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The conservation of steppic birds—a European perspective

Paul D. Goriup and Leo Batten

In the last 45 years the expansion and intensification of agriculture has meant that Europe has lost much of its permanent lowland grassland. Many species associated with this habitat are threatened as a result including several ground-nesting birds. The authors explore the opportunities that exist for conserving them.

All types of lowland grasslands in Europe have suffered enormous losses over the past two centuries, but the rate of loss has been particularly rapid since the end of the Second World War. Agricultural expansion and intensification are the principal causes of grassland conversion. Hardly 5 per cent of the area once occupied by lowland dry grassland or steppe now remains intact in Great Britain (Fuller, 1987; NCC, 1984), and it is highly fragmented across the continent (Wolkinger and Plank, 1981). The only other habitat that has suffered comparable destruction is lowland heath, but heathland decline has attracted far more attention from conservationists than has dry grassland loss. This lack of concern can be largely attributed to the popular conception of steppic communities as being largely 'artificial', created from post-glacial woodland clearance and maintained by human intervention through grazing, crop rotation, fire and cutting.

The situation of European steppic grasslands as a whole has become critical and can no longer be neglected. Butterflies, reptiles, birds and mammals have all suffered large declines. Some grassland animals have even become globally threatened, for example the Alcon large blue *Maculinea alcon*, meadow viper *Vipera rakosiensis* and great bustard *Otis tarda*. Steppic plant species have also declined heavily, but few are acutely threatened. One example of fungi that have declined is the large crimson wax cap *Hygrocybe punicea*, which is listed as threatened in The Netherlands, West Germany, Poland and Sweden (Everett *et al.*, 1989).

Lowland dry grassland: the steppic habitat

In the present context 'lowland dry grasslands' or steppes may be defined as those areas that:

(i) support vegetation not dominated by Ericaceous species and averaging less than 1 m in height;

(ii) are developed on plains or gently undulating ground (i.e. areas particularly vulnerable to arable intensification);

(iii) hold, or could be developed to hold, a breeding, migratory or wintering population of at least one of the vulnerable bird species, or five or more of the other bird species, listed in Table 1.

Accordingly, steppic habitats can include a more or less substantial cover of low shrubby vegetation, especially in semi-arid areas, where grass species may be mainly annuals. Alpine pastures and steeply inclined grassland habitats have rather different problems, which are better treated separately (for example by the NCC Forum on Birds and Pastoralism, which is described later).

Areas of steppe in central and western Europe are generally either outposts of the eastern true steppes or originate from southern 'sub-Mediterranean' thermophilic plant communities (Wolkinger and Plank, 1981). The former support drought-resistant grasses such as *Stipa* spp. and *Festuca valesiaca*, and shrubs, especially of the Chenopodiaceae and Compositae. Other typical species include *Adonis vernalis*, *Astralagus* spp., *Silene otites*

Table 1. Dry grassland bird species to be covered by the project

Vulnerable dry grassland birds in Europe	
White stork	*Ciconia ciconia*
Hen harrier	*Circus cyaneus*
Pallid harrier	*C. macrourus*
Montagu's harrier	*C. pygargus*
Long-legged buzzard	*Buteo rufinus*
Tawny eagle	*Aquila rapax*
Saker falcon	*Falco cherrug*
Lanner falcon	*F. biarmicus*
Merlin	*F. columbarius*
Lesser kestrel	*F. naumanni*
Red-footed falcon	*F. vespertinus*
Button-quail	*Turnix sylvatica*
Demoiselle crane	*Anthropoides virgo*
Crane	*Grus grus*
Little bustard	*Tetrax tetrax*
Great bustard	*Otis tarda*
Stone curlew	*Burhinus oedicnemus*
Collared pratincole*	*Glareola pratincola*
Black-winged pratincole*	*G. nordmanni*
Greater sand plover*	*Charadrius leschenaultii*
Black-bellied sandgrouse	*Pterocles orientalis*
Pin-tailed sandgrouse	*P. alchata*
Short-eared owl	*Asio flammeus*
Red-necked nightjar	*Caprimulgus ruficollis*
Dupont's lark	*Chersophilus dupontii*
Calandra lark	*Melanocorypha calandra*
Short-toed lark	*Calandrella brachydactyla*
Lesser short-toed lark	*C. rufescens*
Thekla lark	*Galerida theklae*
Tawny pipit	*Anthus campestris*
Other dry grassland birds in Europe	
Red-legged partridge	*Alectoris rufa*
Quail	*Coturnix coturnix*
Grey partridge	*Perdix perdix*
Lapwing	*Vanellus vanellus*
Curlew	*Numenius arquata*
Barn owl	*Tyto alba*
Little owl	*Athene noctua*
Skylark	*Alauda arvensis*
Crested lark	*Galerida cristata*
Meadow pipit	*Anthus pratensis*
Yellow wagtail	*Motacilla flava*
Wheatear	*Oenanthe oenanthe*
Isabelline wheatear	*O. isabellina*
Corn bunting	*Miliaria calandra*
Rose-coloured starling	*Sturnus roseus*

Selection criteria:
(i) occurrence as a breeding species within the geographical area covered by the project and
(ii) principally ground-nesting and/or
(iii) principally inhabit steppic habitats but
(iv) do not require wetlands throughout the year

'Vulnerable' species are listed according to Grimmett and Jones (1989).
*These species inhabit saline grasslands near open water.

and *Potentilla arenaria*. The sub-Mediterranean grasslands may support *Bromus erectus* and forbs such as *Pulsatilla vulgaris, Helianthemum nummularium, Hippocrepis comosa, Dianthus carthusianorum* and *Seseli montanum*. They are especially noted for their wealth of orchids, such as *Himantoglossum hircinum, Aceras anthropophorum, Anacamptis pyramidalis, Orchis* spp. and *Ophrys* spp. Also known as calcareous or calcicolous grasslands, they occur in the UK and Ireland on thin soils over chalk and limestone.

Saline steppic habitats are particularly well-represented on the coasts of the UK, France, The Netherlands, West Germany, Spain, Portugal and Italy. Away from coastal areas, halophytic grass and dwarf shrub communities occasionally occur inland on alkaline and saline soils, for example on the Anatolian plateau of Turkey and in the Balkans. The saladas in central Spain are still fairly extensive and support a very unusual plant association including *Puccinellia fasciculata, Frankenia pulverulenta, Juncus gerardii, Bupleurum tenuissimum* and *Salsola soda* (Dijkema, 1984).

It should also be noted that unimproved or lightly managed pasture derived from scrub or woodland clearance, or from land reclamation, generally approximates to 'native' dry grasslands. Similarly, cereal crops that are grown organically, or at least without using pesticides, often harbour important communities of plants and animals (Ratcliffe, 1977; Nohr, 1989). Indeed, some birds are positively attracted to pesticide-free cereal crops because of the better cover for breeding and abundance of insects for food (Petretti, 1988). The careful management of these 'pseudo-steppes' (Goriup, 1988) can provide significant benefits for wildlife.

Birds of lowland dry grasslands

The steppic habitats of Europe support many distinct bird communities comprising species that share one or more of several characteristic adaptations to the habitat, including ground-nesting, conspicuous courtship and territorial displays, cryptic plumage, flock formation,

and tendency to range over large areas. A list of these species is given in Table 1.

The dispersive behaviour of steppic birds (as individuals or in flocks) is probably a response to the erratic and thinly distributed supply of food in areas that are subject to wide climatic fluctuations. This contrasts with the more evenly regulated food sources generally available in forests and wetlands. The consequence is that steppic bird communities will not be adequately conserved by any existing or currently envisioned system of protected wildlife areas (see Grimmet and Jones, 1989).

Moreover, it is impossible for any one country alone to guarantee the future survival of many lowland steppic birds. In Hungary, for example, where the great bustard is afforded stringent protection and a large area of suitable habitat is maintained, the bird's population has still declined from over 3000 birds in the late 1970s to 1200 in 1989 because of emigration to less secure areas in France, Italy and Yugoslavia during hard winters, and is forecast to decline to 800 by the late 1990s (F. Markus, pers. comm.).

Opportunities for saving steppic birds through land-use policy reform

There is high potential for promoting the conservation of steppic birds among the general public and even many large landowners who could actually benefit from lowland dry grassland conservation within a regional agricultural plan, providing such plans were co-ordinated across Europe. From this point of view, flagship species like the Montagu's harrier, pin-tailed sandgrouse, stone curlew, great bustard (which appears on the coat of arms of the counties of Wiltshire and Cambridgeshire in England), white stork and demoiselle crane are perhaps the most important attributes for the conservation of lowland dry grassland habitats.

Throughout Western Europe and especially in the European Community (EC), where the problems for steppic birds are most severe, public support has shifted away from ever more agricultural intensification towards

The stone curlew is a key indicator of lowland dry grassland habitats in Europe. It has declined throughout Europe over the last 50 years.

favouring environmental protection and wildlife conservation. Since the early 1980s, there has been growing pressure for reform of the EC Common Agricultural Policy (CAP), both to reduce surplus production and to prevent further environmental damage (e.g. Gardner, 1981; Molenaar, 1981; Baldock, 1986; Woods, 1988, 1989). In Great Britain alone, overall agricultural land-use changes arising from EC policy redirection and technological advances could lead to the release of an estimated 1.6 million ha of grassland in the lowlands (North, 1988). This movement of opinion, and the resulting land-use policy changes briefly described below, can be harnessed for the benefit of Europe's steppic birds, as well as other species associated with this habitat.

Environmentally Sensitive Areas

In 1985 an EC Regulation (797/85) on improving the efficiency of agricultural structures came into force; it introduced the concept of 'Environmentally Sensitive Areas' (ESAs) into the CAP. Under Article 19 of the Regulation, Member States can introduce national aid schemes to support ecological and landscape management within designated ESAs (Haigh, 1987). The Regulation is expected to remain in force until 31 December 1994. In Great Britain,

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The *mesetas* of Spain are among the most important remaining areas of lowland dry grassland in Europe. This estate in Gedia is managed extensively for cereals and production of partridges for hunting, and supports many other characteristic steppic species such as bustards, sandgrouse and larks.

ESAs containing significant areas of lowland dry grassland habitat have been declared in the Brecklands, South Downs and Somerset Levels (MAFF, 1989a) where grants for managing or recreating lowland dry grassland habitats range from £70 to £200 per ha.

MAFF (1989d) has issued useful guidelines for dry grassland management within the Breckland, South Downs and Somerset Levels ESAs, and agricultural take-up has generally been quite good (Table 2). However, the management prescriptions for ESAs need considerable improvement and strengthening (Mathers and Woods, 1989), if they are not simply to serve as financial safety-nets during a period of low agricultural returns (Lobley, 1989).

Table 2. Land and take-up areas in ESAs with significant amounts of lowland dry grassland

ESA	Total area (ha)	Farmland (ha)	Area under Agreements (ha)
Brecklands	94,030	4,295	3,535
Somerset Levels	26,970	13,800	9,630
South Downs	53,340	11,725	7,270

Source: Mathers and Woods, 1989

It is clear that considerable attention will need to be paid to improving and simplifying incentive schemes for farmers if real progress is to be made towards the objective of recreating a diversity of steppic habitats on a large enough scale to be useful to several threatened birds. However, the Countryside Commission (1989) and the Farming and Wildlife Trust (Carter, 1989) are now vigorously pursuing this matter for Great Britain.

Set aside

A subsequent EC Regulation (1094/88) was aimed at further curbs in cereal production; it led to the introduction in February 1988 of 'set

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aside' schemes whereby farmers were provided with financial support of £130–200 per ha for undertaking alternative land uses (fallow, afforestation, or non-agricultural activities) on at least 20 per cent of arable land normally used for growing certain crops (MAFF, 1989b). Once instituted, a set-aside agreement must run for at least five years. Additional Countryside Premiums ('top-ups') of £45–120 per ha were introduced by the Department of the Environment (administered through the Countryside Commission) in 1989 to encourage farmers in eastern England to conserve and enhance the beauty of their set-aside land (Countryside Commission, 1989).

The full implications and likely benefits of these measures for conserving lowland dry grassland birds in the UK has yet to be seen, although it seems unlikely that there will be any significant release of land for re-establishment of lowland grassland in the immediate future. In fact, the use of grassland as pasture is prohibited under the present UK set-aside rules (MAFF, 1989b), although grazing is an essential management requirement. Moreover, take-up of set-aside schemes has been very modest: during 1988/89 only 58,000 ha were removed from crop production (MAFF, 1989c).

In West Germany, a similar scheme, jointly funded by the EC, Deutscher Bund für Vogelschutz and Land of Baden–Württemberg, provides compensation to farmers who sign a management contract to maintain grassland (*Naturopa*, **89**, 1).

Farm extensification and crop conversion

EC Regulation 1094/88 also opens the way for schemes to help farmers introduce less intensive methods of growing crops such that overall production would be reduced by 20 per cent, while conversion entails switching from surplus crops to others (Woods, 1988). Farm extensification in cereals and beef has recently been implemented, but crop conversion has not yet been instituted.

Nitrate-sensitive areas

The designation of nitrate-sensitive areas in England complying with EC Directive 80/778 on the quality of drinking water (Haigh, 1987) provides a basic payment for specified cover crops, including sowing grass swards.

Structural Fund reforms

Another EC measure of importance for agricultural land use and grassland conservation took place in 1988 when it was agreed that expenditure from three Community Structural Funds (the EC aid programme) should be doubled over five years to a total of £35 billion (Baldock *et al.*, 1989). In particular the

Roche Court Down in Wiltshire, UK, has not been ploughed for over a century. The mature chalk grassland is home to one of the richest dry grassland invertebrate communities in England.

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Guidance Section of the Community Agricultural Fund (FEOGA) was to be targeted towards speeding up the adjustment of agricultural structures and promoting the development of rural areas especially in poorer regions. Member States wishing to apply for EC aid had to submit Regional Plans to the Commission by 31 March 1989. These plans have to meet the EC's requirements for environmental protection, but the staff resources needed for carrying out the environmental checks are lacking.

Agricultural reforms outside the EC

Measures are also being taken outside the EC for conserving steppes and to cope with new agricultural policies. In Austria, farmers in Marchfeld and Burgenland are being encouraged by private and government schemes to cultivate weedy strips of land around field edges and allow fields to revert to fallow to benefit species such as the great bustard (Kollar, 1988). Across the border in Hungary, the government is releasing agricultural land into private ownership, while spending has increased markedly to purchase protected areas in the pusztas before they are subjected to intensification (F. Markus, pers. comm.). In January 1989 Liechtenstein initiated a grant scheme for the conservation of 'sparse grasslands'. In lowland areas this support will amount to £480 per ha (*Naturopa*, **89**, 1).

Opportunities for saving steppic birds through international wildlife law

While the development of environmentally sensitive agricultural policies is the key to the conservation of European steppic birds in the future, existing international legislation can also play a major role.

EC Directive on the Conservation of Wild Birds

The 'Birds Directive' (Council Directive 79/409) of April 1979 provides for the protection, management and control, and exploitation of wild birds, their nests, eggs and habitats. It has the full force of the law in EC territory, and under certain circumstances takes precedence over domestic legislation where the latter does not reach the required standards. Article 3 of the Directive stipulates that Member States shall take measures to preserve a sufficient diversity and area for all species of wild birds naturally occurring in the EC territory, including creation of protected areas, upkeep and management in accordance with the ecological needs of habitats inside and outside protected areas, re-establishment of destroyed biotopes and creation of biotopes (Lyster, 1985). Under Articles 4.1 and 4.2 of the Directive, member states are required to take special measures to conserve the habitat of certain rare species (listed in Annex 1) and all regularly occurring migratory species. Dry grassland species listed in Annex 1 include great bustard, stone-curlew, and Montagu's harrier. Areas of land that are designated for such species are known as Special Protection Areas (SPAs).

Bonn Convention

Under Article V of the Bonn Convention on the Conservation of Migratory Species of Wild Animals, 'Agreements' may be made between signatories in order to promote conservation action for certain species listed in Appendix II. This includes providing new habitats favourable to the migratory species and reintroduction into favourable habitats. Such Agreements aim 'to restore the migratory species concerned to a favourable conservation status or to maintain it in such a status'.

An Agreement for the White Stork is being prepared for submission to the next meeting of the Parties in 1992 (Goriup and Schulz, in press). This Agreement could serve as a basis for a wider Agreement covering many of the dry lowland grassland birds listed in Appendix II.

Bern Convention

The Bern Convention on the Conservation of European Wildlife and Natural Habitats was originally adopted by the Committee of

Ministers of the Council of Europe, but it is open for signature by non-members of the Council for Europe. Appendix II of the Convention concerns threatened fauna, and includes a large number of steppic birds. Ten major obligations on Parties are laid down, of which the following are most relevant here:

* to undertake measures to maintain populations of wild flora and fauna at a level which corresponds to ecological requirements, taking account of other public interests;
* to take appropriate and necessary legislative and administrative measures for the strict protection of the species listed in Appendix I (for plants) and II;
* to conserve the habitats of these species;
* to encourage research related to the purposes of the Convention;
* to encourage the reintroduction of native species of wild flora and fauna if the essential ecological conditions are satisfied.

Current initiatives relating to the conservation of steppic birds

It is not possible to give here a complete account of all the current activities that could usefully contribute to the conservation of steppic birds throughout Europe. However, it is worth touching on some of them to show that there is a strong base of knowledge upon which to build a broader approach to saving steppic bird communities. In addition, it should be noted that related initiatives are under way for birds using other types of grassland and arable areas. For example, the Forum on Birds and Pastoralism was formed as a result of a workshop centred on the conservation of the chough *Pyrrhocorax pyrrhocorax* in Europe held in November 1988 (Bignal and Curtis, 1989). The second meeting of the Forum will be held in the Isle of Man in October 1990, covering a wide range of habitats and geographical locations associated with low-intensity agriculture centred on pastoralism. Similarly, wet grasslands and their birds are the subject of a project co-ordinated by the Wader Study Group, which convened a meeting on this subject at Ribe, Denmark in 1989 (M. Pienkowski, pers. comm.).

Research on steppic birds

There are many small- and medium-scale projects currently under way in Europe, which are directed at developing conservation principles for steppes and their birds. For example, the NCC has a project on the Conservation of Vulnerable and Dispersed species, which is formulating strategies for the conservation of birds in the wider countryside (M. Pienkowski, pers. comm.). This involves examination of the pattern of bird distribution over Britain and devising suitable land-use strategies to maintain and enhance this ornithological interest based on the interspecific relationships and ecological requirements of a range of indicator species. The occurrence and management of dry grassland in agricultural areas is being examined as part of the overall assessment of the ecological requirements of such indicator species, several of which are included in Table 1.

Other current projects include:

* monitoring the status of bird populations on farmland in Great Britain by the British Trust for Ornithology (O'Connor and Shrubb, 1986);
* research into the grey partridge by the Game Conservancy Trust (Potts, 1983);
* joint Royal Society for the Protection of Birds/NCC studies on the stone curlew (Green, 1988);
* habitat management of grass verges for barn owls by the Hawk Trust (Shawyer, 1987);
* studies on management of cereal field margins by Oxford University and the NCC;
* research by NCC, Institute of Terrestrial Ecology and others into technologies for creating species-rich grasslands (Buckley, 1989);
* management of meadows for white storks in West Germany (Goriup and Schulz, in press);
* studies of grazing to maintain dry grassland in Austria (Kirchenberger, 1989);
* studies of the effects of organic farming on

bird populations in Denmark (Nohr, 1989);
* bilateral agreement between UK and Hungary for joint research on wildlife conservation in agricultural areas and puszta habitats with special reference to the great bustard;
* development of a grassland conservation strategy in Eastern Europe, led by Hungary and Bulgaria (IUCN, 1989);
* research on steppe birds in Spain by the University of Leon, University of Madrid and the Jose Maria Blanc Foundation (Alvarez, 1987; de Juana *et al.*, 1989);
* International Council for Bird Preservation review of the conservation priorities for dispersed bird species in Europe.

Promoting public awareness of steppic birds

While there has been a high level of attention paid to agricultural excesses, very little publicity material has been produced that highlights the benefits of species-rich steppes in Europe. Accordingly examples of materials are few:
* ITE and NCC have distributed booklets and leaflets on recreating or maintaining herb-rich grasslands;
* a steppe conservation campaign was launched in Spain by the Sociedad Espanola de Ornitologia in 1988;
* a film on Italian steppe grasslands was produced by PandaFilm in 1987;
* campaigns on the conservation of white storks are being mounted in West Germany and on the great bustard in Austria, East Germany and Hungary.

Future outlook

The single common factor underlying all current lowland dry grassland projects is that they are essentially local, or at best national, in scope. Yet the species most at risk, such as the great bustard, are highly dispersed and require very large areas or extensive networks of habitats to maintain their populations. These can only be maintained by a steppe conservation strategy carried out at the European level, extending from Ireland east to the western republics of the USSR (i.e. Estonia, Latvia, Lithuania, Byelorussia, Ukraine and Moldavia), the Balkans and Turkey.

This situation was highlighted at the 15th meeting of the ICBP European Continental Section (Adana, Turkey, 1989), where a recommendation was adopted to develop a project that would cater for the needs of dispersed species such as steppic birds. Such a project would link in with other existing initiatives on conserving birds of grasslands and agricultural areas, but focus on the particular needs of steppic birds by:
* establishing a European network of specialists to co-ordinate and promote project activities, monitor the status of steppes, conduct appropriate research and provide advice;
* reducing and eventually halting the rate of loss of existing steppes in Europe;
* re-establishing a pattern of steppic habitats within regional farming units (based on ESAs or other similarly designated zones), with these units spread across Europe in sufficient size and number to sustain viable populations of all steppic birds;
* encouraging greater awareness of the value of species-rich dry grasslands for environmental protection (e.g. combating soil erosion and purifying water) and recreation (e.g. wildlife tourism and game shooting).

Until such a project has been firmly established—and this means sustained effort well into the next century—the future outlook for some of Europe's most spectacular and familiar birds is bleak.

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Paul D. Goriup, ICBP Bustard Group, c/o The Nature Conservation Bureau, 36 Kingfisher Court, Hambridge Road, Newbury RG14 5SJ, UK.
Leo Batten, Chief Scientists Directorate, Nature Conservancy Council, Northminster House, Peterborough PE1 1UA, UK.