

**ACTION PLAN FOR THE CORNCRAKE (*Crex crex*)
IN EUROPE**



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PRE-PUBLICATION VERSION

for limited circulation

¹ now Royal Society for the Protection of Birds/BirdLife International

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Timetable

Workshop: October 1994 - Gdansk, Poland

First draft: March 1995

This draft: April 1996

Reviews

Progress towards implementation of actions and achievement of targets will be reviewed annually by BirdLife International. This document should be reviewed and updated by BirdLife International every three years. An emergency review will be undertaken if sudden major environmental changes, liable to affect the population, occur within the species range.

Geographical scope

This plan is intended for implementation in all 34 European breeding-range-states of the Corncrake: Austria, Belarus, Belgium, Bosnia-Herzegovina, Bulgaria, Croatia, Czech Republic, Denmark, Estonia, Croatia, Finland, France, Germany, Hungary, Republic of Ireland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Republic of Moldova, Netherlands, Norway, Poland, Romania, Russia (European part only), Serbia-Montenegro, Slovakia, Slovenia, Spain, Sweden, Switzerland, Ukraine, United Kingdom and Isle of Man.

Lietuviu liaudies daina	A Lithuanian folk song
Oi griezle, griezle mano, Kur buvai sia vasarele? Lankoj, lankoj, Sieneli grebiau.	Oh Corncrake, my little corncrake, Where were you this summer to stay In a mead, until late I gathered-in hay.
Uz arklio pedos tupejau, Pro pradalgele ziurejau. Greblys, greblys Man lizda ardys.	I crouched in a horse's hoof print And watched from across a swath As a rake, a rake My nest was to break.
Is rundo stikliuko geriau. Is liusto mergyte vedziau Truks plys, truks plys Smuikelio styga.	I sipped from a small rounded glass And married a pretty young lass One stroke, one stroke My fiddle-string broke.
<i>Translated by Mantas Zurba</i>	

A Latvian Folk Song	
Grieze gieza rudzīšos Paipalina pjavina; Atziet grieze no rudziem, Paipalina no pjavinas	Corncrake craked in the rye Little quail in meadow hay Corncrake leaves the rye field, Quail is out when meadow yields.
<i>Translated by Oskars Keiss</i>	

- 4 -
CONTENTS

SUMMARY	6
INTRODUCTION.....	7
PART 1. BACKGROUND INFORMATION	7
Distribution and population.....	7
Distribution	7
Population.....	8
Long-term trends.....	8
Recent trends.....	8
Life history.....	10
Feeding.....	10
Breeding.....	10
Habitat requirements.....	11
Movements	12
Threats and limiting factors.....	12
Mechanisation and earlier mowing.....	12
Loss of suitable habitat: hay meadows and wetlands.....	14
Increased predation rates.....	15
Recreational disturbance.....	15
Hunting	15
Ecological change in Africa.....	15
Pesticides and pollution	16
Conservation status and recent conservation measures.....	16
PART 2. AIMS AND OBJECTIVES	25
AIMS	25
OBJECTIVES.....	25
1. POLICY AND LEGISLATIVE	26
2. SPECIES AND HABITAT PROTECTION.....	32
3. MONITORING AND RESEARCH.....	37

4. PUBLIC AWARENESS AND TRAINING	42
REFERENCES	46
ANNEX 1 RECOMMENDED CONSERVATION ACTIONS BY COUNTRY	47

- 6 -
SUMMARY

The Corncrake *Crex crex* is a globally threatened species, classified as Vulnerable at both world and European level due to the long-term and very steep decline of the species across its range. It is listed on Annex I of the EU Wild Birds Directive and Appendix II of the Bern Convention, and it will be added to Appendix II the Bonn Convention in 1997. The Corncrake's breeding range extends over much of northern and central Europe and into Asia. It migrates in autumn, especially through Egypt, to winter in sub-Saharan Africa. There are a few wintering records from Asia and Australasia, and one recent record of a recently-captured bird on sale in Viet Nam (E. Meek *in litt.*). The estimate of the total European population is 92,000–233,000 singing males, breeding in 34 countries. Only 10 states, nine of which are in central and eastern Europe, now have populations of more than 1,000 singing males, and only Russia, Belarus and Ukraine have more than 10,000 males. Corncrakes have been declining in Europe since the last century, on average over the last 10 years by about 20–50%.

Threats and limiting factors

- * **The mechanisation and earlier dates of mowing - high**
- * **Loss of suitable habitat: hay meadows and wetlands -high**
- * **Recreational disturbance and hunting - low**
- * **Ecological change in Africa - low/unknown**
- * **Pesticides and pollution - low/unknown**
- * **Increased predation rates - unknown**

Conservation priorities

- * **Encourage policies at international level to promote extensive, grass-based farming - high**
- * **Promote policies at national and regional (within-country) level that benefit Corncrakes including the production of a national Corncrake action plan - high**
- * **Encourage maximum legal protection of key sites and of the species - high**
- * **Develop and implement a European survey and monitoring strategy - high**
- * **Establish and develop a Corncrake Research Working Group - high**
- * **Research to determine the impact of mowing on Corncrake populations and to indicate means of reducing the impact - high**
- * **Other research including monitoring effectiveness of conservation measures - high**
- * **Raise public awareness and support for the Corncrake across Europe - high**

INTRODUCTION

The Corncrake *Crex crex* is a globally threatened species, listed as Vulnerable in *Birds to Watch 2* (Collar *et al.* 1994) and is considered as Rare by IUCN (Groombridge 1993). It is listed as Vulnerable at European level (Tucker & Heath 1994) because of the long-term and very steep population decline across the continent – by about 50% over the last 20 years. The declines are thought to be due primarily to changes in grassland management on the breeding grounds associated with agricultural intensification together with loss of suitable breeding habitats, including losses through drainage.

The species is listed on Annex I of the EU Wild Birds Directive and Appendix II of the Bern Convention. In 1994 the Parties to the Bonn Convention agreed to list the Corncrake on Appendix II at their next Conference in 1997, and until then to treat it as if already listed.

As part of the preparation of this action plan a questionnaire was sent to experts in 32 of the 34 known European breeding-range-states (Bosnia-Herzegovina and Serbia-Montenegro were not approached directly), asking questions about population size and trends, ecology, threats and conservation measures. Questionnaires were completed by all 32 range-states and Croatian and German representatives supplied details for Bosnia-Herzegovina and Serbia-Montenegro. The results were collated in advance of a workshop in Gdansk (October 1994) which was attended by 45 experts from 23 range-states.

PART 1. BACKGROUND INFORMATION

The information presented here is summarised from Green *et al.* (in press), which analyses the results of the completed questionnaires and other information received from the 34 breeding-range-states.

Distribution and population

* Distribution

The Corncrake breeding range formerly extended over much of northern and central Europe between c.41°N and at least 65°N, extending into Asia in western Siberia up to 120°E. More than half the world population may breed in Asia (Russia, Georgia, Iran, Afghanistan, Tajikistan, Kyrgyzstan, Kazakhstan and China) (Collar *et al.* 1994). The distribution is now much restricted within the former range, and is fragmented in western Europe. In Europe, Corncrakes are found from sea-level up to 1,400 m in the Alps and 3,000 m in Russia.

The autumn passage of most of the world population appears to be concentrated through the Middle East and north-east Africa and especially Egypt (Stowe & Becker 1992). Corncrakes winter mainly in the savannas of south-central and south-east Africa, from southern Tanzania to northern South Africa; there are also some records from western Africa.

The Corncrake still breeds in 34 European states (its status in Albania is not known and it no longer breeds in The Former Yugoslav Republic of Macedonia and breeds only irregularly in Turkey). Only 10 states now have populations of more than 1,000 males. Nine of these are central and eastern European countries (CEEC), with more than 10,000 singing males in Belarus, Russia and probably Ukraine, and several thousand in Bulgaria, Estonia, Latvia, Lithuania, Poland and Romania. France is the only country in western Europe with over 1,000 males. Germany has the second-largest western population with c.800 singing males. Populations from Austria, Ireland, Italy, Sweden and United Kingdom are all significant in size, but those from other countries (Belgium, Denmark, Luxembourg, Netherlands, Norway, Spain and Switzerland) can only be considered relicts.

* **Population**

The most recent European breeding population estimate is 92,000–233,000 singing males, based on 1985–1994 data supplied in the questionnaires (Table 1). This is similar to the estimate of 92,000–200,000 by Tucker and Heath (1994), despite the inclusion of more precise data for nine states.

* **Long-term trends**

Corncrake populations in almost all European range-states appear to have suffered long-term declines. Declines were reported as early as the latter half of the nineteenth century in Denmark (Kjærbølling 1852) and Germany, and after 1880 in Britain and Ireland (Norris 1947, Green 1995). In France and Norway, as in other west European countries, declines were first noted in several regions early this century (Collett 1921, Broyer 1985). In central Russia declines were first reported around 1930, important declines becoming obvious in the 1950s and 1960s (Ptushenko & Inozemtzev 1968, Malchevskiy & Pukinskiy 1983, Kurochkin and Koshelev 1987). Countries now showing stable or fluctuating trends either experienced large declines previously or have been properly surveyed only recently, and reliable comparisons thus cannot be made.

* **Recent trends**

On average, Corncrake numbers fell by c.20–50% over the last 10 years in 22 European countries. Several countries such as Denmark, Ireland, Netherlands, Norway and Poland show very strong declines of more than 50%, whereas Belgium, Finland, Germany, Hungary, Italy, Sweden and Switzerland appear to have kept stable or fluctuating populations (Liechtenstein has an increasing, but very small, population). All other countries appear to have experienced declines of less than 50%.

Detailed surveys have demonstrated the alarming extent of declines in several countries. In Britain there was a 40% decline during 1978–1993, including a 17% decline during 1988–1993, and the declines in Ireland were even more severe, including 81% during 1988–1993. In France a reduction of c.40% in numbers and range occurred during 1984–1992. In western Ukraine probably more than 60% of the population has disappeared since 1976, including a 10% decline during 1988–1993. In the Netherlands the population has declined by more than 75% since the early 1980s. In Belarus, the decline has probably been greater than 10–15% in the last ten years.

Table 1. The most recent Corncrake population estimates (singing males) in 34 European range-states. Accuracy is assessed on a scale from 0 (a guess) to 3 (a census accurate to 10% of the true number). The population trend over the 10 years prior to the most recent estimate is given as –2 (decrease of >50%), –1 (decrease of 20–49%), 0 (change of <20%), F (fluctuating, with changes of >20% but no clear trend).

	Number of singing males	Accuracy code	Year of estimate	Population trend
Austria	140–180	2	1989–91	(–1)
Belarus	26,000–30,000	2	1990	–1
Belgium	17–21	2–3	1992–94	F
Bosnia-Herzegovina	300–1,000	1	1987	?
Bulgaria	1,000–2,500	2	1980–94	–1
Croatia	400–1,000	1	1990	?
Czech Republic	200–400	1	1985–89	–1
Denmark	6	3	1991	–2
Estonia	5,000	2	1993	–1
Finland	500–1,000	2	1994	0
France	1,100–1,200	3	1991–92	–1
Germany	800	2	1994	0
Hungary	350–450	2	1993–94	F
Republic of Ireland	174	3	1993	–2
Italy	250–300	0	1994	?
Latvia	3,000–10,000	2	1993	–1
Liechtenstein	8	3	1994	0
Lithuania	3,000–4,000	2	1994	?
Luxembourg	<10	0	—	–1
Moldova	450	2	1985	–1
Netherlands	30–80	2	1990–95	–2
Norway	70	2	1995	–2
Poland	6,600–7,800	1	1993	–2
Romania	3,000–6,000	0–1	—	?
Russia	10,000–100,000	1	1994	–1
Serbia-Montenegro	>100	0	1991	?
Slovakia	600–900	1	1992	?
Slovenia	>500	2–3	1992–93	–1
Spain	24–31	2	1993–94	–1
Sweden	250–1,000	0	—	?
Switzerland	4	1	1993	0
Ukraine	25,000–55,000	1	1993	–1
United Kingdom and Isle of Man	489	3	1993	–1
Total		91,668–233,333		

Life history

* **Feeding**

The diet in the breeding season includes a wide range of invertebrates found on plants, and on and within the soil. In Germany and Poland birds mainly take relatively large insects (length 5–12 mm) (N. Schäffer unpubl.). Small vertebrates such as fish and amphibians are also taken occasionally. In Scotland and Ireland earthworms and molluscs are important in the diet (G. A. Tyler unpubl. data). The principal prey (beetles, other large insects, earthworms, snails, slugs) are widespread in habitats other than those used by Corncrakes, so it appears that the species has specialised more in the structure of the vegetation that it occupies than in the food it takes. During autumn and winter the birds take mainly seeds.

* **Breeding**

Most birds arrive on the breeding grounds in May, females slightly later than males. The mean date of arrival across 28 European range-states is 21 May (30 April to 15 June).

Corncrakes are sequentially polygamous. Males advertise for mates, and probably defend territory, with a loud disyllabic song, given occasionally by day and almost continuously at night from tall ground vegetation. After being attracted to a singing male, the female associates closely with him for several days during which the male sings only infrequently (Schäffer & Munch 1993, Tyler & Green in prep.). The pair-bond breaks during egg-laying and the male then resumes singing, sometimes moving a considerable distance to a new singing area (Tyler & Green in prep.). The mean date of ceasing to sing over 24 European states was 8 July (12 June to 19 July), several weeks before the southward migration starts. Calling is heard only occasionally as late as September. Females may lay a second clutch later in the summer and may also move before doing so. Incubation and care of the chicks is by the female alone.

The nest is on the ground in dense vegetation, constructed from dead stems and leaves. The average clutch size is c.10. Nests are recorded from the second half of May to the first half of July in over half of 24 range-states; in 12 states nests are found over two months or more. Chicks are recorded from the second half of June to the second half of July in more than half of 21 states, with many states also reporting flightless chicks in August. The long period over which nests and chicks are reported suggests that production of two clutches per female may be widespread, while also being partly attributable to variation between states in the time at which breeding starts.

Observations in Scotland indicate that: incubation of first nests begins from c.20 May to 12 June and takes c.19–20 days; apart from the destruction of nests by mowing, nest success is remarkably high with 80–90% survival to hatching; chicks leave the nest soon after hatching and are fed by the female bill-to-bill; broods forage by day within 100–200 m of the nest; about half of first-brood young survive to independence (10–15 days old, flying at c.35 days) in broods in which at least one chick survives; all females which rear their first brood before mid-July incubate a second clutch for 16–18 days, starting 12 days after leaving the first brood, with a similar nest success to first broods; most eggs hatch by the end of July or early August; females stay with their second broods longer (15–20 days) and overall productivity is higher than in first breeding attempts due to

better chick survival, with 60% of chicks surviving to independence (T. Stowe *et al.* unpubl.).

At two weeks of age the distinctive calls of young birds and the females can be heard, giving reliable evidence of breeding (Schäffer 1994).

* **Habitat requirements**

Corncrakes breed in open or semi-open landscapes, mainly in meadows of tall grass. They almost always conceal themselves in tall ground vegetation. Their original breeding habitats would almost certainly have been riverine meadows of *Carex-Iris-Typhoides* and other grasslands with few trees or bushes, including high-altitude meadows. Today Corncrakes are strongly associated with agricultural grassland managed for hay and silage (Cramp & Simmons 1980). The ground vegetation of Corncrake breeding habitat needs to be over 20 cm tall in order to provide cover but not so dense that it is difficult for the birds to walk through. Most habitats selected by Corncrakes are subject to annual mowing, grazing or winter floods.

In parts of the breeding range the distribution, and probably abundance, of singing Corncrakes is strongly affected by the availability of suitable vegetation in spring. In western Scotland, where the meadow grass is too short to provide adequate cover until mid-June, on arrival Corncrakes use stands of tall herbs, such as *Urtica dioica* and *Anthriscus sylvestris*, and marsh vegetation such as *Iris pseudacorus*, *Phragmites* and *Phalaris arundinacea* (Cadbury 1980). In Germany singing males select tall ground vegetation with some robust or woody stems present, such as *Salix* bushes and the edges of reedbeds; neighbouring areas with shorter vegetation are used relatively early in the season as feeding habitats during daylight (Schäffer & Münch 1993).

Corncrakes tend to avoid the following habitats because they are too dense: stands of dead grasses from the previous year's growth; vegetation with closely spaced and robust stems or leaves, such as tussock-forming species of *Juncus*; closely spaced grasses in fertilized meadows, especially if they are pushed to the ground by wind and rain; and vegetation on abandoned meadows and other farmland after a few years on nutrient-rich soils, but perhaps not for decades after abandonment if the soil is poor, as in the Bohemian forest of the Czech Republic.

Suitable habitats include moist, unfertilized grassland and regularly cut meadows in areas of low-intensity agriculture. Across their European range hay or silage fields in valleys liable to flooding seem to be of highest importance, but the birds also breed in hay/silage fields in dry lowlands and in marshes, crops or in hay/silage fields in (sub-)alpine areas (listed in order of decreasing importance). Wetlands, in particular peatbogs (e.g. in Bosnia-Herzegovina) and the edges of marshes, provide important habitats. They may act as refuges for Corncrakes when drier grasslands are unsuitable, for example, because the grass is too short during spring or after mowing in late summer. Wetland margins are also likely to be grazed or mowed late in summer, if they are managed at all, so the risk of damage to nests, chicks and flightless moulting adults is low.

In fertilized meadows or fields sown with cereals successful breeding is believed to be infrequent, but herbaceous vegetation on field margins or fallow land may be used as alternative habitats during the harvest. Males are regularly found singing in clear-cut

forests in Belarus, Belgium, Lithuania, Poland and Russia, in pastures in Latvia and Lithuania, in young conifer plantations in Belgium, and on abandoned land, including set-aside, in Austria, Belgium, Czech Republic, Germany and Slovenia.

Corncrakes breed in some grazed habitats in which vegetation grows tall in summer. In Scotland suitable habitat has been created by grazing grassland with cattle during autumn and winter (September–February), but carrying out no grazing or mowing in summer. Removal of cattle in very early spring allows time for patches of herbaceous vegetation (especially *Urtica dioica*) to grow tall enough to harbour corncrakes in May and early June when the grass is too short for them.

* **Movements**

Autumn migration starts in August and continues until October. The main passage through Egypt is in September and the first half of October, with a peak in the third week of September (Goodman & Meininger 1989). Southward movement through Africa lasts from September to December and is linked to the occurrence of rainfall and the growth of cover (Stowe & Becker 1992).

Threats and limiting factors

* **Mechanisation and earlier mowing**

The mechanisation of hay and silage mowing and the practice of starting it earlier in the year are the greatest threats to Corncrakes across Europe by reducing nest success and the survival of chicks and adults. It is likely that most rapid declines in Corncrakes have occurred following the mechanisation of mowing – the transition from hand scything to mowing machines, at first drawn by horses and then motorised. Mowing machines threaten Corncrakes as follows.

1. *Reduced chance of nest and chicks avoiding destruction*

Compared with hand scything, with mechanised mowing it is much more difficult:

- (a) for the mower to avoid destroying nests – virtually all nests in mowed meadows may be destroyed; and
- (b) for chicks to escape from the mower into uncut grass due to:
 - the speed of operation of machinery; tractors are faster than horses, tractor-drawn mowers that cut in circles are faster than ones which mow in lines (N. Schäffer *in litt.* 1994)
 - the capability for large areas of hay/silage to be mowed in one session
 - the cutting proceeding from the outside of the field inwards, trapping chicks in the centre where they are less likely to avoid destruction
 - the increased chance that chicks which attempt to escape by crossing the open, already mowed area of the field may be taken by predators such as gulls *Larus* and White Storks *Ciconia ciconia*.

Adults are rarely killed, either during incubation or when with young or even when flightless during the moult in July/August. Adults and fledged young may fly out of the grass when close to the mower, but flightless chicks which do not break cover are often killed. In Scotland and Ireland at least 40% of chicks appeared to be killed when mowing

took place from the edge of the meadow inwards. By comparison only up to 8% of chicks appear to be killed during mowing from the centre of the meadow outwards (Tyler in prep.).

2. Increased proportion of Corncrake nests and chicks being at risk due to earlier mowing

Because it is more rapid, mechanised mowing allows the grass harvest to be completed within a shorter time. Hence, fields which would have been mowed in late summer if mowing was done by hand are harvested earlier, within the breeding period of the Corncrake. Earlier mowing also results from intensification of grass production, including a switch to silage production rather than hay.

3. Prevention of second clutches by early removal of tall ground vegetation

In many countries hay mowing removes much of the tall vegetation suitable for Corncrakes before a second clutch can be produced.

According to the questionnaire returns, on average across Europe over 60% of the Corncrake population (17–100% in different states) may be affected by the management of hay and silage meadows. Mechanisation of mowing has occurred in most parts of the European range, and in most range-states mowing with tractor-drawn mowers and forage/silage harvesters is the most common form of harvesting. However, harvesting of hay by hand or with hand-operated or horse-drawn machines is still an important method in some states (predominantly in central and eastern Europe) and high-density Corncrake populations have persisted longer here.

Most mowing of hay and silage in Corncrake areas takes place in June–July although there is considerable variation among states, some having most mowing in May–June and others in late July and August. Mowing earlier than late June will destroy the first nests and remove the tall vegetation necessary to allow the production of replacement nests and enhance the survival chances of adults and chicks. Hence in most range-states mowing is sufficiently early that there is little possibility of successfully producing a second brood in hay or silage and in some even the production of the first brood is severely threatened.

In mechanised countries, Corncrakes are often confined to marginal areas, such as high altitudes or cold wet corners of the country, where grass growth is slower and mowing is thus delayed.

Importance: high

* **Loss of suitable habitat: hay meadows and wetlands**

Loss of these habitats are important threats in many range-states.

Wetland loss

Wetlands are threatened by drainage, flood alleviation schemes on rivers, peat extraction from peat bogs, etc. Indeed the extinction of breeding Corncrakes in The Former Yugoslav Republic of Macedonia is attributed to land-claim of wetlands in the last 15–20 years (V. Maletic *in litt.* 1994).

Meadow loss

Hay/silage meadows are threatened by drainage, flooding of river valleys through creation of reservoirs (e.g. in Ukraine), conversion to arable, forestry plantations and other developments. An example is the conversion of hay meadows in France to maize *Zea mais* and sunflower *Helianthus annuus* fields (due to EU subsidies) and poplar *Populus* plantations.

Intensification

Intensification is the adoption of methods of farming that produce greater yields, with greater input of fertilizers and an increased number of agricultural operations. Intensification of management of mowed grassland includes the switch from hay to silage production and usually leads to faster grass growth and so to earlier harvesting. Intensification thus leads to increased risk of damage to Corncrakes and also to other changes that are less well understood. For example, increased fertilizer application and re-seeding could cause changes in plant species composition and physical structure of grasslands leading to reduced invertebrate prey availability and reduced penetrability of the grassland due to increased stem density. Also, the replacement of cattle and hay production by intensive sheep grazing (encouraged by sheep premium payments in the EU) can lead to the loss of suitable tall vegetation, e.g. in Scotland and parts of Ireland.

In the last five years, whereas most west European states have experienced increased agricultural intensification, most central and east European countries have undergone reductions in the intensity of farming, especially in the use of agrochemicals, resulting from the transition from state to private-run farming combined with the difficult economic situations. This trend towards extensification is likely to reverse when the economic situation in central and eastern Europe improves.

Abandonment

Abandonment, the converse of intensification, involves the withdrawal of centuries-old practices, such as hay-making. In some states agricultural abandonment due to socioeconomic factors – especially the exposure of rural communities to market forces – is a threat to habitats kept suitable for Corncrakes by traditional management. For example: the exodus of farmers from marginal and other rural areas (and areas contaminated with radioactivity from the accident at the Chernobyl nuclear power station, e.g. in Belarus), and ageing of the remaining population, causing abandonment of low-intensity grazing and hay-making at wetland margins; the reduction in cattle farming leading to the abandonment of agriculture on dry grasslands which were previously grazed or mowed (in the EU, declines in cattle, partly due to the limiting of milk production, may result in the conversion of meadows to arable or plantations). Through natural succession, abandonment can eventually lead to the development of vegetation

(grass ground layer and scrub) which is too dense for Corncrakes, although initially a temporary increase in tall ground vegetation and large insects often benefits the species (N. Schäffer unpubl.). The banning of all agricultural management following the establishment of strict nature reserves and “nature restoration projects” can thus be detrimental to Corncrakes.

Importance: high

* **Increased predation rates**

Corncrakes tend to be more vulnerable to predators when they are located in small patches of tall cover or when they have to move between patches across short vegetation. Hence a decrease in the area and continuity of suitable tall cover could increase losses of adults to predators.

In Scotland and Ireland the main proximate cause of death of radio-tagged adults was predation by mammals (otter *Lutra lutra*, American mink *Mustela vison* and domestic/feral cat *Felis catus*). In addition, deaths and injuries to untagged Corncrakes caused by collisions with fences, overhead wires and road traffic were observed. Variation between areas in adult breeding season mortality was substantial, but did not correlate with variations in population trends. In fact adult mortality was higher in an increasing population than in one which was decreasing (G. A. Tyler in prep.).

Importance: unknown

* **Recreational disturbance**

Isolated populations may be vulnerable to disturbance from birdwatchers but in general Corncrakes are likely to be relatively resilient to human disturbance. For example, numbers in a Moscow city park remained stable between 1928 and 1994 despite heavy recreational pressure. An exception may be Switzerland where the relict population may be at risk from recreational disturbance (W. Müller *in litt.* 1995).

Importance: low

* **Hunting**

The Corncrake is still a quarry species in at least two breeding-range-states, Russia and Ukraine. However, it is not usually a popular quarry: relatively few are taken and hunting is not considered likely to affect the species at population level.

An estimated 0.5–2.7% of the European Corncrake population (up to 14,000 birds) is killed each autumn as a by-catch of the netting of Quail *Coturnix coturnix* and the trapping and shooting of other species on the north coast of Egypt (Baha el Din *et al.* in prep.). The birds killed include a high proportion of juveniles. This estimated proportion assumes that no Asian breeders are taken in Egypt, though Asian Corncrakes probably do pass through the country (Stowe & Becker 1992) so the proportion of the European population at risk is even lower. Hence it seems unlikely that even the complete prevention of Corncrake killing in the coastal strip of Egypt would lead to an increase of more than c.1% in the chance that a Corncrake will survive the non-breeding season.

Importance: low

* **Ecological change in Africa**

A desk study has suggested that Corncrakes are not under threat in the sub-Saharan winter quarters (Stowe & Becker 1992). Locally, burning of grasslands or overgrazing

may have displaced birds, but no major threats have been identified, even from pesticide use. Indeed the area of suitable habitat may be increasing as woodlands are felled and cultivated areas abandoned. There is no evidence of an effect on Corncrakes of the recent droughts in sub-Saharan Africa, which are widely believed to have affected some species (e.g. Sand Martin *Riparia riparia*).

Importance: low/unknown

* **Pesticides and pollution**

There is no hard evidence regarding the impact of pesticides or pollution in breeding, passage or wintering areas. It is possible that pesticides could reduce food availability. One possible impact of pollution is that nutrient enrichment, particularly by aerial deposition of nitrogen, could change the vegetation structure, making it too dense for Corncrakes to penetrate (N. Schäffer *in litt.* 1994). In central and east European countries there has been a reduction in the use of pesticides associated with the economic pressures of the political transition period.

Importance: low/unknown

Conservation status and recent conservation measures

* **Austria**

Fully protected (including from shooting and disturbance; nest-sites, eggs and young) under the nature conservation laws of all nine counties.

Important concentrations: Lower Austria, Styria and Vorarlberg.

- The first national Corncrake survey and the first conservation measures taken were in 1994; in two areas of eastern Austria payments were made to farmers for Corncrake-friendly mowing.
- One quantitative study (unpublished) was undertaken in 1990–1991 to describe the calling habitats of Corncrakes on a military training area.

* **Belarus**

Removed from the list of quarry species in winter 1994. Inclusion in the list of protected animals anticipated winter 1994/95.

Important concentrations: widespread.

- No conservation measures have been undertaken specifically for Corncrakes.

*** Belgium**

Important concentrations: Fagne-Famenne.

A two-year programme, partly financed by the EU LIFE programme began in 1995. It entails the acquisition and management of land as well as (Wallonia only) population monitoring and public awareness.

Wallonia:

Full species protection under the Nature Conservation Law (Arrêté du Gouvernement wallon of 14 July 1994) and inclusion on the “Red List” of this law.

- RNOB manages over 80 ha of Corncrake habitat in Fagne and Famenne as nature reserves. Similar acquisition programmes are envisaged by the government.
- An annual magazine has been produced by P. Ryelandt to maintain contact between those concerned about Corncrakes, including farmers, foresters, etc.

Flanders:

Full species protection under the 1991 hunting decree.

- Corncrakes are now breeding in new nature reserves established primarily for breeding waders and wintering geese.

*** Bosnia-Herzegovina**

Important concentrations: Livanjsko Polje.

Between 1992 and 1996 Livanjsko Polje has been affected by war. If and when information becomes available, it will be necessary to review the species status and that of the site, and take action as required.

*** Bulgaria**

The species has been legally protected since 1962. The fine for any action against the species (trapping, killing, injuring, collecting eggs, chicks, etc.) was increased to 30,000 leva (US\$500) per specimen in 1995, from the fine initially imposed by a special Act 342 of the Ministry of the Environment in 1986. Included as Endangered in the national Red Data Book (Boev 1985).

Important concentrations: Sofia and Burgas regions, along the Black Sea coast, Smoljan region, the Balkans range (mainly 800–1,400 m), Dobrudja and Trakia plain.

- The Ministry of Environment is funding a BSPB project to conserve wet meadows in north-west Bulgaria.
- Four protected areas (Chokliovo Marsh, Aldomirovtzi and Dolni Bogrov, Dolni Bogrov and Vrachanski Balkan National Park) have been designated in core Corncrake areas and proposals have been made for further such designations.
- Habitat preferences were studied during 1992–1994.

*** Croatia**

Fully protected (adults, young, eggs, habitat, against disturbance) in 1981 by a special act based on the Nature Conservation Law.

Important concentrations: alluvial wetlands of the Sava river (including Turopolje, Lonjsko, Mokro, Jelas Polje), Drava and Danube floodplains and north-east of Karlovac along the Kupa river.

- About 50,000 ha of Lonjsko Polje and Mokro Polje is protected as a Nature Park.

*** Czech Republic**

Fully protected by the Nature and Countryside Conservation Law No. 114/1992 and the Appendix to Law No. 395/1992.

Important concentrations: Sumava, Krkonose, Jeseníky, Beskydy.

- Most of the main Corncrake populations are located in National Parks and Protected Landscape Areas.
- A detailed study on Corncrake habitat use is underway, involving vegetation analysis and intensive ringing and trapping, in abandoned meadows in the Sumava mountains.

*** Denmark**

Protected from shooting and trapping since at least 1967. Included in the Red Data Book as Endangered (Skov-og Naturstyrelsen 1991).

Important concentrations: Northern Jutland (Bornholm, Sealand) but the species no longer regularly breeds in Denmark.

- Environmentally Sensitive Areas were introduced in the mid-1980s with EU subsidies.
- In 1994 a conservation plan was introduced for the Ryå/Store Vildmose area in Northern Jutland (the last regular breeding site for Corncrakes, although irregular since 1984); the local authorities make agreements with the farmers for Corncrake-friendly management. Result: a male was heard singing on only one night.
- The 1992 Nature Protection Act revision provides better protection of meadows and their buffer zones to a minimum of 2,500 m² in area.
- Most of the former important Corncrake localities have some form of national protection (e.g. under the 1992 Nature Protection Act), and Varde Ådal in south-west Jutland is an SPA, but due to lack of appropriate management this protection has been insufficient to maintain the Corncrake populations.

*** Estonia**

No special protection, but not a quarry species. Protected only in nature conservation areas.

Important concentrations: widespread.

- Mowing has been delayed in Matsulu Nature Reserve.
- The Corncrake was the Estonian Bird of the Year in 1995: special attention was paid to clarifying habitat preferences, through the gathering of information on population size in different habitats, especially agricultural sites; widespread media promotion of Corncrakes will emphasise how farmers can help Corncrakes to survive.

*** Finland**

Protected since 1962, classified as Vulnerable.

Important concentrations: south-east Finland, especially southern Karelia, and the south coast.

- No conservation measures have been undertaken specifically for Corncrakes.

*** France**

Fully protected through the 1976 Nature Protection Law against shooting, capture, transport, use and persecution, including egg-collecting. Listed in the French Red Data Book as Vulnerable.

Important concentrations: Basses Vallées Angevines (BVA), Loire valley, Charente valley, Saone valley and Carentan marshes in Normandy.

- Although 80% of the national Corncrake population is concentrated in 10 IBAs, none of these sites has any legal protection.
- Voluntary schemes providing payments to farmers for Corncrake management were introduced in 1993 when 6 million francs was spent on management over c.6,000 ha (Marais de Carentan 3,100 ha, BVA 1,975 ha, Val de Soane 480 ha, Val de Meuse 400

ha) benefiting 10–20% of the national Corncrake population. The schemes are funded through the following programmes:

- Environmentally Sensitive Areas. Six ESAs have been established covering all the important concentrations mentioned above, except the Charente valley, plus Vallée de l'Oise and Vallée de la Meuse. Mowing is delayed (although sometimes not late enough for Corncrakes) and fertilization regulated. Participation of farmers is variable, e.g. in the Saone valley as much as one third of the habitat, but in the Meuse valley less than 10%.
 - EU ACNAT/LIFE. In four areas – Marais de Carentan, BVA, Val de Saone and Vallées du Nord-Est de la France (Meuse, Oise, Aisne, Chiers).
 - In 1994 a LIFE Nature programme was started to cover c.400 ha more through pilot programmes in five important areas in Val de Charente, Val de Loire, Val de Saone and Val de Seine.
 - Through the CAP mechanism, beef grazed at less than 1.4 livestock units/ha receive a premium payment of 300 francs/ha (c.£35).
 - The planting of poplars has been regulated in BVA.
 - About 600 ha of land has now been acquired and is managed as nature reserves for Corncrakes, including 180 ha by the Federation Departementale de Chasseurs du Maine et Loire, 180 ha by Conservatoire Régional Rhône-Alpes, 200 ha by LPO and 70 ha by the Conservatoire des Sites Bourguignons.
- Experiment on Corncrake-friendly mowing (centre-out) in Saone valley (1994, 1995).
 - Research on Corncrake habitat use has been undertaken (relationship between mowing dates and quality of hay and Corncrake numbers); this has included funding from the EU LIFE programme (relationship between mowing dates and site fidelity, densities and population trends).
 - EU LIFE-funded project with the Republic of Ireland and the United Kingdom.

* Germany

Fully protected by the Nature Protection Law.

Important concentrations: Unteres Odertal in Brandenburg, Murnauer Moos and vicinity in Bayern, and north-west Niedersachsen.

- In a very few local areas, mowing has been stopped around the calling sites (NGOs and nature reserves).
- In Brandenburg Biosphere Reserves, National Parks and Landscape Parks (mainly in the Oder and Elbe valleys) farmers are paid 550 DM/ha by the state authority to cut only small areas at a time (maximum 6 ha), and not more than 25% before 15 June, 50% before 30 June and 75% before 15 August. Together with four other similar programmes, the state of Brandenburg paid 18 million DM in 1994 for bird-friendly management of 50,000 ha of grassland.
- The two most important Corncrake areas have statutory protection, though not specifically for Corncrakes: Untere Oder National Park and Murnauer Moos Naturschutzgebiet nature protection area.
- In the Naturschutzgebiet “Lange Rhon” (17 calling males in 1993) 5–10% of management agreements from the “Bayerisches Naturschutzforderprogramme” delay mowing until 1 August (prior to 1992 the date was only 10 July). Also since 1992, farmers have voluntarily been leaving 5–10% of their meadows uncut under the “fallow-strip-concept”. In November 1994 a new guideline for management agreements was introduced by the Bavarian State Ministry for the Environment providing much better possibilities for Corncrake management.

- Radio-tracking studies in 1991 on habitat use and breeding biology.
- Scientists from Germany and Poland are undertaking an intensive study during 1992–1994 including fieldwork in north-east Poland and also Czech Republic, Germany, Slovakia and Russia. Investigations cover: habitat use, mating system, breeding biology, vegetation structure, availability of food, feeding ecology, predation, biometry, migration, individuality of calls, calling groups and determination of sex and age. Methods include trapping (700 birds so far), radio-tracking, counts of calling males, attracting migrating birds using tape-recorders, measurements of vegetation structure and food availability, DNA-fingerprinting and analysis of faeces. Six birds are being kept in captivity and in 1994 the first successful captive breeding occurred.

* **Hungary**

Strictly protected since 1988.

Important concentrations: Bodrogkoz, Hansag, Bodva-volgy.

- A new protected area has been designated.
- During 1990–1993, 100,000 HUF was spent on Corncrake conservation measures and a further 100,000 HUF on population surveys.

* **Republic of Ireland**

Fully protected, being listed on Schedule 1 of the Wildlife Act 1976. Listed in the Irish Red Data Book as Endangered (Whilde 1993).

Important concentrations: Shannon Callows, northern Donegal and Mayo.

- Introduction of Rural Environment Protection Schemes (ESA equivalent) from 1994, including specific management prescriptions (delayed and centre-out mowing, habitat creation measures) on Natural Heritage Areas (statutory sites) important for Corncrakes.
- National Parks and Wildlife Service/IWC voluntary payment schemes to farmers for Corncrake management began in 1992 in northern Donegal (1992 £2,785, 17% take-up; 1993 £2,457, 20% take-up; 1994 £5358, c.60% take-up) and were extended to the Shannon Callows (1993 £16,638, 30% take-up; 1994 £70,640, 80% take-up) and Moy valley (1994 £10,215, c.55% take-up).
- IWC is acquiring land on the Shannon Callows (21 ha so far).
- Radio-tracking studies have been undertaken by IWC/RSPB in the Shannon Callows during 1992–1994.
- EU LIFE-funded project with France and the United Kingdom.

* **Italy**

Fully protected (from hunting, and taking and destruction of nests, eggs and chicks) under the National Law on Fauna Protection and Shooting Regulation (L. 157/92). The species was removed from the quarry list in 1978 prior to which it was mainly shot in August, during migration.

Important concentrations: province of Udine in Friuli-Venezia Giulia region, Veneto region especially Vicenza and Treviso provinces.

- The Osservatorio Faunistico for the province of Udine commissioned a preliminary report on the species in 1994. A researcher was funded to assist with the Italian national survey in 1995. LIPU is continuing survey work in other provinces in 1996.

* **Latvia**

Fully protected since 1980 (including eggs, young and nests) by the regulation on particularly protected nature objects (territories and species). Included in the Latvian Red Data Book in

category 2, “declining” (Andrusaltis *et al.* 1985). (Proposed to be “vulnerable with continuing declines”: Lipsbergs *et al.* 1990.)

Important concentrations: widespread.

- A small proportion of the population breeds in existing and proposed protected areas.
- Surveys were carried out in some areas in 1989–1994 to determine numbers, trends, habitat selection and important sites for protection.
- Public awareness was raised in 1995, the European Nature Conservation Year, by depicting the Corncrake on postage stamps and by an associated information booklet.

* **Liechtenstein**

Fully protected. Included in the Red Data Book as Endangered.

Important concentrations: Ruggeller Riet.

- No conservation measures have been undertaken specifically for Corncrakes.

* **Lithuania**

Fully protected by the regulation on particularly protected nature objects. Included in the 1990 Red Data Book as an indeterminate, insufficiently studied species (fourth category).

Important concentrations: Nemunas valley and delta, Jura valley, central Lithuanian plain, Katra valley.

- In 1992–1993 surveys were carried out in about half of the administrative districts.
- In 1995 the first popular publication on Corncrake protection was produced.

* **Luxembourg**

Fully protected by the National Bird Protection Law (1928). Listed in the National Red Data Book in Category 2.1, “endangered with extinction” (Weiss 1992).

Important concentrations: near Fentage, Erpeldange/Bous and Pissange.

- No conservation measures have been undertaken specifically for Corncrakes.

* **Republic of Moldova**

Protected, i.e. shooting is banned. Not included in the national Red Data Book.

Important concentrations: north-west, east and south-west Moldova, especially the middle Prut valley.

- Environmentally Sensitive Areas have been established in the middle Prut valley.
- The state has established the following reserves: Padurea Domneasca (seven males), Plaiul Fagilui (five males), Codrii (three males) and Prurul de Jos (two males).

* **Netherlands**

Fully protected under the Bird Act 1936 (from shooting, damage to eggs and young, deliberate disturbance). Included in the Red Data Book as endangered and vulnerable (Osieck & Hustings 1994).

Important concentrations: Rhine-Waal-Yssel river forelands and arable land in north-east Groningen province (although the latter is declining sharply).

- Thirteen IBAs regularly hold 1–5 singing males, between them accounting for 32% of the national breeding population (23% in the five best sites) (Van den Tempel & Osieck 1994). Only two of them (Oostvaardersplassen, Brabantse Biesbosch) are designated SPAs, holding 2% of the population. All 13 IBAs are at least partly protected by national law and/or owned by nature protection organisations. Although none are managed specifically for Corncrakes, managers usually take care when a singing male is present.
- Some small reserves have been established for Corncrakes, e.g. in the early 1960s the Dutch State Forestry bought an area in the Sliedrechtse Biesbosch (no longer managed specifically for Corncrakes, but it had on average five singing males in 1989–1991) and in the late 1970s and early 1980s it acquired land with singing Corncrakes in the Rhine area close to the German border (Ooypolders).
- During 1968 to 1986 over 500 birds were ringed, and research was undertaken on habitat use, territorial behaviour and movements (van den Bergh 1991).
- During 1984–1987 an extensive study was made of numbers, distribution and habitat selection in the agricultural north-eastern part of Groningen province (Voslamber 1989). Surveys continued to 1992 and were carried out again in 1995 (K. Koffijberg pers. comm.)

* **Norway**

Under the 1981 Species Protection Act as revised in 1993 Corncrakes are fully protected from shooting, nest-destruction and disturbance, and adults, nests, eggs and young receive special protection during the breeding season. Included in the Norwegian Red List of vertebrates (Christensen & Eldøy 1988) and the Norwegian Red List (DN rapport 1992-6).

Important concentrations: Co. Rogaland, Møre and Romsdal, Akershus and Buskerud.

- Negligible numbers occur in protected areas.
- A national survey of Corncrakes was carried out in 1995, in which 70 calling males were found
- A brochure promoting corncrake-friendly farming practices was widely distributed in 1995.

* **Poland**

Fully protected under the Species Protection Act. Not listed in the Red Data Book for birds.

Important concentrations: Narew valley, Biebrza valley, Przemysl and Krosno areas and perhaps the foothills of the Bieszczady mountains.

- Most of the Biebrza valley was declared a National Park in 1993.
- German and Polish scientists are undertaking a major investigation on Corncrakes during 1992–1994 (see “Germany”, above). Study sites include the Narew and Biebrza valleys. In 1994 c.200 ha of meadows were rented as a study area where early mowing was avoided.

* **Romania**

Not protected under the 1973 nature protection law (9/1973). Included in the new Red Data Book published in 1995.

Important concentrations: widespread.

- No conservation measures have been undertaken specifically for Corncrakes.

*** Russia**

A quarry species, and not protected under any special laws. Will be included in the Appendix of the Russian Red Data Book as a species requiring special control, but not special protection.

Important concentrations: widespread.

- No conservation measures have been undertaken specifically for Corncrakes although the species is protected within strict nature reserves (Zapovedniks) along with other bird species.
- In 1994 censuses were made in areas where there had been previous counts of Corncrakes. In addition, surveys carried out in three river valleys (Oka, Moskva and Msta) showed that Corncrake densities were high enough for the valleys to qualify as IBAs.

*** Serbia-Montenegro**

Important concentrations: in Serbia, Vojvodina, especially Sava and Danube valleys; in Montenegro, Lake Plavsko jezero at the head of the Lim river.

*** Slovakia**

Protected since 1 January 1995 (against trapping, and taking of eggs or young) by the Law of the Slovak Parliament no. 287/94 on the conservation of nature and landscape. A special notice on the conservation of animals, connected to this general law, is currently in preparation and will include protection of nests, habitats and designation of special reserves for the Corncrake. Listed as Vulnerable in the former Czechoslovakian Red Data Book and also probably in the new Red Bird List for Slovakia (in preparation).

Important concentrations: widespread.

- During the last decade no special measures on research or protection of the Corncrake have been undertaken.
- The state nature conservation authorities have legal powers to restrict activities affecting the Corncrake, but these have not been implemented due to a lack of the funds necessary for Corncrake-friendly management.
- A management plan is being prepared for meadows in the Záhorie area.
- A Group for the Protection of the Corncrake is currently being established by the Slovak Agency of Environment (responsible to the Ministry of Environment).

*** Slovenia**

Fully protected (from hunting, and destruction of nests, eggs, chicks and habitat). Included in the Red Data Book as Endangered.

Important concentrations: Lake Cerknisko, Ljubljansko barje, west Julian Alps, Planinsko polje, Reka valley.

- A full national survey was carried out in 1992–1993 by DOPPS, plus some ringing.
- No conservation measures have been undertaken specifically for Corncrakes.

*** Spain**

Legally protected (from shooting and harm to eggs, young and nest, but not from damage to habitat) and classified as “of special interest” in the National Catalogue of Threatened Species (Royal Decree 439/90). Included in the Red Data Book as Indeterminate (ICONA 1986).

Important concentrations: Cinca basin, Ebro depression in Catalonia.

- The Catalonia Government has established two reserves: Llobregat delta (one male in 1984, 1993) and Montenegre mountain, Tordera (two males since 1990). No conservation measures have been undertaken specifically for Corncrakes.

* Sweden

Fully protected from hunting and habitat damage under a Schedule of the Wildlife Act.

Important concentrations: Oland, Gotland and Uppland.

- Radio-tracking studies have been undertaken during 1992–1994 in South Oland to investigate the relationship between habitat, mowing and breeding success.

* Switzerland

Protected under the Bundesgesetz über die Änderung des Bundesgesetzes über Jagd und Vogelschutz vom 1962. Protected under the Federal law on hunting and bird protection, Bundesgesetz über die Jagd und den Schutz der wildlebenden Säugetiere und Vögel vom 1986, from shooting, damage to nests eggs and young, and disturbance at the nest. Swiss Red Data Book, category 2, Endangered (Zbinden *et al.* 1994).

Important concentrations: Neuchatel and Vaud cantons of the Jura mountains.

- There has been a general change in agricultural policy to less intensive agricultural management of meadows.
- No Corncrakes breed in protected areas.

* Ukraine

A quarry species, fully protected only in state Nature Reserves and partially protected in other nature protected areas. Not included in the New Red Data book of Ukraine.

Important concentrations: north-eastern and central Ukraine.

- No conservation measures have been undertaken specifically for Corncrakes.

* United Kingdom

Fully protected under schedule 1 of the Wildlife and Countryside Act 1981 (in Britain) and Wildlife (Northern Ireland) Order 1985. A national action plan for this species was published in 1996 by the biodiversity steering group set up under the UK Biodiversity Action Plan (1994).

Listed in *Red Data Birds in Britain* (Batten *et al.* 1990).

Important concentrations: Western Isles, Inner Argyll Islands, Orkney.

- Through the EU Common Agricultural Policy (CAP) mechanism beef grazed at less than 1.4 livestock units/ha receive a premium payment.
- ESAs are established in the Western Isles, Inner Hebrides and Co. Fermanagh by government agriculture departments.
- Voluntary schemes are run throughout the range of the Corncrake to encourage delayed mowing and Corncrake-friendly mowing in strips or centre-out.
- SNH has established a scheme to promote the growing of late-cut hay in Skye. However this is not targeted particularly at Corncrakes and there is no options for the provision of early cover so no Corncrakes are present in the area covered by the scheme despite the spending of £2,002 over 51 ha in 1993 and £2,500 over 60 ha in 1994.
- Around the RSPB reserve of Balranald the RSPB established a hay scheme paying £2,600 in 1993 and (with the addition of an option to increase early cover) £5,600 in 1994. Numbers have increased from 11 in 1992 to 13 in 1994.
- RSPB has established three reserves: Coll, 18 males in 1994; Balranald (North Uist), 13 males in 1994; Loch Gruinart, five males in 1994.

- Full surveys carried out 1978–1979, 1988 and 1993, with annual population monitoring of the majority of the United Kingdom population (since 1992 in Scotland and since 1990 in Northern Ireland).
- Radio-tracking studies carried out in 1985–1987 (RSPB with Nature Conservancy Council funding) and 1993–1994 (RSPB), on habitat selection, timing of breeding and the effect of mowing on breeding success.
- The benefits to the crofting community of Corncrake-friendly management have been promoted (by RSPB and the Scottish Crofters' Union).
- EU LIFE-funded project with the Republic of Ireland and France (see below).

PART 2. AIMS AND OBJECTIVES

AIMS

1. To prevent any further declines below 1994 levels in the population size and distribution of the Corncrake in Europe (so removing the species from BirdLife International's *World List of Threatened Birds* (Collar *et. al.* 1994)).
2. To ensure the recovery of small breeding populations of Corncrake at risk of extinction.

OBJECTIVES

THE POLICY OBJECTIVES SET OUT IN THIS SECTION SHOULD ALL BE AIMED AT ACHIEVING THE FOLLOWING DETAILED HABITAT MEASURES

Maintain or increase the area of habitats suitable for Corncrakes

- Natural habitats that require minimal human interference to maintain their suitability or Corncrakes (highest priority).
- Most habitats used by Corncrakes require low-intensity grassland farming management to keep the vegetation structure suitable.
- Land-claim, conversion to arable, intensification and abandonment of farmed habitats should be discouraged. Habitat restoration should be encouraged.

Manage suitable habitats in a Corncrake-friendly way

Sustainable extensive grass-based farming to benefit Corncrakes, which usually involves mowing, requires either:

- Continuation of traditional unmechanised methods (mainly in central and east European countries)
 - maintain, as appropriate, farm size (small), type, (extensive, grass-based) and diversity (not monoculture) or
- Modification of mechanised methods (mainly western Europe)
 - reduce agrochemical inputs
 - grow late-cut hay or silage
 - discourage faster machinery such as circle mowers
 - Corncrake-friendly cutting (delay cutting; cut in small compartments over a long period; cut from centre to edges or in strips)

Both systems require sustainable rural communities with sufficient farmers to undertake the necessary management, which will be relatively labour-intensive, at least in unmechanised

systems.

- Maintenance or development of tall ground vegetation throughout the season near or adjacent to hay meadows
 - Careful control of the timing and stocking density of grazing.

1. POLICY AND LEGISLATIVE

1.1. To encourage policies at an international level that benefit Corncrakes

1.1.1. Encourage international agencies and governments in bilateral arrangements to promote extensive, grass-based farming through all their investment and agricultural policies, trade agreements and legislation

Organisations, particularly the World Bank, International Monetary Fund (IMF), World Trade Organisation (WTO), Organisation of Economic and Cultural Development (OECD), Food and Agriculture Organisation (FAO), North Atlantic Treaty Organisation (NATO), European Bank for Reconstruction and Development (EBRD), European Union (EU) and Council of Europe (CoE), which have influence over recipient country national policy development should promote sustainable rural development which maintains Corncrake habitats and encourages Corncrake-friendly management practices.

Aid to countries in central and eastern Europe

Agencies which provide aid to countries – especially World Bank, EBRD, FAO, IMF, EU and also national governments in bilateral arrangements – should promote sustainable rural development which benefits Corncrakes. For example:

- Assess the environmental consequences of international aid for investment in agricultural and other development, e.g. through EU strategic environmental assessment legislation.
- Minimise schemes and grants that could damage important sites or promote intensification, damaging changes to farm structure (e.g. size, type and diversity), or other damaging effects.
- Allocate a minimum 10% of support to rural areas for environmentally sensitive farming, with Corncrake habitats a clear priority. Direct funds to (1) rural development projects that retain small-scale farming communities whose practices are extensive and (2) specific farming schemes to benefit wildlife.
- Attach environmental conditions to aid, e.g. conditional on signing the Biodiversity Convention (see 1.1.5).

Conditions attached to agreements on trade

It is recommended that environmental conditions should be attached to all relevant trade agreements (e.g. the EU Association Agreements – the political and trade agreements between the EU and central and east European countries) which affect land use. Conditions which could harm extensive farming, such as those which require land privatisation as a condition of trade concessions, should be assessed and minimised.

Priority: high

Time-scale: ongoing

1.1.2. Encourage the development of sustainable agriculture and adequate nature conservation legislation, funding and action at the same time as economic development

Political and economic developments in Europe, including accession of more countries to the EU, will lead to further development of the economies of “marginal” areas through financial assistance, e.g. Structural Funds and PHARE (EU aid to central and east European countries). As central and east European countries undergo transition to a market economy, prices and living standards will rise and farming and other industries will re-adjust to market conditions. This will mean pressure on natural and farmed habitats from land-claim and intensification or abandonment of farmed land. However, the rapid changes in farming expected in Europe will create opportunities for conservation as well as threats.

Enhance levels of nature protection

The development of rural areas in Europe will need to be matched by increased environmental standards. The central and east European countries will need to adopt a similar level of nature protection legislation and policies to those of the EU, and to ensure channelling of adequate resources for nature protection institutions, science and projects.

Promote environmentally sensitive farming

Policies that are being pursued to adjust farming structures, e.g. grant aid for farm amalgamation and development, should be used to benefit the environment, and avoid causing incidental damage.

Most scope for conservation action through influencing farmers financially in the short term is through payments for sympathetic management under policies such as those adopted in the EU under the Agri-environment Regulation 2078/92 and related measures. There is the potential in the medium term to have similar measures adopted in central and east European countries on their accession to the EU or through aid programmes.

It is recommended that EU agricultural policy be reformed to support extensive farming, shifting support for production towards support for environmental management, particularly through schemes based on Regulation 2078/92, but also through commodity reforms, Less Favoured Area policies, etc. The EU could draw up a list of potential ESAs which would benefit the Corncrake. The EU could also promote policies with low subsidies for production and high subsidies for environmental management within central and east European countries.

In central and east European countries, support (e.g. through capital grants for equipment) is needed (1) to prevent abandonment and ensure continued agricultural management where this is required to maintain Corncrake habitats, and (2) to encourage the extensive management practices characteristic of good Corncrake habitat.

'Debt for nature' agreements, under which creditor states relieve the foreign debts of a country in exchange for appropriate conservation policies and their effective implementation, should be developed as an important potential source of funding for Corncrake conservation work, including reserve management costs (see 2.1.3.2).

Priority: high

Time-scale: ongoing

1.1.3. Encourage international agencies, especially the EU, Council of Europe and national governments cooperate to promote actions 1.1 and 1.2

Many governments and agencies have aid and assistance programmes in central and east European countries. These should be coordinated, and assistance given to developing environmentally sustainable policies and practices by using PHARE, TACIS etc., to support technical exchange and networks of policy specialists.

Experts throughout Europe, in agri-environment policy, agricultural land management for wildlife, particularly Corncrakes, should establish a network to:

1. Develop a strategic programme of policy analysis, development and promotion,
2. Exchange information,
3. Develop policy ideas for Corncrake conservation,
4. Monitor trends in agricultural policies affecting the central and east European countries in relation to potential risks and opportunities for Corncrakes.

Such a network should consist of western and eastern experts drawn from government agriculture and environment ministries, NGOs including BirdLife International and independent experts.

A conference to prepare an agri-environment action plan for transition to the EU took place in May 1995, in Hungary, organised by BirdLife International, with support from the EU and from EU governments.

Priority: medium

Time-scale: ongoing

1.1.4. Consider the implications for Corncrakes of international flows of private capital investment in agriculture

Many EU (and U.S.A.) businesses are investing in central and east European countries' agriculture (e.g. Bernard Matthews, Sentry Farming, Velcourt Farming) and are having a big impact on land use. This should be examined with a view to assessing the likely impacts on Corncrakes and the potential for influencing private capital investment in favour of Corncrakes.

Priority: medium

Time-scale: ongoing

1.1.5. Encourage all relevant international conventions to give Corncrakes maximum protection and all Corncrake range-states to sign and ratify these

The Corncrake already receives maximum protection through the Bern Convention and the EU Wild Birds Directive. Protection could be strengthened, however, e.g. through official addition of the species to Appendix II of the Bonn Convention (this will be addressed in 1997).

Ratification of these conventions represents the minimum level of protection necessary for a species such as the Corncrake which is widely dispersed and dependent on specific management.

Hence, such commitments and legal agreements must be complemented by habitat management achieved through projects and policies (see 1.1.1–1.1.4, 1.2).

Priority: medium

Time-scale: medium

1.2. To promote policies at national and regional (within-country) level that benefit Corncrakes

1.2.1. Encourage all range-states to prepare a national Corncrake action plan

Using this international action plan as a basis, each country should be encouraged to prepare a national plan. This should use the best available information on Corncrake populations, habitat requirements and ecology to determine measurable national population targets for Corncrakes and to define the conservation actions necessary to achieve these targets within an agreed timescale. The plans should specify clearly which organisations are to implement each action. Such action plans will contribute to each signatory country's commitments under the Biodiversity Convention. A strategic habitat approach is also to be encouraged. The Corncrake is a priority species for the forthcoming Habitat Strategy for Agricultural Habitats being prepared as one of eight habitat strategies for birds by BirdLife International (Tucker in press). This will provide a framework for habitat action planning at national level.

Priority: high

Time-scale: short

1.2.2. Encourage all range-states to give the maximum appropriate legal protection to Corncrakes and their habitats

National nature protection legislation should be maintained or enhanced to give the Corncrake full protection, including through adequate site protection legislation. Corncrakes already receive full protection in all EU states plus Belarus, Bulgaria, Croatia, Czech Republic, Latvia, Norway, Poland, Slovenia and Switzerland. Legal protection needs to be strengthened in Estonia, Lithuania, Romania and Slovakia and especially in Russia and Ukraine where the Corncrake is still listed as a quarry species. All range-states should be encouraged to list the Corncrake as a species which justifies the designation of protected areas.

Priority: high

Time-scale: medium

1.2.3. Encourage national rural policies and legislation that are amended or introduced in an integrated manner to the benefit of Corncrakes

Government officials in agriculture, environment, water, forestry, rural and regional development departments and environment and nature conservation agencies should promote the reform of rural policies. Politicians in national governments and their advisers should be encouraged to lead this process. Agricultural advisory bodies, institutes, farmers' organisations and universities should also be lobbied to promote change (see also 4.1.2).

All rural land use policies should be closely integrated, with nature conservation objectives tied closely to other policy objectives. In particular, it is recommended that the emphasis of agricultural policies should change from food production only, to include conservation of the countryside, including nature conservation.

For the Corncrake to benefit from changes to rural policy, it could be used as a flagship species to promote extensive, grass-based farming (while keeping in mind the requirements of other

priority species). It is recommended that specific targets for Corncrake conservation should be developed in national biodiversity plans and these should be supported within national rural policies for other economic sectors.

Within the EU, the Structural Funds should promote rural development initiatives that will help sustain rural economies and communities in areas with Corncrake-friendly farming systems. Such initiatives could include marketing and processing of the produce of extensive farming systems, wildlife-based and other sensitive tourism (see 1.2.3.4), and other small-scale business development. It is recommended that all such EU-funded programmes should be subject to strategic environmental assessment to ensure that they have no adverse impacts on Corncrakes.

Priority: high
Time-scale: ongoing

1.2.3.1. Encourage national policies on land tenure (especially privatisation), farm restructuring and capital investment aid for agricultural “improvements” (meliorations) that favour Corncrakes

Many agricultural policies are determined at a national level, e.g. land tenure (including privatisation) and capital grant aid to farmers. The potential of these policies to harm Corncrake habitat, especially through intensification, should be minimised. For example, grants for amalgamation of fields and farms should ensure that small-scale mosaics of grass-based farming are retained and either (1) sufficient numbers of farmers are retained for continuation of traditional labour-intensive practices or (2) provision is made to compensate for loss of yield due to delayed mowing using Corncrake-friendly methods. However, governments should not normally provide capital funding for intensification of agriculture through land-claim, drainage, farm amalgamation and acquisition of machinery in any areas important for Corncrakes.

Priority: high
Time-scale: ongoing

1.2.3.2. Encourage national policies on taxation and employment legislation in relation to agriculture that include specific reference to balancing the needs of economic development with conservation

Many general policies that are not specific to agriculture (e.g. tax and employment legislation) have the potential to detrimentally affect the structure of farming and farming practices. One example is the saving of tax by the purchase of agricultural machinery. Another is land taxes on hay meadows and wet grasslands (or even penalties to ensure intensive use or afforestation). Such policies encourage intensification and could be altered (e.g. by removing or reducing the taxes) to encourage the labour-intensive, grass-based farming systems needed by Corncrakes.

Priority: medium
Time-scale: ongoing

1.2.3.3. Encourage the allocation of funding to pay farmers for Corncrake-friendly management, targeted at key areas

In EU member states, the agri-environment regulation 2078/92, extensification and ESA policies should be promoted and targeted at important areas for Corncrakes, with appropriate prescriptions. In countries about to, or planning to, join the EU, it is recommended that similar schemes should be developed, promoted and targeted at Corncrakes.

Management agreement schemes, designed specifically as hay meadow or Corncrake schemes, should aim to maintain, and where possible increase, the area of hay meadows and wetlands and

manage these in a Corncrake-friendly way (see Summary of Main Actions above). The schemes should have clear and measurable nature conservation targets, linked to international conventions, especially the Biodiversity Convention, and comprehensive monitoring of their results should be undertaken. To establish and successfully implement such schemes, publicity and campaigning, based on careful strategy, will be necessary to demonstrate the need for them, their feasibility, take-up of options by farmers, etc.

Funding for such schemes should come from agriculture budgets where possible, from within the Common Agricultural Policy (CAP) in the EU (especially regulation 2078) and from sources such as EU PHARE, World Bank, EBRD, IMF and bilateral aid in central and east European countries. Where funding from state agriculture departments is still under negotiation the state nature conservation authorities, with assistance from conservation NGOs as appropriate, could introduce Corncrake grant schemes in strategically targeted areas (only where agricultural intensification is a problem). As well as protecting the local Corncrake populations the areas where these “pilot” or “model” schemes are taken up can act as trials and demonstrations of Corncrake-friendly practices.

Conservation organisations should identify priority areas, sources of funds and collaborators in farming organisations to implement the schemes (see 4.1.2, below). Sometimes, a Corncrake grant scheme will be a “top-up” of existing extensification or conservation schemes and sometimes it will be a separate scheme. It should be noted that in certain central and east European countries where farmers have suffered from recent economic crises, payment schemes are likely to be particularly effective.

Priority: high
Time-scale: ongoing

1.2.3.4. Sensitive development of ecotourism, where appropriate

In some important Corncrake areas, especially outside the central and east European countries, ecotourism could bring benefits, for example by providing funding for appropriate management as well as by raising public support for the Corncrake. However, this industry should be developed sensitively – promoting the Corncrake in the context of its landscape – and only where it is possible to carry it out with no detriment to Corncrakes or other wildlife.

Priority: low
Time-scale: ongoing

1.2.4. Ensure development of strong NGOs with competence in Corncrake conservation in all range-states

Strong NGOs with expertise (well-trained staff) and resources (including well-informed members) are essential to ensure Corncrake conservation through, for example:

- Encouragement of, and cooperation with, governments in the funding and management of Corncrake-friendly practices (see 1.2.3.3).
- Reserve acquisition (2.1.3.1).
- Research to inform national policies and advice on Corncrakes (3.1–3.11).
- Undertaking education and awareness-raising work on the plight and requirements of the Corncrake (4.1–4.2).
- International liaison and cooperation on Corncrakes including:
 - Corncrake research (see 3.11);
 - exchanging experiences and advice on education and training of farmers, conservation officials, etc., and the preparation of management plans (see 2.2);
 - raising awareness and generating international solidarity to encourage national governments to make commitments to Corncrake conservation (see 2.2).

Priority: high

Time-scale: ongoing

1.2.5. Re-creation of Corncrake habitat in areas of former importance for the species

In several west European countries, much of the best Corncrake habitat has been destroyed through drainage, land-claim and conversion to arable, etc. In recent years, some governments (e.g. Denmark) have granted an annual sum for re-establishment of habitats formerly important for wildlife, and part of this should be targeted towards re-establishment of Corncrake habitats. It should be emphasised that Corncrake habitats also benefit other threatened species, e.g. White Stork, Garganey *Anas querquedula*, Black-tailed Godwit *Limosa limosa*, threatened amphibians, plants (e.g. orchids) and many others.

Priority: medium

Time-scale: ongoing

2. SPECIES AND HABITAT PROTECTION

2.1. To encourage adequate protection for key Corncrake sites

2.1.1. Identify key Corncrake sites that qualify as Important Bird Areas

It is essential to identify all key European sites for breeding Corncrakes and ensure that they are listed as Important Bird Areas (IBAs) according to agreed BirdLife International criteria (BirdLife International in prep.). The most appropriate criterion for selecting Corncrake IBAs is that “the site holds significant numbers of one or more globally threatened species”. A definition of “significant” has not yet been finalised. A conservative estimate of 1% of the European population is 900 calling males; only about a third of the range-states (as few as 10) have a total population at that level, and, due to the dispersed distribution of this species, very few, if any sites would have numbers which met this threshold.

New Corncrake IBAs should be identified in the light of results of the forthcoming European Corncrake survey (3.1.1). For large countries of apparent importance for Corncrakes but where Corncrake surveys have not yet been carried out at all, (e.g. Belarus) or have only just started (e.g. Russia), the following procedure for identifying Corncrake IBAs should be followed:

1. **Set priorities** by ranking habitats in order of Corncrake density and productivity on the basis of data from previous research in sample areas.
2. **Get complementary preliminary information** on Corncrake densities (and productivity where possible) in the different habitat types and regions including verification of rankings in 1, above. Existing distribution, or other data on Corncrakes from local people, including ornithologists, should be collated, even though few data may be available.
3. **Identify potential IBAs** on the basis of suitable Corncrake habitats (manual methods of map analysis, GIS, satellite images, etc.), making use of existing vegetation and land use maps as appropriate. Where it is impossible to undertake Corncrake surveys, IBAs could be identified solely on the basis of this habitat assessment. Otherwise:
4. **Undertake special surveys** in a sample of sites (selected to be a representative of the various Corncrake habitats, established in 2, above) to determine the number of Corncrakes included within each potential Corncrake IBA, and the boundaries of the site.
5. **Rank IBAs** according to Corncrake numbers and reassess the threshold population size used to identify IBAs if necessary (according to the current national population size and number of sites selected).

During this process the following should be taken into consideration:

- Sites with successful breeding and near-natural or natural habitats with small or no human impact and restricted management should be given priority (in the absence of data on breeding success the prevalence of late and Corncrake-friendly mowing should be taken to indicate probable breeding success).
- Widely standardised habitat definitions (as currently being developed by BirdLife International for IBAs) should be used to ensure comparable results across the range of the species (see also 3.6).

Priority: high
Time-scale: short

2.1.2. Encourage optimum statutory protection for important Corncrake sites

2.1.2.1. Identify and encourage the statutory designation, as appropriate, of all internationally and nationally important Corncrake sites

Each range-state should be encouraged to identify all Corncrake sites, including IBAs, that qualify for statutory site protection under relevant existing international and national legislation. Each range-state should determine the target proportion of the national Corncrake population to be encompassed by statutory site protection measures. This will depend on the Corncrake status, strength of statutory site protection in that country and adequacy of alternative means of securing requisite habitat management including wider countryside measures.

Range-states should be encouraged to evaluate the adequacy of statutory site protection measures which can be applied to Corncrake sites, in terms of the range of controls over land use, efficacy of enforcement, scope of coverage of land types, etc. Any deficiencies in the system or its application should be rectified. National policies for statutory site designation should recognise that sites which are important for Corncrakes, and are in agricultural rather than natural biotopes, and which are not necessarily of very high biodiversity, should be considered for designation.

Important international site designations for Corncrakes under international legislation include Biosphere Reserves and IUCN Category 2 National Parks throughout the range and, in the European Union, SPA/Natura 2000. IUCN Category 2 National Park status may be preferable where Corncrakes occur in natural habitats, whereas Biosphere Reserve buffer zones may be more appropriate where their habitats depend on agriculture. Other relevant international designations are Ramsar and World Heritage sites and Council of Europe Biogenetic reserves. National (and regional, as appropriate) governments and statutory conservation agencies, with support from Convention Secretariats where necessary, are encouraged to ensure that all Corncrake sites which would benefit from statutory site protection are designated, including all IBAs. The particular mechanism(s) selected for each site should be that which affords it the strongest protection and best opportunities for Corncrake-friendly management. In some cases landscape conservation designations will be as relevant as those for biodiversity conservation purposes. It is recommended that the highest possible level of statutory protection should be secured for all IBAs listed for Corncrakes (see 2.1.1) by 2004.

Priority: high

Time-scale: long

2.1.2.2. Encourage Corncrake-friendly management policies and practices on all proposed and existing statutory sites for Corncrakes, taking account of the requirements of other high priority species (birds and others) where appropriate

It is essential that all relevant statutory sites – both biological and landscape – have management plans, preferably published, which include policies and prescriptions for Corncrakes to ensure that site management benefits Corncrakes as well as other priority species. As part of these management plans it is essential that managers of protected sites monitor trends in Corncrake populations in relation to management practices, and take account of their findings in modifying management where necessary. In central and east European countries, local NGOs and experts (supported as necessary by foreign governments, experts and international NGOs), should advise on legislation, policy and management to optimise the management of national protected sites for Corncrakes.

Priority: high

Time-scale: ongoing

2.1.2.3. Protect Corncrake sites from damaging developments

The statutory protection afforded to a site by its designation is only as good as the scope, application and enforcement of relevant legislation. Corncrake sites face a range of development threats such as individual land use development projects involving integrated rural development, industrial and housing developments, land drainage schemes, afforestation proposals and inappropriate tourist developments. Any potentially damaging developments which are on Corncrake sites or are otherwise likely to affect Corncrakes should be opposed or modified. Such developments and changes of land use should be subject to an adequate environmental impact assessment of both their individual and cumulative impacts.

Priority: high/medium

Time-scale: ongoing

2.1.2.4. Seek to obtain the maximum benefit from international conventions in protecting sites for Corncrakes

In addition to 1.1.5 above, international convention secretariats are encouraged to assist in ensuring that member states designate all key sites for Corncrakes under the relevant conventions, as appropriate, e.g. Ramsar. Under conventions such as Ramsar the international status of sites designated should be used as a stimulus to strengthen national legislation and its implementation and enforcement and to raise public awareness of Corncrakes. Conventions (e.g. Ramsar, Bern, Bonn) should also be invoked in defending internationally important sites for Corncrakes (see 2.1.2.3 above).

Priority: high

Time-scale: ongoing

2.1.3. Acquire and appropriately manage nature reserves for Corncrakes

Nature reserves, defined here as areas owned and/or managed primarily for nature conservation, need to be acquired and managed for Corncrakes for the following reasons.

- To conserve a particular population of Corncrakes, especially core populations in countries with small populations by protecting its habitat from development threats, and ensuring optimal management to maximise productivity.
- To allow experiments in the development of optimal management techniques.
- To act as a demonstration site for optimal management techniques, including for managers of unprotected areas.
- To show Corncrakes to people to educate and raise awareness and public/political support for the species; this is especially relevant in countries with few Corncrakes.

The two actions below will apply especially to west European countries where Corncrakes tend to be more restricted to core areas. In central and east European countries, emphasis should be given to developing strong NGOs with expertise and resources to assist Corncrake conservation through reserve acquisition (see 1.2.4).

Priority: high/medium

Time-scale: ongoing

2.1.3.1. Consider acquisition of land with important Corncrake concentrations

Where there is a potential opportunity for statutory or voluntary nature conservation bodies to acquire land as a nature reserve to benefit Corncrakes, careful consideration should be given to whether acquisition is appropriate. It could, for example, be more cost-effective to protect the Corncrakes through payments (ideally from government) to land managers for Corncrake-friendly management practices. Natural Corncrake habitats – as opposed to those maintained

through agricultural management – should always be a priority for reserve acquisition as minimal management expenses need be encountered.

Priority: high/medium

Time-scale: ongoing

2.1.3.2. Encourage appropriate management for Corncrakes in and around nature reserves of importance for the species

Management plans with clearly defined objectives and priorities should be considered essential for reserves important for Corncrakes, to ensure that their specific requirements are catered for in the general management of the reserve. Reserve managers should be provided with adequate advice to manage land optimally for Corncrakes. It is important to realise that continued agricultural management is often essential within a nature reserve to maintain habitat suitability.

Wherever possible, reserves, acting as core areas for Corncrakes, should be linked to Corncrake-friendly management (encouraged by financial incentives) in the surrounding wider countryside, enhancing the benefit of the reserve to Corncrakes as well as to the surrounding area.

On some reserves, especially in central and eastern Europe, ecotourism could bring benefits by providing funding for reserve management. However, this industry should be developed sensitively and only where it is possible to do so without detriment to Corncrakes or other wildlife (see 1.2.3.4). In some reserves with vulnerable Corncrake populations, especially in western Europe, human recreation should be managed to avoid disturbance to Corncrakes. Predator control may also be necessary on some reserves.

Priority: high/medium

Time-scale: ongoing

2.2. Nature conservation organisations should ensure that they collaborate with each other and widely with relevant authorities and interest groups (apart from agricultural ones) regarding Corncrake conservation

The nature conservation organisations leading Corncrake conservation action in their country should, as necessary, agree between themselves a division of labour regarding the Corncrake, and collaborate with local authorities, hunters, promoters of ecotourism and other conservation organisations to protect Corncrake habitats and promote Corncrake-friendly management.

Priority: medium

Time-scale: ongoing

2.3. Nature conservation organisations should publish technical advice for administrators, land managers and their advisors responsible for delivering Corncrake-friendly management

Nature conservation organisations are likely to have the best national expertise on Corncrake-friendly management. To disseminate this they should produce leaflets and technical manuals based on the best available scientific evidence. Funding for their production should be obtained from agricultural agencies where possible. The more technical manuals should be aimed at advisors of farmers – including fieldworkers deployed by the nature conservation and agricultural organisations; more simple guidance in the form of pamphlets should be provided to farmers (see 4.1.2). Technical publications should also be provided to the administrative agencies responsible for land use policies, including payment schemes to farmers (see 4.1.1).

Priority: medium

Time-scale: ongoing

3. MONITORING AND RESEARCH

3.1. To develop and implement a European survey and monitoring strategy for the Corncrake

The three main objectives for a European Corncrake survey and monitoring strategy are:

- Identify the key Corncrake areas within each country.
- Provide a better estimate of total population size.
- Monitor trends in numbers across the range to detect significant changes.

Priority: high

Time-scale: medium

3.1.1. *Ensure that comparable Corncrake surveys have been undertaken in all countries in the period 1995–2000*

It is essential that during the period 1995–2000 national Corncrake surveys are undertaken in all European breeding-range-states, using standard methods (see Annex 2). This will make it possible to identify key areas and establish a new European population estimate. Data on mowing dates and productivity (see 3.2.1) should also be collected. This might best be achieved through a pan-European Corncrake survey which could be coordinated – in terms of organisation and funding – by BirdLife International.

Priority countries

The highest-priority countries for future survey work, ranked in order (based partly on population sizes and partly on the lack of knowledge), are: Russia, Ukraine, Belarus, Romania, Croatia, Bosnia and Herzegovina, Bulgaria and the Baltic states (Lithuania, Latvia, Estonia).

Pilot censuses

Agreed methods and their practicalities should be tested by running one or two pilot projects in high-priority countries. Such trials were undertaken in 1995 in Russia and Bulgaria. It would be advisable for all high-priority countries to attempt small-scale experimental censuses to familiarise organisers with the methods and difficulties.

Implementation

In many priority countries there is a shortage of skilled ornithologists to conduct surveys. Even where such ornithologists exist they are often not in a position to participate in a survey. One solution could be to import birdwatchers into countries where local expertise is lacking, but this prevents creation of potential local job opportunities in conservation and may cause problems over language and lack of familiarity with the areas.

Priority: high

Time-scale: medium

3.1.2. *Develop and implement an agreed pan-European monitoring strategy*

A strategy for monitoring the European and national Corncrake populations is essential to detect population trends and the impact of conservation actions. Surveys should be repeated every five years where possible, with annual counts in some sample plots. However, in countries where no formal survey has been carried out prior to 1995, the first survey is likely to provide new data on areas of high density and/or productivity. These data can form the basis of an improved stratification as a basis for random sampling for repeat surveys.

Priority: high
Time-scale: ongoing

3.1.3. Establish and develop a Corncrake Census Working Group

A working group is needed to organise census methods and sampling strategy across the Corncrake breeding range. At the Gdansk workshop it was agreed to form such a group under the chairmanship of R. Green (RSPB) to include about four Corncrake survey organisers from Russia and other high-priority countries. The first task of this group has already been accomplished: all 19 relevant range-states have completed a questionnaire on the Corncrake census techniques previously used in each country. Following consideration of questionnaire returns, the working group should develop and recommend standard methods to be used for surveys, coordination of surveys at international level and evaluation of the results obtained.

Priority: high
Time-scale: ongoing

3.2. To encourage research to determine the impact of mowing on Corncrake populations and to indicate means of reducing the impact

3.2.1. Rapid assessment of the incidence and success of breeding

The presence of singing males in an area does not necessarily indicate successful breeding: males may fail to attract females; if females arrive and lay eggs it may be that virtually all nests fail or that virtually all chicks which hatch die before fledging. Detailed studies are required for full quantification of breeding success. However, some rapid methods can be used as an adjunct to surveys of singing males to identify areas where successful breeding is likely or unlikely to have occurred (see Annex 2). During a census, such rapid assessment should be undertaken for at least a sample of areas in which surveys of singing males are carried out.

Priority: high
Time-scale: short

3.2.2. Determination of timing of reproduction and incidence of double-brooding across the Corncrake range

Radio-tracking of female Corncrakes in the United Kingdom has demonstrated that most females lay two clutches, the second of which hatches in mid- to late July. This behaviour has a strong influence on the degree to which delaying the time of mowing improves breeding success. More information is needed on the prevalence of this behaviour in sample areas throughout the breeding range. Methods are outlined in Annex 2.

Priority: high
Time-scale: medium

3.2.3. Correlation of population trends with habitats and the timing and method of mowing

Correlations have been found between Corncrake population trends and changes in the extent of tall ground vegetation habitats and the timing and method of mowing. Such studies are an essential test of hypotheses generated by more intensive work such as radio-tracking studies. Intensive studies may demonstrate the importance of particular habitats or farming practices in a few study areas, but hypotheses about population change derived from them are only convincing if confirmed by more extensive studies, such as those which compare the ecological circumstances associated with declining and stable populations. The elements required for such studies are outlined in Annex 2.

Priority: high

Time-scale: long

3.2.4. Quantification of movements between geographical regions

The choice of an appropriate strategy for the conservation of Corncrakes is affected by the distances moved by individuals both within and between seasons. For example, if most individuals return to breed at some distance from their natal area then measures to increase populations by improving breeding success within small areas might be nullified by dispersal of locally produced recruits. Methods for quantifying movements are listed in Annex 2.

Priority: high

Time-scale: medium

3.3. To estimate annual survival rates of juveniles and adults

Estimation of survival rates is required for the construction of simulation models of Corncrake populations. Such models are of value in estimating the probable effect on population trends of varying survival and breeding success through conservation measures. Estimation of survival must take into account movements, so that estimates can be made of the number of birds that survive but do not return to particular intensive study areas. Annex 2 lists appropriate methods.

Priority: high

Time-scale: medium

3.4. To investigate the ecological requirements of Corncrakes in habitats subject to infrequent management

Some Corncrakes occur in areas which are not often used for agriculture. Such areas could act as core reserves where Corncrakes would not be subject to adverse pressures from agricultural intensification. However, where agricultural activities have been abandoned relatively recently, such areas may soon become unsuitable for Corncrakes without further management. More information is required on habitat selection, diet, breeding success and factors affecting important habitat characteristics in these areas. The topics that should be investigated are listed in Annex 2.

Priority: high

Time-scale: medium

3.5. To quantify the effectiveness of conservation measures

Available research on Corncrake ecology suggests that several types of conservation action are likely to be effective in enhancing population levels. However, only a few studies have attempted to quantify the benefits of particular types of habitat management or modification of agricultural practice for Corncrakes. Such studies are essential in the design and implementation, with government support, of conservation measures. There is scope for studies of two distinct types: those that examine the effect of management on demographic rates (e.g. the effect of hay-

mowing methods on chick survival) and those which aim to assess effects on population size at the level of a region or country.

As declining Corncrake populations may be being affected by several interacting factors it is necessary to test the effect of a package of measures if positive results are to be expected at the population level. This should include assessment of the effects of: mowing method on chick survival; changing the time and/or method of mowing on the number of chicks fledged per female; increasing the area of tall ground vegetation; and changing fertilizer and pesticide inputs. Appropriate methods are listed in Appendix 3.

Priority: high

Time-scale: medium

3.6. To develop rapid methods for assessing the suitability of vegetation stands for Corncrakes

Monitoring of Corncrake habitats, including those resulting from experimental management, could be greatly improved if a standard method could be devised of measuring the characteristics of vegetation stands which are important to Corncrakes. Several studies of habitat selection by radio-tagged birds and the characteristics of singing sites and nest-sites have identified correlates of habitat preference including species composition, vegetation height and mechanical resistance of the vegetation to passage by Corncrakes. The results of these studies should be used to produce methods for recording vegetation structure which can be used in rapid field surveys.

Priority: high

Time-scale: short

3.7. To assess the importance of mortality caused by predators on the breeding grounds

There are few estimates of mortality rates of nests, chicks and adults caused by predators. Information is lacking on whether, in some areas, it might be possible to increase numbers of Corncrakes by reducing the proportion killed by predators. Studies should include evaluation of the importance of predation relative to other sources of mortality and whether modifications of habitats, for example increasing the area and quality of vegetation cover, could reduce predation.

Priority: medium

Time-scale: long

3.8. Association of the Corncrake with other wildlife

Areas with high densities of Corncrakes are often rich in other fauna and flora. The identification of important plant and animal species and assemblages in areas which also hold high densities of Corncrakes would be valuable in convincing governments to give protection to key Corncrake sites. This could be achieved by carrying out a review of knowledge of the fauna and flora of core Corncrake areas identified during the proposed survey and monitoring programme.

A related topic is the extent to which management techniques such as delayed hay mowing and/or mowing from the centre of meadows outwards benefit plants, particularly late-flowering species, and other animals. A review identifying the benefits to other wildlife of management prescriptions designed to benefit the Corncrake would be valuable in convincing governments to include such prescriptions in agri-environment measures and nature reserve management plans.

Priority: medium

Time-scale: long

3.9. To quantify mortality caused by hunting and trapping

Efforts should be made to improve estimates of the numbers of Corncrakes killed by hunting and trapping, especially on migration. At present the only recorded potentially significant trapping mortality is a by-catch associated with Quail-netting in Egypt.

Priority: medium

Time-scale: long

3.10. To assess factors adversely affecting Corncrake habitats outside Europe

A recent comprehensive review of the literature and unpublished information (Stowe & Becker 1992) failed to identify any probable links between declines in Corncrake populations and ecological change in the main wintering areas in Africa. However, it would be valuable to update this study to take account of new information as it becomes available. Knowledge of distribution and timing of movements in winter has been improved by recent bird atlas projects in southern

Africa, and there may be new information on the status in India. Advances in remote sensing are providing estimates of recent changes in the extent of biomes used by Corncrakes in Africa. A review of this and other new information should be carried out and updated regularly.

Priority: medium

Time-scale: long

3.11. To establish and develop a Corncrake Research Working Group

Rapid progress in improving scientific knowledge relevant to the conservation of Corncrakes will be an important part of any strategy for stemming the species' decline. This progress will be facilitated by free exchange of ideas and information among scientists concerned, and it is proposed that an international Corncrake Research Working Group be set up consisting of scientists directly involved in Corncrake research. The duties of this group would be as follows.

- Regular review of research requirements for Corncrake conservation.
- Dissemination and standardisation of research techniques such as habitat recording, ageing and sexing, radio-tag attachment, etc.
- Coordination of international research projects such as studies of movements.
- Responding to queries from national or international bodies regarding scientific aspects of Corncrake conservation.
- Dissemination of scientific literature.
- Advice to postgraduate students on research projects relevant to Corncrake conservation.

In many countries, national Corncrake study groups should be formed and affiliated with the international group.

Priority: high

Time-scale: ongoing

4. PUBLIC AWARENESS AND TRAINING

4.1. To raise awareness and support for the Corncrake across Europe

Each target audience needs to be clearly defined in order to determine the best way to influence it, i.e. the key messages and the most effective way of successfully delivering them must be identified. All messages should explain why it is worth taking action to conserve the Corncrake: the fact that it is a globally threatened bird and why this is so; its national/local status; and a description of its most appealing characteristics. The messages should all emphasise what each target audience can do to help the Corncrake.

4.1.1. Convince decision-makers to support and undertake action for the Corncrake

International, national, regional and local politicians and other decision-makers need to be convinced to support and undertake action to conserve the Corncrake – especially through policy, legislation and the safeguarding of sites. Demonstration of their conviction by becoming active members of conservation NGOs should be encouraged.

The international and national legal and conservation status of the species and the international obligation to conserve it need to be emphasised together with its role as a flagship species for grassland and wetland conservation. All communications with this group must be based on sound technical (legal, economic, scientific) knowledge but also convey measured emotion and conviction.

The messages should be relayed through personal contacts, meetings, symposia and concise technical publications. This should be set against a background of efforts to enhance public awareness (see 4.1.5) to demonstrate to politicians that this is a matter which the electorate cares about.

Priority: high
Time-scale: ongoing

4.1.2. Gain the commitment of farmers and their representative organisations and advisors to promoting and undertaking Corncrake-friendly policies and practices

Nature conservation organisations should liaise and collaborate closely with those who influence management decisions taken on the ground by farmers and agricultural contractors, including agricultural lobby groups, advisory bodies, training colleges, suppliers and agriculturalists. Conservation organisations should supplement as necessary the advice on Corncrakes provided to farmers via agricultural groups with direct contact with individual farmers on the ground and at local meetings, together with information via the farming media. Supporting material should include leaflets, videos of farmers undertaking Corncrake-friendly mowing, etc., and concise technical manuals.

The most important messages to convey are detailed technical advice on how to undertake Corncrake-friendly mowing and management, where to obtain funding for undertaking this, where to obtain further management advice and, if appropriate, the possibility of income from ecotourism. Background information on the natural history of Corncrakes and their local status should also be provided in order to promote understanding. In addition it is important to give feedback to farmers on the biological results of their own individual efforts at Corncrake-friendly management, as well as the results of efforts at a local and national level. This should be set against a background of efforts to enhance awareness about Corncrakes in the local community (see 4.1.3) to ensure that peer pressure supports the Corncrake-friendly efforts of farmers.

Priority: high
Time-scale: ongoing

4.1.3. *Develop support for and a sense of ownership of Corncrakes in local communities where Corncrakes occur*

Support for Corncrakes among people who share their local areas with them is important in: encouraging local land managers to undertake their operations in a Corncrake-friendly manner; preventing hunting or birdwatching disturbance of Corncrakes and damage to Corncrake habitats; and involving local people in Corncrake surveys where appropriate. Key messages should aim to build a sense of affection, local pride and ownership for the species which can be achieved by providing vivid audio-visual illustration of the Corncrake call and appearance, interesting details about their natural history, and local facts about the Corncrake and any folklore associated with it. Simple details should also be given on what Corncrake-friendly management entails and how local people can prevent other threats to Corncrakes. The legal status of the bird should be made clear. Opportunities for income from ecotourism should be emphasised. It is important to provide feedback to the local community regarding the results of local and national conservation efforts for the Corncrake.

The messages can be conveyed by illustrated talks, local media, posters (in shops, bars, etc.), schools, adult education courses and churches. Locally targeted information leaflets should be supplied. Local authorities should also be targeted with these messages and asked to disseminate them further.

Priority: high

Time-scale: ongoing

4.1.4. *Influence non-agricultural land managers and users, including hunters where necessary, to help conserve the Corncrake*

In addition to farmers, others involved in land management can influence Corncrakes. The most obvious of these are reserve managers (see 2.1.3.2), but others include foresters, water management authorities, fisheries managers, game managers and consultancies. Messages should be similar to those for farmers (see 4.1.2), with emphasis on providing detailed technical advice on what land managers can do for Corncrakes and any sources of remuneration. The legal status of the bird should be made clear to hunters, and where it is still a quarry species voluntary shooting bans should be encouraged. Use should be made of the specialist media and meetings of interest groups to deliver the message.

Priority: medium

Time-scale: ongoing

4.1.5. *Gain the support of the general public for Corncrake conservation*

The general public, including children, birdwatchers and members of conservation NGOs, must be made aware of the Corncrake – its voice, appearance, habits and plight. A strong feeling must be engendered among the public that sufficient action must be taken to ensure the recovery of this species and thus its removal from the list of globally threatened species. The more people that write to politicians expressing this concern, the more likely it is that appropriate action will be taken. It is important that farmers are not blamed for the plight of the Corncrake, and that, where appropriate, the value of traditional farming systems for biodiversity conservation is emphasised. The message to the general public should be conveyed through:

- The media:

- Television: special programmes on the Corncrake aimed at prime time, items in magazine programmes, short clips on the news, etc.

- Radio: including Corncrake calls, live and recordings.

- Newspapers.

- Magazines: including countryside and birdwatching magazines.
- Schools, colleges, university and adult education classes (with support from the state education authority).
- Illustrated talks and film presentations (to the general public and members of conservation and birdwatching NGOs).
- Publicity materials promoting the Corncrake (e.g. leaflets, posters, calendars, postage stamps, games).

Priority: high

Time-scale: ongoing

4.2. To ensure coordinated production of materials promoting Corncrakes and their requirements

The conservation organisations of Europe should coordinate efforts to promote the Corncrake in order to maximise effectiveness of disseminating the message while minimising the cost of producing supporting materials. Organisations in each country should assess what materials they already have available, what additional materials are required, where they can be obtained and how they should be paid for. BirdLife International should then coordinate efforts to fill gaps. Materials that could usefully be disseminated include:

- Videos aimed at land managers, showing farmers undertaking Corncrake-friendly management.
- Videos aimed at school children.
- Slide sets (e.g. birds alive and killed, mowing techniques).
- Leaflets.
- Games.

Translation services will also be required.

National publicity strategies (what, when, how, by who) should be carefully planned before the start of each season, including consideration of having the Corncrake designated the national “Bird of the Year”. Consideration should also be given to running a Corncrake campaign (public awareness and/or fund-raising) at a European level, probably linked to a European Corncrake census or other pan-European conservation initiative for the Corncrake.

Priority: high

Time-scale: medium

REFERENCES

- Aigare, V., Andriūaitis, G., Lipsbergs, J., Lodzina, I. and Tabaka, L. (1985) Pp.328–329 in *Latvijas PSR sarkana gramata*. Riga: Zinatne. (In Latvian, in Russian).
- Batten, L. A., C. J., Clement P., Elliot G.D. and Porter R. F. (1990) *Red data birds in Britain*. London: T & A D Poyser.
- & van den Berg, L. M. J. (1991) Status, distribution and research on Corncrakes in the Netherlands. *Vogelwelt* 112: 78–83.
- Boev, N. (1985) [The Corncrake *Crex crex*.] Pp.104–105 in B. Botev and T. Peshev, eds. [*Red Data Book of Bulgaria*.] Sofia: Bulgarian Academy of Sciences. (In Bulgarian.)
- Broyer, J. (1985) *Le rôle de genêts en France* (*Crex Crex*). Lyon: Union Nationale des Associations Ornithologiques.
- Cadbury, C. J. (1980) The status and habitats of the Corncrake in Britain 1978–79. *Bird Study* 27: 203–218.
- Christensen, H. R. and Eldøy, S. (1988) *Truede virveldyr i Norge*. DN-rapport 1988-82.
- Collar, N. J., Crosby, M. J. and Stattersfield, A. J. (1994) *Birds to watch 2: the world list of threatened birds*. Cambridge, U.K.: BirdLife International (BirdLife Conservation Series no. 4).
- Collett, R. (1981) *Norges fugle I-III*. Kristiania: H. Aschehoug.
- Cramp, S. and Simmons, K. E. L., eds. (1980) *The birds of the western Palearctic*, 2. Oxford: Oxford University Press.
- Goodman, S. M. and Meininger, P.L. (1989) *The Birds of Egypt*. Oxford: Oxford University Press
- Green, R. E. (in press) The decline of the Corncrake *Crex crex* continues. *Bird Study*.
- Groombridge, B., ed. (1993) *1994 IUCN Red List of threatened animals*. Gland, Switzerland and Cambridge, U.K.: International Union for Conservation of Nature and Natural Resources.
- Kjærbølling, N. (1852) *Danmarks fugle*. Copenhagen.
- Kurochkin, E. N. and Koshelev, A. I. (1987) [Family Rallidae.] Pp.335–464 in V. D. Ilyichev and V. E. Flint, eds. [*Birds of the USSR: Galliformes, Gruiformes*.] Leningrad: Nauka. (In Russian.)
- Lipsbergs, J., Kacalova, O., Ruce, I. and Sulcs, A. (1990) Pp.106–107 in *Popularzinatniska sarkana gramata, dzivnieki*. Riga: Zinatne.
- Malchevskiy, A. S. and Pukinskiy, Y. B. (1983) *Ptitsy Leningradskoy oblasti i sopredelnykh territoriy*, 1. Leningrad: Leningradskogo University.
- Norris, C. A. (1947) Report on the distribution and status of the Corncrake. *Brit. Birds* 40: 226–244.
- Osieck, E. R. and Hustings, F. (1994) [*Red data and important birds in the Netherlands*.] Zeist: Vogelbescherming Nederland (Techn. Rep. 12). (In Dutch.)
- Ptushenko, E. S. and Inozemtsev, A. A. (1968) [*Biologiya i khozyaistvennoye znachenije ptits Moskovskoy oblasti i sopredelnykh territoriy*.] Moscow: Moskovskogo University. (In Russian.)
- Schäffer, N. (1994) Methoden zum Nachweis von Brutten des Wachtelkönigs *Crex crex*. *Vogelwelt* 115: 69–73.
- Schäffer, N. and Münch, S. (1993) Untersuchungen zur Habitatwahl und Brutbiologie des Wachtelkönigs *Crex crex* im Murnauer Moos/Oberbayern. *Vogelwelt* 114: 55–72.
- Skov- og Naturstyrelsen, Miljøministeriet [Ministry of the Environment, National Forest and Nature Agency] (1991) Røddliste '90. [*Red Data List '90*]. (In Danish.)
- Stowe, T. J. and Becker, D. (1992) Status and conservation of Corncrakes *Crex crex* outside the breeding grounds. *Tauraco* 2: 1–23.
- van den Tempel, R. and Osieck, E. R. (1994) [*Important Bird Areas in the Netherlands*.] Zeist: Vogelbescherming Nederland (Techn. Rep. 13). (In Dutch.)
- Tucker, G. M. and Heath, M. F. (1994) *Birds in Europe: their conservation status*. Cambridge, U.K.: BirdLife International (BirdLife Conservation Series no. 3).
- Voslamber, B. (1989) De Kwartelkoning *Crex crex* in het Oldambt: aantallen en biotoopkeuze. *Limosa* 62: 15–21.
- Weiss, J. (1992) Rote Liste der Brutvögel Luxemburgs 5 Fassung/Stand: Herbst 1991. *Regulus Wiss. Ber.* 10: 23–29.
- Whilde, A. (1993) *Threatened mammals, birds, amphibians, and fish in Ireland*. *Irish Red Data Book 2: Vertebrates*. Belfast: HMSO.
- Zbinden, N., Glutz von Blotzheim, H. And Schifferli, L. (1994) Liste der Schweizer Brutvögel mit Gefährdungsgard in den einzelnen Regionen. Pp.24–30 in P. Duelli *Rote Listen der gefährdeten Tierarten der Schweiz*. Bern: Buwal.

ANNEX 1 RECOMMENDED CONSERVATION ACTIONS BY COUNTRY

- *** **Austria**
- 1.2.3. Encourage extensification of agriculture, including reduction in use of fertilizers, in Corncrake areas.
 - 1.2.3.3. Encourage development and implementation of agri-environment measures to the maximum benefit of Corncrakes.
 - 1.2.3.3. Encourage development and implementation of payment schemes in key areas to ensure late mowing.
 - 1.2.3./2.1.2.3. Prevent canalisation, drainage and other damaging developments (road construction, etc.).
 - 2.1.2.1. Promote statutory protection of IBAs.
 - 2.1.3. Establish nature reserves in key Corncrake areas.
 - 2.3./4.1.2. Provide advice to farmers on Corncrake-friendly management.
 - 3.1.1. Undertake a repeat national survey.
 - 3.1.2. Develop and implement a regular Corncrake monitoring scheme.
 - 3.2.1. Clarify reproductive status.
 - 3.2.3. Undertake habitat surveys.
 - 3.2.4. Undertake ringing studies to determine site faithfulness.
- *** **Belarus**
- 1.2.2. Promote inclusion in the list of protected animals (anticipated winter 1994/95).
 - 3.1.1. Undertake a national Corncrake census.
 - 3.1.2. Develop and implement a regular monitoring programme.
 - 3.2. Conduct research to assess the effect of agricultural activities on breeding success.
 - 3.4. Conduct research on Corncrakes in the area abandoned due to the Chernobyl disaster
- *** **Belgium**
- 1.2.3.3. Wallonia: Encourage adoption of agri-environment measures in key Corncrake areas, especially funding for delayed mowing and Corncrake-friendly mowing in SPAs; maintain unmown areas in key sites, including in nature reserves.
 - 2.1.3. Acquire and manage nature reserves in key Corncrake areas.
 - 2.3./4.1.2. Provide management advice to those who manage land with breeding Corncrakes, especially farmers.
 - 3.1.2. Undertake full annual monitoring survey.
 - 3.2.1. Wallonia: undertake an intensive survey of a sample of singing males to identify periods of low song intensity that could indicate mating and search for proof of breeding in key Corncrake areas using contact calls of juveniles.
 - 3.2.4. Wallonia: undertake research using individual voice recognition to identify movements between sites within (and possibly between) breeding seasons.
 - 3.4 Wallonia: undertake Corncrake research in the abandoned fields of the Marche-en-Famenne military camp.
 - 2.1.5./4.1.2. Provide management advice to those who manage land with breeding Corncrakes, especially farmers, and provide information about funding

and application of agri-environment measures in SPAs and nature reserves.

- 4.1.3. Raise public awareness about Corncrakes in local communities around Corncrake areas.
- 4.1.5. Produce leaflets on key nature reserves for Corncrakes.

* **Bosnia-Herzegovina**

- 2.1.2.1. Encourage the designation of Livanjsko Polje as a protected site under the nature conservation law.
- 2.1.2.3. Encourage the protection of Livanjsko Polje from any further melioration programmes or peat extraction.
- 3.1.1. Undertake a national Corncrake census to identify key sites.

* **Bulgaria**

- 1.1.2./1.2.3. Encourage the adoption of programmes for sustainable development in agricultural areas of importance to Corncrakes.
- 1.2.3.3. Promote the introduction of measures to encourage farmers to undertake Corncrake-friendly management.
- 1.2.3. Promote the extensification of agriculture, including reduction in use of fertilizers, in Corncrake areas.
- 1.2.3./2.1.2.3. Prevent canalisation and drainage of Corncrake areas.
- 2.1.2.1. Encourage the statutory protection of all IBAs identified for Corncrakes.
- 2.1.3. Establish nature reserves in key Corncrake areas.
- 2.3./4.1.2. Prepare a leaflet for farmers on Corncrake-friendly management.
- 3.1.1. Undertake a full national census as part of the coordinated European census, following the pilot survey in 1995.
- 3.1.2. Undertake annual surveys of core Corncrake areas.
- 3.2.3. Undertake habitat surveys.
- 3.2.2./3.4./3.5. Undertake radio-tracking studies to determine the timing of reproduction and incidence of production of second broods in mountain areas, species movements, key sites during migration, etc..

* **Croatia**

- 1.2.1. Develop a national Corncrake action plan based on the European plan.
- 1.2.3./2.1.2.3. Prevent the planning and implementation of melioration and canalisation of the Sava and Drava rivers.
- 3.1.1. Undertake a national Corncrake survey.
- 3.1.2. Annually monitor the Corncrake population.

* **Czech Republic**

- 2.3. Prepare guidelines for management of Corncrake breeding habitat.
- 3.1. Establish a National Corncrake Working Group to:
 - Identify the key Corncrake areas and provide an exact estimate of population size.
 - Monitor trends in numbers to detect significant changes.
- 3.2. • Undertake vegetational analysis of breeding habitats.
- 3.2.4. Intensive ringing in key areas to assess movements between regions.
- 3.4. Continue the study of habitat use within abandoned meadows in the Sumava mountains, and use radio-telemetry.

- * **Denmark**
- 1.2.1. Encourage the production of a national Corncrake Action Plan.
 - 1.2.3./2.1.2.3. Discourage any further drainage of Corncrake habitats.
 - 1.2.3.3. Encourage the continuation, evaluation and any necessary improvements in the Corncrake-friendly conservation plan introduced in 1994 in the Ryå/Store Vildmose area.
 - 1.2.3.3. Seek to extend Corncrake-friendly farming to other former Corncrake localities and protected areas besides Ryå/Store Vildmose, delaying mowing until after 1 August, or at least 16 July, and cutting from the centre-out or in strips.
 - 1.2.3.3. Encourage the inclusion of all suitable river valleys in the ESA scheme and that, where appropriate, these include government funding for Corncrake-friendly management.
 - 2.2. Encourage close contact between the Ministries of Environment and Agriculture, the regional and local public administrations and DOF to exchange information on habitat preferences, prescriptions to achieve these and other information, including that emanating from the working groups mentioned under 3.1.3 and 3.1.1, below.
 - 1.2.5. Seek to reverse drainage schemes where appropriate, as in the planned restoration of the Skjern Å river delta.
 - 2.3. Produce specific agricultural guidelines for Corncrake-friendly management.
 - 3.1.1. Undertake a national Corncrake survey as part of DOF's new atlas and bird site project 1993-1996.
 - 3.5. Investigate the importance of permanent set-aside and encourage organic farming in relation to possible recolonisation by the Corncrake.

- * **Estonia**
- 1.2.1. Encourage the preparation of a national Corncrake action plan for 1996–2000.
 - 1.2.2. Encourage the listing of the Corncrake as a legally protected species (Category II) and inclusion in the National Red Data Book.
 - 1.2.3. Encourage the introduction of measures to stop the abandonment of traditional grassland management in river valleys and semi-natural alluvial meadows important for Corncrakes.
 - 1.2.3.3. Encourage measures to ensure extensive land use in Corncrake areas.
 - 2.3. Provide advice on Corncrake-friendly management.
 - 3.1.1. Undertake a national survey.
 - 3.1.2. Develop and implement a Corncrake monitoring scheme.
 - 3.2. Undertake research on habitat use and population trends, starting in 1995.
 - 4.1.2./4.1.4. Undertake a campaign to raise awareness and educate all relevant types of landowners about the requirements of Corncrakes.

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Finland

- 1.2.3.3. Encourage the delay of mowing until August in Corncrake areas.
- 3.1.1. Undertake a national survey, including habitat description.
- 3.1.2. Develop and implement an annual monitoring programme.
- 3.2. Undertake research to determine habitat selection, proportion of paired males, site tenacity and breeding success.
- 4.1. Widely promote the needs of the Corncrake.

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France

- 1.2.3.3./2.1.2.2. Encourage the adoption of agri-environment measures to promote late-cutting dates in the 10 IBAs which hold 80–90% of the national Corncrake population.
- 1.1.2./2.1.2.3. Encourage the production for each IBA of a land use plan agreed between French administration, farming authorities and conservation NGOs to prevent further loss of Corncrake habitat to crops or poplar plantations.
- 2.1.2.1. Encourage the designation of the 10 IBAs as SPAs.
- 2.1.3. Establish and manage reserves for Corncrakes in core areas.
- 3.1.1. National survey in 1997.
- 3.1.2. Annual surveys in key sample areas.
- 3.2.3. Continue research, through the LIFE programme, on the relationship between mowing dates, densities and population trend.
- 3.2.4. Research on site fidelity, movements and breeding biology.
Research on the relationship between densities, botanical parameters and timing and duration of flooding.

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Germany

- 1.2.3.3. In Corncrake areas seek later mowing dates than are necessary for breeding waders, extensive programmes to cut meadows in only small compartments at a time over a long period and in strips or from the centre to the edges and encourage mowing machinery that moves more slowly.
- 2.1.2.2. Encourage appropriate management of statutory sites including the prevention of any unsuitable vegetational succession at Untere Oder National Park or ensure development of appropriate habitats as a substitute for any habitat lost to succession in core areas.
- 3.1.1. Undertake a national census.
- 3.2.1. Estimate breeding success.
- 3.2.3. Define the optimum size of patch to mow at one time to maximise the chances of Corncrake survival.
Determine the relationship between the speed of movement of mowing machines and the mortality of adult and juveniles.
Define the time it takes for meadows to become suitable for Corncrakes after mowing.
- 3.2.4. Identify source and sink populations through investigation of the relationship between populations from different biogeographical regions, including the migration of adult Corncrakes during the breeding period.
- 3.1.2./3.5. Monitor the effects of all conservation actions on Corncrakes.
- 3.7. Investigate the impact of predation and human disturbance on key Corncrake populations.

- * **Hungary**
- 1.2.3.3. Encourage wider adoption of agri-environment measures to promote late-cut grass
 - 2.1.3.1. Establish nature reserves in all core areas.
 - 2.3./4.2. Prepare a leaflet on Corncrake-friendly management for Tokaj-Bodrozug Landscape Protection Area (IBA 032).
 - 3.1.2. Undertake annual monitoring in the key areas.

- * **Republic of Ireland**
- 1.2.3.3. Promote the uptake of the Rural Environment Protection Scheme in core Corncrake areas from 1995, and introduce targets and a monitoring programme to ensure that the scheme is effective in Corncrake conservation and habitat management.
 - 1.2.3.3. Continue a separate Corncrake Grant Scheme (delayed mowing, centre-out mowing, early and late cover creation) until Corncrake conservation is adequately dealt with by agri-environment measures.
 - 1.2.3.3. Examine the feasibility of drawing up management agreements in core Corncrake areas, e.g. Donegal islands (Tory, Inisbofin).
 - 2.1.2.1. Encourage the adequate protection of all important corncrake areas under the EU Wild Birds Directive and the revised Wildlife Act.
 - 2.1.3.1. Establish nature reserves in core areas.
 - 2.1.3.2. Finalise management plan for reserve in the Shannon Callows.
 - 3.1.2. Undertake annual monitoring surveys in the key areas (Shannon Callows, Moy catchment, North Donegal).
Continue IWC/RSPB research project.
 - 3.2.4./3.3. Continue IWC/RSPB research project, including ringing of adults and chicks, biometric and DNA studies and voice analysis.

- * **Italy**
- 1.2.3.3. Using EU Regulation 2078/92, encourage wider adoption of agri-environment measures to modify cutting techniques and prevent succession of abandoned habitats.
 - 1.2.3.3. Encourage the establishment of annual schemes to pay farmers in Corncrake areas to delay cutting or to undertake Corncrake-friendly mowing.
 - 2.3./4.1.1./4.1.2./4.1.4. Provide advice on methods of Corncrake management to local administrations.
 - 3.1.1. Continue national surveying during 1996-7.
 - 3.2.3. Continue studies on habitat use.
 - 3.2.4. Undertake studies of movements.
 - 4.1.3. Encourage local politicians and fieldworkers to take action for Corncrakes.

- * **Latvia**
- 1.2.2. Promote the improvement of national nature protection legislation.
 - 1.2.3. Promote measures to encourage sustainable agriculture.
 - 2.3./4.1.2. Provide advice to farmers on Corncrake-friendly methods of management.
 - 2.1.2.1. Encourage the improvement of the protected area system including designation of more floodplain meadows.
 - 3.1.1. Undertake a national survey during 1995-2000.
 - 3.1.2. Continue to develop and implement a Corncrake monitoring scheme.
 - 3.2. Undertake detailed studies of habitat requirements.

- * **Liechtenstein**
- 1.2.3. Promote a change in agricultural policy towards extensification and reduction in use of fertilizers in potential Corncrake areas.
 - 2.1. Encourage the production of a new nature conservation law with better possibilities for the financial support of extensification.
 - 3.1.2. Undertake annual monitoring surveys.

- * **Lithuania**
- 1.2.1. Encourage the preparation of a national Corncrake action plan.
 - 1.2.1./2.2/3.1.3/3.11
Organise a globally threatened species working group.
 - 1.2.2. Encourage the updating of the Red Data List with information recently obtained for Corncrakes.
 - 2.1.2.1./2.1.3. Promote the statutory protection and nature reserves on all important Corncrake areas not yet protected.
 - 3.1.1. In 1995-1997 undertake Corncrake surveys in the IBAs of the Nemunas delta and the potential IBA in the Jura valley followed by a national Corncrake survey.
 - 3.2.3. Study Corncrake biology and ecology in the Nemunas delta and two or three other sites with high Corncrake densities.
 - 4.1.1. Convince decision-makers to support and undertake action for the Corncrake.
 - 4.1.2. Undertake campaigns to raise awareness and educate farmers about Corncrakes and ecology in general.
 - 4.1.3. Develop support and a sense of ownership for Corncrakes in local communities where Corncrakes occur.
 - 4.1.5. Gain the support of the general public for Corncrake conservation.

- * **Luxembourg**
- 1.2.3.3. Encourage extensive farming methods.
 - 2.1.1. Identify Corncrake sites.
 - 2.1.2. Encourage optimum statutory protection for important Corncrake sites.
 - 3.1.1. Corncrake survey in 1995 and 1996.

- * **Moldova**
- 1.2.3.3. Encourage the wider adoption of agri-environment measures to promote late-cut grass.
 - 2.1.3. Establish reserves in core areas.
 - 3.1.1. Undertake a full national survey in 1996.
 - 3.1.2. Undertake annual monitoring surveys in the main areas.
 - 3.2.4. Undertake studies of Corncrake movements.

- * **Netherlands**
- 1.2.3. Promote extensive use of river grasslands outside IBAs, including regular (annual) flooding.
 - 1.2.3.3. Encourage adoption of agri-environment measures in areas that regularly hold singing male Corncrakes.
 - 1.2.3.3. Encourage the development and implementation of payment schemes in key areas to encourage late mowing.
 - 2.1.2.1. Encourage the designation as SPAs of the five existing IBAs of highest importance for Corncrakes (Sliedrechtse Biesbosch, Gelderse Poort, Heteren-Amerongen, Deventer-Zwolle, Ewijk-Waardenburg).
 - 2.1.2.2. Encourage Corncrake-friendly management of all statutory sites and reserves, river forelands and other areas which hold Corncrakes.
 - 3.1.1. Maintain the annual national Corncrake survey with special emphasis on habitat use and current land use.
 - 3.5. Undertake a review of habitat use of singing Corncrakes in river floodplains in relation to current and future land use management.
 - 4.1.2./4.1.5. Promote management advice to those who manage land with breeding Corncrakes, especially farmers and nature conservation bodies.

- * **Norway**
- 1.2.1. Encourage the preparation of a national Corncrake action plan by 1998.
 - 1.2.2. Support legal protection, with practical measures each breeding season, to protect all proven and expected Corncrake nest-sites, to an agreed radius around the nesting area.
 - 1.2.3.3. Promote measures to intensify agriculture in Corncrake areas.
 - 2.3./4.1.2. Provide advice to farmers on Corncrake-friendly management.
 - 3.1.2. Follow up the 1995 national surveys with regular surveys and descriptions of habitat.
 - 3.2. Analyse survey results to determine habitat use and population trends.
 - 4.1 Undertake public awareness campaigns relating to the corncrake.

- * **Poland**
- 1.2.2. Encourage the addition of Corncrake to the next revision of the Polish Red Data Book.
 - 1.2.3. Promote the introduction of measures to stop the abandonment of traditional grassland management in river valleys important for Corncrakes.
 - 1.2.3.1. Promote measures to ensure that the value of Kombinat Wizna for Corncrakes is not diminished as 6,000 ha of grassland is sold during 1994–1996.
 - 2.1.2.2. Promote management of the Biebrza National Park to prevent natural succession of formerly mowed grasslands important for Corncrakes.

- Encourage the completion of the management plan for the Kombinat Wizna collective farm to promote Corncrake-friendly mowing.
- 3.1.1. Undertake a national census.
- 3.2. Undertake the research outlined above (see “Germany”), including research to:
- Investigate the movements of flightless juveniles in relation to mowing, using radio-telemetry and trapping.
 - Develop an optimum mowing regime for Corncrakes (and Aquatic Warblers *Acrocephalus paludicola*) at Kombinat Wizna.
- 3.4. Undertake research in the Biebrza National Park to determine the effects on Corncrakes of plant succession in response to cessation of mowing.
- 3.8. Undertake research to determine the possibilities for action to conserve Corncrakes, Aquatic Warblers and other species in the same habitat.
- 3.1.2./3.5. Monitor the effects of all conservation actions on Corncrakes.

* **Romania**

- 1.2.1. Encourage the production of a national Corncrake action plan.
- 1.2.2. Encourage the legal protection of the species.
- 3.1.1. Undertake a national census in 1995–1996.
- 4.1. Raise public awareness.

* **Russia**

- 1.2.1. Encourage the production of a national Corncrake action plan.
- 1.2.3.3. Promote programmes to support traditional extensive management of meadows in model areas, i.e. some National Parks and regional temporary reserves (zakazniks).
- 1.2.3. Encourage stricter controls on the use of agrochemicals in river valleys and lake basins.
- 2.1.2.1. Promote statutory designation as regional temporary reserves (zakazniks) of most nationally and internationally important Corncrake areas.
- 2.1.3.1. Promote new regional temporary reserves (zakazniks) for Corncrakes.
- 3.1.1./3.2. Undertake a survey of European Russia in 1995–1996 to estimate the national population size, identify core Corncrake areas (IBAs) and describe associations with habitat and management.
- 3.1.2. Develop and implement a monitoring programme.
- 3.2.3. Undertake research on the impact of mowing on Corncrake breeding success.

* **Serbia-Montenegro**

No information.

* **Slovakia**

- 1.2.1. Encourage the production of a national Corncrake action plan.
- 1.2.2. Encourage full protection for the Corncrake under executive notices to the new law on the conservation of nature and landscape.
- 1.2.3.3. Encourage the introduction of schemes encouraging farmers to undertake Corncrake-friendly management.
- 1.2.4. Build up a strong NGO for the protection of birds, ensuring competence in the conservation of Corncrakes and other threatened species.
- 2.1.1. Revise and update the national IBA inventory to ensure that all qualifying Corncrake sites are included within the IBA network.

- 2.1.2.1. Promote statutory designation as nature reserves for all key Corncrake sites.
 - 2.1.2.2. Encourage Corncrake-friendly management in protected areas.
 - 2.1.2.4. Promote increased effectiveness in the implementation of the Ramsar Convention.
 - 2.1.3. Consider acquisition and management of land with important Corncrake concentrations.
 - 2.2. Promote the development of the Group for the Protection of Corncrakes and collaboration among nature conservation bodies and with other authorities regarding the conservation of Corncrakes.
 - 3.1.1. Undertake a national Corncrake survey to estimate population size, distribution and key areas.
 - 3.1.2. Develop and implement a Corncrake monitoring programme.
 - 3.1.3./3.1.1. Become active members of the BirdLife Corncrake census and research working groups.
 - 3.2./3.2.1. Undertake research to investigate habitat use by Corncrakes, including productivity in different habitats and the impact of timing and method of mowing.
 - 3.5. Monitor the effectiveness of conservation measures.
 - 4.1.2. Inform and educate farmers about the ecology and requirements of Corncrakes.
 - 4.1.5. Organise a public campaign about the conservation of the Corncrake to gain wide public awareness.
 - 4.1. Produce educational materials about Corncrake conservation.
- * Slovenia**
- 1.2.1. Encourage the production of a national Corncrake action plan.
 - 1.2.3. Promote a statutory national programme to support extensive meadow use.
 - 1.2.3.3. Encourage measures to protect the main areas and develop and implement special Corncrake management programmes for each of the key areas.
 - 2.1.2.1./2.1.3. Encourage the establishment of legally protected areas and nature reserves.
 - 3.1.1. Undertake a full national survey before 1999.
 - 3.1.2. Undertake annual monitoring (full and sample surveys) in the main areas, and occasional surveys at other sites.
 - 3.2. Undertake research on habitat requirements, etc.

- * **Spain**
- 1.2.2. If breeding is confirmed (3.1.1, below) then the category of threat of the Corncrake in the National Catalogue of Threatened Species should be upgraded.
- 1.2.3.4. Maintain confidentiality of the location of the breeding sites to protect the birds from disturbance by birdwatchers.
- 2.1. Encourage the Identification, protection and appropriate management of IBAs for Corncrakes.
- 3.1.1. Undertake a full survey in 1996 to confirm the existence of a breeding population and identify key areas most in need of protection.
- 3.1.2. Monitor the population annually.
- 4.1.2./4.1.3. Develop and implement a public-awareness-raising programme targeted at farming communities.

- * **Sweden**
- 1.2.3. Encourage agricultural policies which favour Corncrakes.
- 2.3./4.1.2. Provide advice on Corncrake-friendly management.
- 3.1.2. Monitor the Corncrake population.
Continue radio-tracking study in Oland.

- * **Switzerland**
- 1.2.1. Encourage the production of a national Corncrake action plan.
- 1.2.3. Encourage a change in agricultural policy to promote extensification in potential Corncrake areas.
- 1.2.3.3. Promote the introduction of payment schemes to encourage farmers to undertake Corncrake-friendly management.
- 2.1.2. Promote the introduction of special protection regulations for areas with Corncrakes: prevent early mowing at sites with singing males; if Corncrakes breed, ensure Corncrake-friendly management in the surrounding area.
- 2.3./4.1.2. Provide advice on Corncrake-friendly management to farmers and other managers.
- 3.1.2. Undertake annual monitoring surveys.

- * **Ukraine**
- 1.2.2. Promote the inclusion the Corncrake in the National Red Data Book.
- 2.1.2. Encourage the protection and appropriate management of important Corncrake areas.
- 3.1.1. Undertake a national census to provide a national population estimate, and identify key areas.
- 3.1.2. Monitor Corncrake habitats.
- 3.2.1. Conduct research to determine population structure (sex ratio, etc.) and breeding success.
- 4.1. Raise awareness of the Corncrake, with nature protection and agricultural organisations as well as with the general public, and through secondary and higher education institutes.

- * **United Kingdom**

- 1.2.3.3. Continue the Corncrake Grant Scheme until it can be integrated into agri-environment measures.
- 1.2.3.3. Promote wider adoption of agri-environment measures to promote late-cut grass and reduce sheep numbers, increasing low-intensity beef.
- 2.1.3. Consider establishing further reserves in core areas.
- 3.1.1. Undertake a full survey in 1998.
- 3.1.2. Undertake annual surveys in the main areas.
- 3.2.2./3.2.3. Continue radio-tracking studies of timing of breeding and habitat selection.
- 3.2.4. Undertake studies of movements.