1980s, the species now being confined to a small area in the east of the county. During the 1970s and 1980s, the number of occupied tetrads fell from around 40 to six (R. L. Bland in litt.).

The open downlands and plains of Wiltshire attracted enormous numbers of Corn Buntings during the nineteenth century, when the species was 'extremely common, especially in the vast tracts of arable land on the Downs' (Smith 1887). Little information is available on population trends during the first half of the twentieth century, but the species was still widely distributed and in places still common by the time of the 1968-72 Atlas. During the late 1970s, there were indications that Corn Buntings were actually increasing in parts of the county (Buxton 1981), but by the time of the 1988-91 Atlas they had disappeared from a number of sites, particularly in the west of the county. The species remains, however, reasonably common in many parts of the Downs and on Salisbury Plain.
Southeast England (Hampshire, Isle of Wight, Sussex, Kent, London, Berkshire, Surrey) In contrast to the declines in numbers and distribution of the Corn Bunting occurring throughout the rest of Britain during the late 1930s, the range in Kent actually expanded during this period (Harrison 1933), although it was still largely confined to eastern and coastal parts of the county. In western parts of Kent, inland breeding may have been more common during the first decades of the present century (Ticehurst 1909; Harrison 1942), but the Weald has apparently never held more than a few, and the Downs are sparsely populated (Taylor et al. 1984). Since the mid 1980s, there has been a sharp decline in numbers in some areas (I. Hodgson in litt.), although the 1988-91 Atlas shows a distribution little changed from that recorded during the first.

In Sussex, Corn Buntings declined greatly during the early 1930s, but were still locally common during the latter half of that decade (Walpole-Bond 1938). Populations apparently fluctuated, with peaks noted in 1911 and 1927. The distribution was almost entirely restricted to the Downs and farmland to the south, and the species was absent from the central and northern parts of the county, as it had been at the end of the previous century (Borrer 1891). Between 1946 and 1976, the species began to appear at many inland sites and in previously unoccupied parts of the Downs in the west of the county (des Forges & Harber 1963; Shrub 1979). Since the early 1980s, the population has again declined, although the 1988-91 Atlas shows that little change in distribution occurred during the 1970s and 1980s.

The Corn Bunting was a ‘fairly plentiful species in all suitable localities’ in Hampshire during the early years of this century (Kelsall & Munn 1905). It was declining by 1920, and by the 1968-72 Atlas had declined in many northern parts of the county (Cohen & Taverner 1972). The 1988-91 Atlas shows that the species has declined further from inland and western parts of the county. On the Isle of Wight, Corn Buntings were decreasing as early as 1909 (Morey 1909) and disappeared during the early 1920s, one of the earliest island extinctions recorded in Britain. During the late 1950s, however, the species reappeared as a breeding bird (Cheverton 1989), with a stable population of between 12 and 20 pairs since (D. Wooldridge in litt.).

The Corn Bunting was described at the turn of the century as ‘tolerably plentiful on the commons and high fallows’ of Surrey, although ‘not very abundant’ in the county as a whole (Bucknill 1900). By the 1930s, it had become scarce or rare in several parts of the county, particularly the northeast, and had apparently undergone a significant decline. A recovery took place during the 1950s and 1960s, when populations known since the 1940s appear to have increased (Parr 1972; J. J. Wheatley in litt.). A further decline set in during the 1980s, and Corn Buntings are now rare and irregular breeders in Surrey (J. J. Wheatley in litt.). Similar trends in population appear to have occurred in the London area, with a poorly documented decline starting before 1940, followed by a general recovery during the 1950s. Although the species withdrew from several previously occupied areas to the southwest of London during the 1970s and 1980s, there was at the same time an expansion in range to the east of the city (Atlas data).

In Berkshire, the Corn Bunting was a common resident in the mid nineteenth century (Clark-Kennedy 1868). This status was again applied to the species during the mid 1960s, although its local distribution was stressed (Radford 1966), and no apparent changes in the Corn Bunting population of Berkshire have occurred since. During both Atlas periods, the species was recorded from every 10-km square in the county.

East Anglia and adjacent counties (Norfolk, Suffolk, Essex, Cambridgeshire, Bedfordshire, Hertfordshire) The present distribution of Corn Buntings in Norfolk and Suffolk is intriguing, since the species is absent from many inland areas despite being common in Cambridgeshire and inland areas of Essex. Early accounts suggest that the distribution in Norfolk and Suffolk was not always predominantly coastal, and during the late nineteenth century the species was ‘pretty generally distributed though not particularly abundant’ (Stevenson 1866), although only one reference to the species’ presence in the centre of Norfolk is known, describing it as ‘common’ (Earl of Kimberley 1875). By 1930, the distribution was withdrawing towards the coast and the Fens, where the species was found in larger numbers (Riviere 1930), and by the mid 1960s it was virtually confined to coastal areas, although still widespread in the Fens on the western fringes of the county (Seago 1977). The coastal populations declined further during the late 1970s (Kelly 1986). There is no indication of the recovery noted elsewhere in southeastern Britain during the 1960s. There was little distributional change in Norfolk between the two Atlas periods.
The decline of the Corn Bunting

The same temporal patterns of distributional change took place in Suffolk. During the late nineteenth century, the species was 'common throughout the county' (Babington 1884), but by the early 1930s it had withdrawn from many central areas and was declining elsewhere (Ticehurst 1932). This decline slowed during the 1930s and was followed by a recovery in coastal areas during the early 1950s, although many apparently suitable areas remained unoccupied (Payn 1962). Atlas data show that, whilst the coastal population declined in range during the 1970s and 1980s, there was an expansion into some central areas of the county.

In Essex, Corn Buntings appear to have increased in numbers since the turn of the century, despite some recent declines. The species was uncommon and declining during the late nineteenth century (Christy 1890), and in the late 1920s was restricted to coastal areas and still declining (Glegg 1929). From the 1940s, however, its range began to expand inland, and, except for a slight drop in numbers during the early 1960s, the increase continued until the late 1960s (Hudson & Pyman 1968; Cox 1984). Although the species is absent from much of the north of the county, some large populations occur in southern and eastern areas. Some of these, however, appear to have declined sharply in recent years, and the Essex population now seems to be in decline once more (M. Dennis in litt.).

At the turn of the century, Corn Buntings were 'abundant' throughout Cambridgeshire (Evans 1904), although 30 years later the local distribution of the species was stressed (Lack 1934). No apparent changes in status have been recorded since, and the species remains common in many parts of the county, particularly the Fens (Bircham 1989). Both Atlases show the species to be widespread throughout the county.

The changing distribution of Corn Buntings has been particularly well studied in recent years in Hertfordshire. Although apparently common during the 1950s, the species was scarce in large areas of central and eastern Hertfordshire and had apparently always been so (Sage 1959). An expansion into these areas began during the early 1950s, populations in the county increased throughout the 1960s and the early 1970s (Gladwin & Sage 1986), and the species became common in central areas where it had once been scarce (Gladwin 1983). Although the population remained stable during the late 1970s, when the national population was in steep decline (Mead & Smith 1982), by the mid 1980s its distribution was also contracting (Terry 1986). Numbers have continued to fall, particularly in the more recently occupied areas. The species was reported from 301 tetrads during 1967-73, but from only 208 during 1988-92 (Smith et al. 1993).

There is no evidence for any change in status of the Corn Bunting in Bedfordshire, where accounts from the turn of the century (Steele-Elliott 1904) and the present day (Trodd & Kramer 1991) refer to the species as being locally common throughout the county. There was no significant change in numbers or distribution between the two Atlas periods and there is evidence of recent expansions in range in some parts of the county (D. Ball and E. Newman in litt.). The species was reported from 453 tetrads during 1968-77 and 514 tetrads during 1988-92, but coverage was estimated to have improved by 23% during the second period, so the figures may in fact represent a small decrease in range (R. Dazley, B. Nightingale and Dr J. T. R. Sharrock in litt.).

East Midlands and adjacent counties (Buckinghamshire, Leicestershire & Rutland, Northamptonshire, Nottinghamshire, Lincolnshire) The Corn Bunting has always been a local, often uncommon breeding bird in Leicestershire and Northamptonshire, although more common in Rutland. Around the turn of the century, the Corn Bunting in Northamptonshire was 'not a very abundant species . . . a few pairs breed' (Lillford 1895). A full survey of Corn Buntings was carried out in Northamptonshire during 1944-50 (Burton c.1950), revealing around 265 singing males, 102 of which were concentrated in three small areas south of Kettering. In common with many other areas of southern Britain, the Corn Bunting population in Northamptonshire was apparently increasing at that time. Since then, however, the population has declined considerably, although large flocks still appear at roost sites in winter (R. W. Bullock in litt.). In Leicestershire and Rutland, the species was described in 1889 as 'common but sparingly distributed—more often seen in winter' (Browne 1889) and was common in Rutland during the first decade of the present century (Haines 1907). Since then, it has declined and is now uncommon (Hickling 1973), with the current population estimated at between 100 and 1,000 singing males in Leicestershire (R. E. Davis in litt.). A recent breeding survey in Rutland found only 30 singing males (Mitcham 1992).

In Nottinghamshire, the species was described as 'fairly common in all cultivated parts' around the turn of the century (Whitaker 1907) and remained so into the 1970s (Dobbs 1975).
The decline of the Corn Bunting

Although detailed information on the past status of the Corn Bunting in Lincolnshire is lacking, it is clear that there was a severe decline in the numbers and range of the species during the 1980s (G. P. Catley and P. N. Watts in litt.). Despite this, parts of Lincolnshire still hold higher breeding densities than almost anywhere else in Britain (Gibbons et al. 1993).

In Buckinghamshire, Corn Buntings were local and 'nowhere numerous' during the early years of this century (Hartert & Jourdain 1920). Despite some local reductions in numbers, the status of this species has apparently changed little since then, with the majority concentrated in the Vale of Aylesbury (Lack et al. 1993). The breeding population of the county is estimated at 200-700 pairs.

West Midlands (Warwickshire, Worcestershire and Staffordshire) and adjacent counties (Cheshire, Derbyshire, Shropshire, Herefordshire, Gloucestershire, Oxfordshire) Changes in the status of the Corn Bunting in the West Midlands have been well documented (e.g. Harrison et al. 1982) and, together with Shropshire and Herefordshire, differ from those found in any other region of Britain and Ireland in the extent of the population recovery and range expansion since 1950. The species was common and widespread in many parts of the West Midlands during the latter half of the nineteenth century (Tomes 1901). Numbers started to decline around the beginning of the century, however, and even as early as 1903 the species was noticeably less common than formerly (Hudson 1903 in Harrison et al. 1982). Corn Buntings were 'not common' in Staffordshire during the 1920s (Smith 1933) and by the 1940s the species had almost disappeared from Worcestershire (Harthan 1946) and was very rare in Warwickshire (Norris 1947). A survey in 1946-50 showed that Corn Buntings bred regularly in the West Midlands only in a small district in south Warwickshire (Norris 1951). Since then, however, Corn Buntings have returned to many areas previously abandoned. The recovery became apparent in Warwickshire from the late 1940s and in Worcestershire from the late 1950s (West Midlands Bird Reports). The increase in these two counties spread into Staffordshire during the early 1960s and between 1966 and 1968 the species was recorded breeding in 27 10-km squares in the three counties (Lord & Munns 1970). Breeding was recorded in an additional 19 10-km squares during the 1968-72 Atlas, representing a very rapid range expansion in the region during the late 1960s and early 1970s. A further spread in Staffordshire is apparent from the 1988-91 Atlas, although in other parts of the West Midlands the population has apparently stabilised and may now be declining. The considerable increase in range and numbers since the late 1940s has been attributed to conversion of large areas of fallow and grazing land to cereal production (Harrison et al. 1982).

In Shropshire and Herefordshire, population trends over the last century have been similar to those in the West Midlands. The species was 'far from common' in Shropshire around the turn of the century (Forrest 1899) and had virtually disappeared by 1940, when fewer than 20 pairs bred in the county (F. Gribble in litt.). The increase in numbers and range which started around 1950 has, however, led to a rise in the population to 400-900 singing males (C. Wright in litt.). A considerable expansion in the breeding range of the Corn Bunting occurred between the two Atlases, when the number of occupied 10-km squares in the county rose from 12 to 22. Shropshire is, therefore, one of the few counties in Britain in which the national decline in numbers and range has not been apparent (Deans et al. 1992; C. Wright in litt.). In Herefordshire, there were only two twentieth-century records of breeding until the early 1970s, since when a number of local populations have appeared (Mountford 1975).

Despite the paucity of information, it appears that Corn Buntings have never been widespread in Cheshire, being absent from the eastern hill pastures and from the southern dairy plain (Coward & Oldham 1900). The species' strongholds in the county during the early 1900s lay in the north and west of the county (Coward 1910). The national increase during the 1950s was apparent in Cheshire from the establishment of new local populations and, although by 1962 there may have been a temporary reversal in this trend, with some formerly occupied areas being abandoned (Bell 1962), considerable increases in population and range were apparent throughout the county during the late 1960s (Cheshire Bird Reports). Since then, numbers have declined and the species now breeds at low densities throughout its range, the current population being estimated at fewer than 450 singing males (Guest et al. 1992).

The population decline of the 1930s was particularly apparent in Derbyshire, where the species was common in many parts of the county during the late nineteenth century (Whitlock 1893). By 1934, the species had become very local, and three years later had abandoned many parts of its former range (Frost 1978). Numbers elsewhere continued to fall during the 1940s. From the 1950s
until the late 1970s, the species underwent a number of local expansions and contractions in its range, disappearing from some areas, but increasing in others (Frost 1978). Since the late 1970s, however, the species has declined throughout the county and is now uncommon and local.

The Corn Bunting has been well studied in Oxfordshire. Around the turn of the century, it was 'a common resident, breeding usually on the high-lying arable lands' (Aplin 1889). A survey in 1928 noted a correlation between the distribution of the Corn Bunting and the distribution of gravels and oolite in the county (Campbell 1959). Particularly high numbers of Corn Buntings were recorded during a survey the following year (Report of the Oxford Ornithological Society 1930). No major population decline appears to have taken place during the 1930s, when the species was in decline throughout most of Britain. A survey of breeding Corn Buntings in 1957 revealed around 400 territories in approximately 1,200 km² (Campbell 1959). Parts of the 1957 survey area were resurveyed in 1985 (Banbury Ornithological Society 1985) and numbers found to be little changed. A more extensive survey in 1992 (Oxford Ornithological Society) suggested that, while numbers changed little since 1957, there was a considerable shift in distribution towards the north of the county (J. Brucker and C. Ross in litt.). The available evidence suggests that Oxfordshire largely escaped the declines of the 1930s and the 1980s.

Early accounts suggest that Corn Buntings were locally common breeding birds in Gloucestershire during the nineteenth century, particularly in the Cotswolds (Bowly 1859; Mellersh 1902). An increase in the number of reported breeding localities during the 1950s might represent a real increase, but may reflect increased observer effort (Swaine 1982). In the late 1970s, the species declined dramatically throughout the county, particularly in the Severn Vale (A. Jayne in litt.). In 1991, a survey of the North Cotswolds revealed a marked contraction in breeding range since the 1968-72 Atlas (P. Dymott in litt.).

Northeast England (Yorkshire, Humberside, Durham, Cleveland, Tyne & Wear, Northumberland) Corn Buntings were common throughout Yorkshire during the nineteenth century, although scarce on higher ground (Nelson 1907). By the 1950s, the species had become 'local but not rare' in central and southern parts of the county (Chislett 1952) and declined throughout the 1950s and 1960s before increasing again during the 1970s and 1980s, when it spread into new areas on the edge of its former range (Mather 1986). The increase and expansion are matched by reports of very large wintering flocks in the east of the county, some exceeding 1,000 individuals (Mather 1986). These population trends differ markedly from the general trend throughout Britain during this period. The recent expansion in range has not, however, been apparent in all parts of the county. A tetrad study of Corn Buntings in the Leeds area has revealed a continued decline in range and numbers throughout the 1970s and 1980s (P. Singleton in litt.) and similar declines have been apparent around Sheffield (Hornbuckle & Herringshaw 1985), Hulflax (M. L. Denton in litt.) and Huddersfield (J. E. Dale in litt.). Around Doncaster, the species was in severe decline until 1965, since when some increase in range and numbers has occurred (Rhodes 1988). The assertion that the species increased in Yorkshire during the 1970s and 1980s (Mather 1986) does not seem to hold true for more western districts of the county.

Information on changes in the status of the Corn Bunting between North Yorkshire and the Scottish border is scant, although the species was described as a 'common resident' in Northumberland and Durham in 1874 (Hancock 1874). Bolam (1912) described the species as a 'common resident, most common perhaps along the coast' in Northumberland, but the same author wrote 20 years later that the species 'has decreased in some places since so much land went out of cultivation' (Bolam 1932). Further declines in Durham were noted by Temperley (1951), who found that the species was more coastal in its distribution than in previous years and was less common throughout. Atlas data show that many inland areas of Northumberland were abandoned during the 1970s and 1980s.

Northwest England (Merseyside, Greater Manchester, Cumbria, Lancashire) and the Isle of Man The changing status of the Corn Bunting in Lancashire (including the new counties of Merseyside and Greater Manchester) has been well documented. At the end of the last century, Corn Buntings were 'very locally distributed, seldom seen except where grain is grown' (Mitchell 1892). The same author described the disappearance of the species from a number of localities where it had formerly been common, partly because of the conversion of arable land to grazing. Between 1913 and 1935, there was a severe population decline in areas away from the coast, although there was some recovery by 1943 (Oakes 1953). During the early 1950s, there
were local increases in many areas which were ascribed to the conversion of grassland back to arable (Oakes 1953). The species was 'widespread' in the Liverpool area in the early 1940s (Hardy 1941) and 'widespread and common' throughout Lancashire in the early 1970s, although scarcer in the east (Spencer 1973). It may always have been more common and widespread in the west of the county, where the strongholds remain the peat mosslands in southwestern Lancashire, Merseyside and the Fylde. In these areas the species is now apparently more common than it was at the end of the last century. A survey of part of the mosslands in 1991 revealed numbers of breeding territories similar to those found by a survey undertaken in 1952 (M. Jones in litt.). There has been no apparent decline in these mossland populations in recent years, but several of the few remaining populations in the higher eastern parts of the county have disappeared (M. Jones and A. Cooper in litt.).

The range of the Corn Bunting in Cumbria has always been primarily coastal, avoiding the high ground of the Pennines and the mountains of the Lake District. The species was found mainly in the South Solway region in the north of the county and to a lesser extent in the lower farmland in the south. It was apparently declining in Cumbria as early as the 1880s (Macpherson 1892), although it increased in the north of the county between 1892 and the early 1940s while decreasing in the south (Blezard et al. 1943). A decline in the main breeding area around the Solway and the Eden Valley began during the early 1960s. By the time of the 1968-72 Atlas, Corn Buntings were found in a thin strip around the coast, disappearing from most southern and western areas by the time of the 1988-91 Atlas. The Corn Bunting survives in reduced and declining numbers at a few scattered localities in the north of the county (M. Carrier in litt.).

During the middle of the nineteenth century, Corn Buntings were common on the Isle of Man and were frequently killed for the table. The population declined markedly during the last quarter of the century, however, and, although the bird remained plentiful in some coastal districts until 1942 (fig. 2), many other sites were abandoned during the 1920s and 1930s (Cullen & Jennings 1986). By 1948, breeding was confined to a single site, and the species last bred on the Isle of Man in 1956 (Cullen & Jennings 1986).

Conclusions

The results of this historical review have been used to construct the likely breeding ranges of the Corn Bunting in 1900 and in 1950 (fig. 5a, b). Comparison of the assumed distribution in 1950 with that found during the 1968-72 Atlas period reveals few differences, suggesting that the decline of the 1930s had stabilised during the intervening years. The present distribution (fig. 5c) shows that the Corn Bunting again declined markedly between 1968 and 1988.

Throughout Britain, the areas worst affected by the population decline of the late 1970s and 1980s are those which were worst affected by the decline of the 1920s and 1930s. The range contracted more severely in regions where the species was less widely distributed during the 1968-72 Atlas period (fig. 6). In general, this contraction has been southwards and eastwards throughout Britain.

A number of possible causes have been suggested to explain the decline in population and contraction in range of the Corn Bunting during the 1970s and 1980s, although none has been shown to be uniquely responsible. Equally dramatic declines have been observed in British populations of other species closely associated with the agricultural environment, particularly Grey Partridge Perdix perdix, Linnet Carduelis cannabina and Tree Sparrow Passer montanus (Marchant et al. 1990), suggesting that changes in agriculture are adversely affecting certain species. Although difficult to quantify, changes in the agricultural environment may also provide some explanation for the widespread population collapse of the 1920s and 1930s and the gradual recovery in many areas during the 1950s and 1960s.
Fig. 5. Likely breeding distribution of the Corn Bunting *Miliaria calandra* in Britain and Ireland in 1900 and 1950 (constructed from this review) and distribution in 1988-91 (adapted from Gibbons et al. 1993)
The decline of the Corn Bunting

Fig. 6. The relationship between the extent of the range of the Corn Bunting Miliaria calandra during the 1968-72 Atlas (expressed as the percentage of all land-based 10-km squares in which the species was recorded) and the percentage decline in distribution between the 1968-72 and 1988-91 Atlases. The contraction in range was proportionally greater in regions in which the species was less widely distributed during the first Atlas ($r_s = -0.783$, $p < 0.001$). Regions follow those described in the regional accounts: 1 Shetland, 2 S Wales, 3 Ireland, 4 N Wales, 5 Inner Hebrides & SW Scotland, 6 N Scotland, 7 S Scotland, 8 Orkney, 9 Central Scotland, 10 NW England, 11 E Scotland, 12 SW England, 13 Outer Hebrides, 14 NE England, 15 W Midlands, 16 SE England, 17 East Anglia, 18 E Midlands

Between 1875 and 1938, falling prices of imported grain and the lack of a protective tariff caused a depression in the market price of home-produced cereals. This led to a 42% decline in the total cereal acreage in Britain between these years (Grigg 1989). Eastern counties of England were less affected by this change in land-use because of difficulty in establishing good pastures, and the historical evidence suggests that the decline in Corn Bunting populations was less severe in those areas. Since the end of the agricultural depression, there has been a continued decline in small-scale cereal-growing for animal feed in many parts of western Britain, reducing further the cereal acreage in a predominantly pasture landscape. Whether there is a critical ratio of cereals to grass below which Corn Buntings do not breed is not known, although it is interesting to note that the range expansion of the species in parts of the West Midlands has coincided with an increase in cereal acreage in areas previously given over almost entirely to pasture (Harrison et al. 1982). Increasing regional specialisation throughout Britain, with western areas becoming increasingly dominated by pasture and eastern areas by arable, has led to a polarisation of the ratio of grass to cereal crops. It has been suggested that this lies behind the population decline of the Yellowhammer in Ireland and parts of western Britain (Prûs-Jones 1993).

Changes in cereal acreage cannot alone, however, account for the changing status of the Corn Bunting during the twentieth century, since the total cereal
The decline of the Corn Bunting as a whole has increased continuously since the late 1930s. The Corn Bunting appears to be particularly attracted to fields of barley *Hordeum* (e.g. Thompson & Gribbin 1986) and the decline in the acreage of this crop over the last 30 years has been used to explain the population decline of the Corn Bunting (O'Connor & Shrubb 1986). The barley acreage in England and Wales is, however, still higher than at any time between 1930 and 1960 (when populations increased in many counties), and in Scotland the total acreage of barley, although small, increased by 525% between 1950 and 1980 (Thom 1986), with no corresponding increase in the population or range of the Corn Bunting. Indeed, Corn Buntings have disappeared from a higher proportion of areas where the barley acreage increased during the 1970s and 1980s than from areas where this acreage decreased (Gibbons & Gates in press).

Changes in the times of sowing and harvesting of both cereal and grass crops have also been cited as possible reasons for Corn Bunting population declines. Wheat *Triticum* is now almost entirely autumn-sown, as is around half the total barley crop. In addition, the area of hay crops has decreased at the expense of silage, which is usually mown several times in a season. There are several ways in which these changes could have affected Corn Bunting populations. The increasingly early harvesting of autumn-sown cereal crops might have lead to increased nest loss, particularly as the Corn Bunting has an exceptionally late breeding season (Crick et al. 1991). In Sussex, three broods in a season were not uncommon during the 1930s (Walpole-Bond 1938), whereas today even second broods are rare owing to earlier harvesting of both hay and cereal crops (Harper 1993). The gradual switch from hay to silage may also increase the risk of nests being damaged or preyed on. An analysis of BTO Nest Record Scheme data suggested an increase in the loss of eggs between 1962 and 1989, although this was not statistically significant, perhaps owing to the small sample size (Crick et al. 1991). Nest losses due to agricultural operations did, however, increase dramatically after 1970 (Crick et al. in prep. a).

Another possible effect of the switch from spring to autumn sowing of cereals is a change in the timing of food availability, although there are reasons for assuming that this effect may benefit Corn Buntings in some parts of Britain. In parts of Scotland, one of the main foods fed to nestlings is unripe grain (Watson 1992a), which is available from winter cereals in northeast Scotland at an earlier date than from spring cereals and at a time when young are likely to be in the nest. This may have contributed to the significant increase in clutch sizes in Scotland over the last 30 years (Crick et al. 1991). It is possible, however, that unripe grain may be used only as a substitute for insect larvae when the latter are in short supply.

One of the more likely detrimental effects of the switch from spring to autumn sowing is the loss of winter stubbles. Early ornithological works make frequent reference to the abundance of Corn Buntings on stubble fields in winter, and such fields are still the most important winter habitat of this species (Donald 1993; Donald and Evans in prep.). Stubble has been shown to be an essential requirement of the Cirl Bunting *E. cirlus* in Britain (Evans 1992), and the loss of winter stubbles is likely to have contributed to the
The decline of the Corn Bunting population declines of a number of seed-eating birds. Even where stubbles remain, they are often treated with herbicides soon after harvesting, severely reducing their value as a source of weed seeds through the winter. Until more is known of the dietary requirements of such species, however, this possible cause of the declines in farmland seed-eaters remains conjecture.

Despite all the potentially damaging effects of a change towards autumn sowing on breeding Corn Bunting populations, analysis of Atlas data has shown that birds were lost from far more areas where the acreage of spring-sown barley increased between the two Atlas periods than from areas where it decreased (Gibbons & Gates in press). This, however, does not prove that autumn sowing does not have a deleterious effect on Corn Buntings, because of differences in the geographical distributions of spring-sown and autumn-sown cereals.

The farmland environment has changed dramatically during the course of the twentieth century. The intensification encouraged in the late eighteenth century by the introduction of the Enclosure Acts has accelerated during the twentieth century, resulting in a loss of habitat diversity in the farmland environment. This has led to a corresponding decrease in the abundance and diversity of the associated flora and fauna (Potts 1991). There are many ways in which the changes wrought on the agricultural landscape could have contributed to the decline of the Corn Bunting population. Between 1947 and 1985, around 175,000 km of hedgerows were lost in England and Wales, to increase the efficiency of modern farming machinery (Jenkins 1990). This loss has deprived many birds of suitable nesting habitat, food and song posts. The increased use of agrochemicals has similarly deprived many species of the insects and weed seeds upon which they depend for their food throughout the year. Corn Buntings were also shown to be particularly susceptible to direct poisoning by agrochemicals during the so-called ‘mercury catastrophe’ which occurred in Sweden during the 1950s and 1960s. The Corn Bunting was one of the hardest-hit species, and its disappearance from several former strongholds was seen as a direct result of poisoning by mercury-based chemicals (Karvik 1964; Otterlind & Lennerstedt 1964). Analysis of BTO Nest Record Cards has revealed evidence of sublethal poisoning of this and other species coincident with the widespread use of organochlorines (Crick et al. in prep. b). The improvement of grasslands and increased use of chemical fertilisers has also led to a decline in the species-richness of many areas, as has the abandonment of traditional rotations in favour of monocultures. Despite this, Corn Buntings have declined less in range and remain most numerous in the more intensively farmed areas of eastern and southern England than in the less intensive farmland in the west and north of Britain.

During the population declines of the 1920s-30s and the 1970s-80s, the greatest range contractions took place in the colder north and the wetter west of Britain. Populations elsewhere contracted in range towards coastal areas (for example in northern England) and away from higher ground, whereas populations in southern and eastern England showed far less marked range changes. This might indicate the effects of climatic factors on the decline of the Corn Bunting, which reaches the northernmost limit of its world range in Britain. Colder winters and wetter summers have been cited as factors contributing to
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The declines of Corn Buntings in parts of Europe (e.g. Hustings et al. 1990; Vidal 1991). The Girl Bunting is another farmland species which reaches the northern limit of its range in Britain and has also declined greatly during the course of the twentieth century. Whether the effects of climate have contributed to the decline of the Corn Bunting is not known. It is possible that populations in northern and western areas of Britain are not self-supporting and rely on immigration from the species’ strongholds in southern and eastern England. A fall in the productivity of these latter populations, caused by one or more of the factors considered above, would then reduce the number able to augment marginal populations.

Population trends of the Tree Sparrow during the course of the twentieth century (Summers-Smith 1989) follow closely those of the Corn Bunting. Both species suffered severe declines in range and numbers during the 1930s, recovered during the 1950s and 1960s, and declined again during the 1980s. In the case of the Tree Sparrow, the recovery of the 1950s and 1960s, which was far more marked than that of the Corn Bunting, was considered to be due to a massive immigration of birds from the Continent. Although little is known of the movements of Corn Buntings, the available evidence suggests that the species does not undertake long-distance movements in western Europe. This may explain the more gradual recovery of the Corn Bunting during the 1950s and 1960s.

It is evident that much remains to be learnt about the exact reasons behind the dramatic decline of the Corn Bunting, although the possibilities discussed above are likely to be at least contributory. Further research into the precise habitat and food requirements and population dynamics of this species is required if we are to understand the declines of this and other farmland birds and act to reverse them. National surveys, such as the BTO’s Farmland Bunting Survey, will provide much of the information required, although more autecological studies are also needed.

Changes in Europe

Corn Bunting population declines in Britain and Ireland during the 1970s and 1980s have been reflected throughout northwestern and central Europe (Tucker 1991). The species is declining in 22 of the 34 European countries for which population data are available and is increasing in just two (BirdLife International/European Bird Census Council European Bird Database, April 1993). Declines have been apparent in most central-European countries, whereas in southern Europe populations appear generally to be stable or even increasing. The species has received particular attention in Sweden (Jonsson 1988, 1989, 1990, 1992) and the Netherlands (Hustings et al. 1990 & in litt.; Schepers et al. 1992).

Corn Buntings were abundant on the cultivated plains of southern Sweden during the nineteenth century and bred in ‘uncountable numbers’ in many areas (Nilsson 1835). Numbers started to decline around the turn of the century (Jonsson 1989) and have continued to do so, although apparently interrupted by shorter periods of recovery. In 1991, intensive searches of all known breeding sites located only ten singing males, and the Corn Bunting is now one of Sweden’s most endangered birds (Jonsson 1992). This population
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Collapse has been blamed on a reduction in habitat diversity resulting in an increase in field sizes, increased use of pesticides, loss of winter stubbles and a series of cold winters (Jonsson 1988). The two remaining breeding areas are characterised by small field units separated by hedgerows and fences with adjacent areas of uncultivated ground (Jonsson 1989).

In the Netherlands, the decline in range and numbers of the Corn Bunting appears to have started during the first half of the twentieth century and was most apparent in the north of the country, particularly at inland sites (F. Hustings in litt.). In Friesland, the species was common during the early 1930s (Eykman et al. 1937), but rare by 1942 (Haverschmidt 1942), suggesting a similarity in the timing of the onset of the decline to that noted in many parts of Britain. In Groningen, the species was common before 1940, but began to decline during the 1950s and disappeared during the 1980s (Hustings et al. 1990). The decline accelerated during the 1970s and 1980s and the Dutch breeding population fell from 1,200 pairs in 1975 to 150 pairs in 1989 and 100 pairs in 1992 (F. Hustings in litt.). Many parts of the breeding range have been abandoned (Hustings et al. 1990), although in the southwest of the country populations increased during the 1960s and 1970s (Buise 1982). The decline was attributed to a number of changes in the agricultural environment, particularly earlier mowing and harvesting, increased use of pesticides, the conversion of hay meadows into grazing land, and improved field drainage. In particular, the decline of a population of Corn Buntings was closely linked to the great increase in area of green maize Zea grown at the expense of rye Secale, barley and oats Avena (Hustings et al. 1990). A general reduction in cereal area was thought to be responsible for the declining numbers of Corn Buntings in parts of the Netherlands and Belgium (Schepers et al. 1992). The decline of the Corn Bunting in grassland areas of the Netherlands has been followed by declines of other species, suggesting that a decrease in Corn Bunting numbers marked only the first step in a general avian impoverishment of these habitats (F. Hustings in litt.). This pattern may now be starting to emerge in Britain, with Scottish and Irish populations of the Yellowhammer showing marked declines between the two Breeding Atlases.

In Schleswig-Holstein (Germany), the breeding population of Corn Buntings fell from 3,000-4,000 pairs in 1955 to 40 pairs in 1987 (von Busche 1989). This decline set in during the early 1960s and accelerated after 1975. It has been attributed to more intensive farming methods and a shortage of food in winter, with many birds apparently dying of malnourishment (von Busche 1989). Similar declines were noted in Eastern Bavaria, where the breeding population fell from 152 singing males in 1975 to 43 in 1988-91 (Vidal 1991). In Austria, a population decline during the 1970s has resulted in a severe range contraction, although in the species’ stronghold in Burgenland numbers have fluctuated markedly (A. Ranner in litt.). In Switzerland, a population decline which accelerated throughout the 1980s has reduced the Swiss population to around 200 pairs, and the species is now regarded as endangered (H. Schmid in litt.). The Danish Breeding Bird Population Index suggests a national population decline of over 50% between 1981 and 1991. Population declines are not limited to northwestern and central Europe. The species has also been declining
The decline of the Corn Bunting rapidly in northern Italy since the early 1970s, the decline again being ascribed to intensification of farming methods (M. Fraissinet in litt.). In France the population is apparently stable (D. Berthelot in litt.).

In eastern Europe, where farming remains less dependent on mechanisation and the intensive use of pesticides, the Corn Bunting does not seem to be in decline, and populations are apparently stable in Poland (Z. Rohde and A. Sikora in litt.), Hungary (Z. Waliczky in litt.) and Bulgaria (P. Iankov in litt.).

Acknowledgments
Too many people to name individually provided valuable references and information used to compile the regional and European accounts. Their help is very gratefully acknowledged and a full set of this correspondence is kept in the BTO library for future reference. Particular thanks are extended to Fred Hustings for providing extremely detailed information on changes in the status of the Corn Bunting in the Netherlands and to Dr Robert Prys-Jones, M. Adams and C. Fisher for providing information on the geographical origins of Corn Bunting skin and egg collections in the Natural History Museum, Tring, and in Liverpool Museum. BirdLife International kindly made available information from the BirdLife International/EBCC European Bird Database. Drs Nick Carter, Andy Evans, David Gibbons & Robert Prys-Jones provided invaluable criticisms of an early draft of this paper. The BTO’s Common Birds Census and Farmland Bunting Survey and PFD’s work on farmland birds are funded by the Joint Nature Conservation Committee (JNCC) on behalf of English Nature, Scottish Natural Heritage, the Countryside Council for Wales and the Department of the Environment (Northern Ireland).

Summary
At the turn of the century, the Corn Bunting Miliaria calandra was a common or abundant bird of farmland and grassland throughout Britain and Ireland. During the 1920s and 1930s, the population began to decline and the range to contract, possibly as a result of declines in the cultivated area of cereals. Populations in western regions of Scotland, Wales, Ireland and western counties of England were particularly badly affected, although declines were noted throughout the species’ range in Britain. The population stabilised during the 1940s, and during the 1950s and 1960s a general recovery became apparent, particularly in eastern areas. During the late 1970s and throughout the 1980s, however, the British population of Corn Buntings again declined. Numbers fell by at least 60% and the range contracted by 35% between the early 1970s and the early 1990s. These declines have again been particularly apparent in northern and western regions of Britain and the species is on the verge of extinction as a breeding bird in Ireland, Wales, western Scotland and southwest England. The range of the Corn Bunting contracted more in areas where the species was less widely distributed in the early 1970s and has withdrawn towards strongholds in the arable areas of eastern and southern England. The reasons behind the decline of this species are unclear, but a number of changes in farming practice are implicated. Reductions in the cultivated area of barley, a switch towards autumn sowing of cereals, replacement of hay by silage, and a decline in traditional rotations and mixed farming practices may all have played a part in the changes in numbers and range noted during the 1970s and 1980s. The increased use of pesticides and the removal of hedgerows may have reduced the food supply of Corn Buntings and other declining farmland birds. Climatic factors may also be involved. The declines in numbers and range noted in Britain have been matched by similar trends in some other European countries.

References
General references (particularly national, county or regional avifaunas and breeding atlases) are condensed to the name of the first author, the year of publication and the title. References to papers are given in full. A complete list of full references is lodged with the BTO and is available on request.

General references
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