

The Corncrake (*Crex crex*) in Ireland

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1. Introduction

The corncrake *Crex crex* has suffered serious and often rapid declines over most of its European range (TUCKER & HEATH 1994) and is listed as threatened with global extinction (Collar et al, 1994), the only Irish bird to be so classified. The corncrake has been declining in northern and western Europe since 1900 (CRAMP & SIMMONS 1980). USSHER & WARREN (1900) describe the species as common and widespread in Ireland, with a breeding range stretching into every county. However, NORRIS (1947) recorded declines over most of the country in the 1940s, with corncrake numbers stable only in the north-west, and with declines in the eastern counties apparently beginning as early as 1902.

2. Development of knowledge about corncrake in Ireland

In response to a lack of information on the ecological requirements of corncrakes a three year study was carried out by the RSPB in the Uists (Scotland) between 1985 and 1987 (STOWE & HUDSON 1991). The results of this study showed the following:

- Corncrakes require early cover in the form of tall vegetation, such as iris, on their arrival in April/May. On the Uists, first broods are usually situated in these areas of early cover, with later broods in hay meadows.
- Males are usually sedentary at night when they may call continuously for several hours. By day they wander widely and their ranges overlap. The peak calling period is between midnight and 3 am.
- The breeding season lasts from May until Au-

gust with corncrakes rearing two broods in this period.

- Centre-out mowing reduces chick mortality.

A study was also carried out in Ireland from 1992 to 1996 by the RSPB, in conjunction with BirdWatch Ireland (TYLER et al. 1998), to measure the impact of timing of mowing on breeding success, and to investigate the response of corncrakes to new mowing patterns designed to protect them during hay and silage harvesting. The study showed that centre-out mowing reduces chick mortality, and that mortality is reduced even further if there is cover present around the margins of the area being cut. Late cover is particularly important in the Shannon Callows where the strips of meadow are unfenced and there are no uncut areas in between.

Most of this information was considered transferable, and the results of these and related studies have been used in determining census methods, and BirdWatch Ireland's requirements and payment levels under the Corncrake Grant Scheme, which was set up in 1992. These include payments to farmers with corncrakes on their land for early cover, delay of mowing until 1 August, corncrake friendly mowing and late cover.

3. Distribution and important areas of corncrake population

The corncrake in Ireland is now confined to three core areas; the Shannon Callows, Mayo and West Connaught, and North Donegal (see Fig. 1). In the 1998 national census almost 99% of the population was recorded within these three core areas.

4. Size and development of national corncrake population

4.1. Size of national corncrake population

National censuses have been carried out on a five yearly basis since 1988. Corncrakes are also censused annually within the remaining core areas. The national census carried out in 1998 recorded a total of 151 - 155 singing males (CASEY 1999). Of these, 69 - 71 were in the Shannon Callows, 63 - 65 in North Donegal (including 19 on Tory Island and 15 - 17 on Inishbofin) and 17 in Mayo & West Connaught (see Table 1). The census was carried out using standard census techniques (STOWES & TONKIN 1985) and is accurate to 10 % of the true number.

4.2. Development of population

a) National population trend

During fieldwork for the first breeding bird atlas in 1968 - 72, corncrake breeding was confirmed or probable in 82 % of the 10 km squares surveyed (SHARROCK 1976), and the population was estimated at 4,000 males (CADBURY 1980). During the first full national corncrake census in 1978, 1,062 singing male corncrakes were recorded (O'MEARA 1979) and a national total of 1,200 - 1,500 was estimated. However, during this survey, the importance of some areas, particularly the Shannon Callows, was not recognised, and it is probable that this total is an underestimate (MAYES & STOWE 1989).

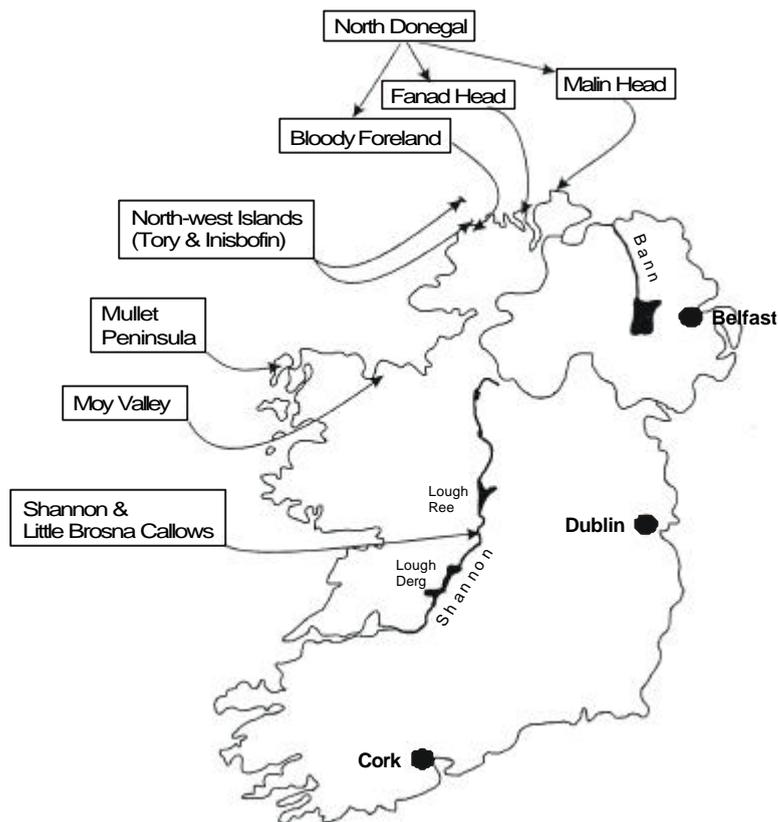


Figure 1: Core Corncrake areas in Ireland.

Following further declines during the 1980s (O'MEARA 1986), another national survey was carried out in 1988. This survey recorded 903 - 930 singing males (MAYES & STOWE 1989), and identified five core areas : North Donegal, the Moy Valley, West Mayo & Galway, the Shannon Callows and the area around Lough Erne in Co. Fermanagh. The huge contraction in range which had been identified in the 1988 survey was confirmed by the 1988 - 1991 Breeding Atlas, which showed a reduction of over 70 % in Irish range since the previous atlas (STOWE 1993).

The most dramatic decline in Irish corncrake numbers was revealed with the completion of the third national corncrake census in 1993, when just 174 singing males were recorded, of which 165 were in the Republic and 9 in Northern Ireland (SHEPPARD & GREEN 1994). This represented a decline of 81% since 1988, and a further contraction in range, such that only 11 % of the corncrakes recorded in 1993 were outside the core areas which had been identified in 1988. Losses were severe even within these former strongholds, with reductions of over 90 % in Co. Fermanagh and West Connaught, and over 80 % in Donegal. The decline had been slowest in the Shannon Callows, where a reduction in numbers of over 30 % was recorded for the five-year period.

A fourth national corncrake census was carried out in 1998, using the same methods employed in 1988 and 1993, to survey the main core areas (the Shannon Callows, North Donegal and Mayo and West Connaught) and counties on the western seaboard. This census recorded a total

of 151 - 155 singing males, a drop of just 7 % since the last national census, in 1993, with almost 99 % of the corncrakes recorded located in the three core areas. This is substantially lower than the 80 % decline recorded in the previous five-year period and may be attributable to intensive conservation programmes instituted since 1993.

b) Examples of population trend in restricted areas

National corncrake numbers decreased by 7 % between 1993 and 1998. This five-year trend masks the fact that corncrake numbers in core areas in Ireland, which are monitored annually, actually increased in 1995 and 1996 (Table 2). Following a decline in 1997, numbers increased slightly in core areas in 1998. It seems likely that this substantial change in corncrake population trends in Ireland is related, at least in part, to intensive conservation measures instituted on a phased basis since 1992. It is hoped that with the continuation of the Corncrake Conservation Project that this positive trend in corncrake numbers will continue.

The combined totals for each core area since 1993 also obscure the fact that trends have been quite different in each of the core areas in Ireland since 1993. These differences can, to a large extent, be related to differences in land management between each of the core areas in this period. In considering trends in corncrake numbers, however, there are important differences even within the core areas. The Shannon Callows area is unique in Ireland in terms of both physical

Table 1: Singing male corncrakes recorded in national censuses, 1988 - 1998.

Area	1988	1993	% Change 88 - 93	1998	% Change 93 - 98
North Donegal	310 - 320	46	- 85.4	63 - 65	+ 39.1
West Connaught	256	29	- 88.7	17	- 41.4
Shannon Callows	125 - 127	88	- 30.2	69 - 71	- 20.5
Core Total	691 - 703	163	- 76.7	149 - 153	- 7.4
Other Areas	90 - 92	2	- 97.8	2	0.0
Ireland (Rep) Total	781 - 795	165	- 79.1	151 - 155	- 7.3
% in core areas	88.4	98.8		98.7	

composition and land ownership patterns, and can be considered as a single ecological unit. The islands of Tory and Inishbofin, off the coast of North Donegal, however, have more in common with each other and other islands off the west coast, than with the Donegal mainland. The mainland areas, including the Moy Valley and Mullet Peninsula in Co. Mayo as well as the North Donegal mainland, have broadly similar agricultural and ecological trends.

The Shannon Callows

The Shannon Callows encompasses fields on either side of the River Shannon from Athlone to Portumna, and along the River Suck and Little Brosna River, which are regularly flooded over the winter months. Because of the flooding it is difficult to get on the fields to reseed and fertilise, and intensification has progressed more slowly in this area compared to Mayo and Donegal. Hay is still the most common crop and, due to the wet nature of the ground, is often cut late. This traditional situation remains in many of the callow lands, although some of the meadow suitable for corncrakes is lost each year as land changes from hay to silage production and hay is converted to pasture.

Following an advisory programme started in 1991, the Corncrake Grant Scheme was introduced in the Shannon Callows in 1993. The major impact on corncrake productivity in that year, however, was the rising of the River Shannon level in early June, which resulted in the callows

being covered with water for several weeks during the corncrake breeding season. Corncrake numbers in the area suffered their largest recorded decline the following season, falling by 26 % to 65 singing males (CASEY 1994).

In 1994, following an increase in grant payment levels and the placement of a second fieldworker in the area, uptake of Corncrake Grant Scheme rose to 80 %. However, corncrake numbers in the area continued to fall, despite good uptake of the Corncrake Grant Scheme, in 1995 and 1996. It is possible that this continued decline was related to the fact that the high uptake of the scheme, and favourable hay-making weather in August 1994 and 1995, meant that a large proportion of the meadows were mown in a very short period of time in those years. Following the introduction of a Late Cover Grant Scheme in 1996, corncrake numbers remained stable in 1997, for the first time since recording began.

Very wet weather in August 1997 meant that mowing was delayed on the callows until well into August, and a substantial area was not mown at all. It appears that this extra delay had a positive impact on productivity, as corncrake numbers increased by over 29 % in 1998, to 69 - 71 singing males. Fears that the poor harvest in 1997 would have a negative effect on farmer participation in future conservation schemes in the area appear to have been unfounded, as uptake of the Corncrake Grant Scheme remained very high, and the outlook for corncrakes on the Shannon Callows seems positive.

Table 2: Corncrake Core area totals, 1994 - 1998

Area	1994	1995	1996	1997	1998
Shannon Callows	65	63	54	54	69 - 71
Donegal Mainland	25	49	69	45	29
Tory Island, Donegal	8	12	21	18-20	19
Inishbofin, Donegal	12	27	15	12	15 - 17
Inishdooley, Donegal	0	0	2	2	0
Moy Valley, Mayo	6	8	5	2	2
Mullet, Mayo	2	8	10	6	8
West Connaught	11	7	8	10	7
Core Area Total	129	174	184	149 - 151	149 - 153

Donegal Mainland

Following serious declines to 1994, corncrake numbers on the Donegal mainland showed an apparent improvement in 1995 and 1996, when large increases were recorded (Table 2). However, these increases have not been maintained, and just 29 singing males were recorded in the area in 1998, a drop of 36 % on last year's total. Close examination of the trends and distribution of corncrakes on the Donegal mainland suggests that the increases seen in 1995 and 1996 are likely to have been related to the exceptional breeding seasons on Inishbofin in 1994 and 1995. Large increases were seen on the mainland immediately adjacent to Inishbofin (Magheraroarty and Bloody Foreland) in those years. Much of the remainder of the increase was as a result of single corncrakes in isolated areas, where protection by the Corncrake Grant Scheme was difficult. It appears, then, that much of this increase was not sustainable in the absence of successful breeding on Inishbofin.

Much of the Donegal mainland is now quite intensively farmed, and although fields and farm units are quite small, intensification appears to be progressing. For farmers wishing to take two cuts of silage per season, delaying mowing to 1 August at current payment rates constitutes a substantial loss. Uptake of the delayed mowing option of the Corncrake Grant Scheme is low (just 37 % of the eligible area was delayed to 1 August in 1997 (DERWIN 1997)) and it seems likely that the Corncrake Grant Scheme, as currently structured, is not adequate to protect corncrakes on the Donegal mainland.

Mayo and West Connaught mainland

The core corncrake area defined as Mayo and West Connaught takes in two main corncrake concentrations - the valley of the River Moy, around the town of Foxford, and the Mullet Peninsula. The Moy Valley has shown consistent and dramatic declines in recent years, with a drop of over 80 % since 1993. It seems likely that, as in the Donegal mainland, the measures put in place by the Corncrake Grant Scheme are not adequate to protect corncrakes there. On the Moy Val-

ley, a trend towards intensification continues despite designation of the area as a proposed NHA and an increase in the level of grant payment could make the difference needed to protect enough corncrake nesting sites in this area.

The Mullet Peninsula, on the other hand, appear to have shown improvements in recent years, with an increase of 166 % since 1993. With such small numbers (8 singing males in 1998), examination of percentage changes are not very useful, but the trend towards increase does appear to be real. The prevalence of early-cut silage is not as high on the Mullet as it is further inland, and the increases could be due to good protection of a small number of potential breeding sites in recent years. However, as was seen on the Donegal mainland in 1995 and 1996, such increases can be lost all too easily.

Donegal islands

Inishbofin

Inishbofin is a small island, just off the coast of Donegal, near Falcarragh. It has an unusual social structure, in that it is inhabited in summer only, with islanders moving to the mainland when schools re-open in autumn. This means that most of the island is not actively farmed. Prior to 1993, the island was extensively grazed by sheep and cattle, and low numbers of corncrakes were occasionally reported.

The management of Inishbofin changed dramatically in spring 1993, when a local dispute led to the removal of all sheep from the island. Much of the area which had formerly been meadow and pasture was then ploughed, but not tilled. In late summer 1993, it was reported that 2 singing male corncrakes were using the rough vegetation which had been allowed to grow up following the withdrawal of grazing. No active management was carried out in 1993, and the accumulation of that year's growth remained in spring 1994, when 12 singing males were recorded on the island. In summer 1994, the vegetation had already started to become rank, and much of this (primarily docks, thistles and some grasses) was mowed by BirdWatch Ireland in that autumn.

Corncrake numbers reached a peak in 1995, when 27 singing males were recorded. However, it was not possible to mow the vegetation in autumn 1995, and no further management took place until spring 1996, when a small area was mowed. That year, 15 singing males were recorded (with 2 on the adjacent island of Inishdooney, which is uninhabited and grazed). After the 1996 breeding season a further small area was mowed.

During 1997, only 12 singing males were recorded on Inishbofin (and 2 on Inishdooney), and a decline was also noted in numbers on the adjacent mainland, which had increased substantially in 1995 and 1996. An area of about 4 ha was mown using a topper in September 1997. An improvement in corncrake numbers was noted in 1998, with 15 - 17 singing males on the island.

Since 1995, a grant scheme has been in operation on Inishbofin, offering an incentive to landowners who agree to leave their land undisturbed until after 1 September and allow BirdWatch Ireland to manage the meadows for corncrakes. In terms of uptake, this scheme has been successful, but much of the land entered to the scheme is becoming progressively less suitable for corncrakes, and is impossible to mow, due to deep ridges left after ploughing, and dense, matted vegetation which has grown up in the intervening years.

It has been suggested that the meadow on Inishbofin should be ploughed, levelled and re-seeded to improve it for corncrakes. A seed-mixture which would be suitable for late-mown hay could be chosen. Ploughing and re-seeding would obviously need to be carried out on a phased basis over a number of years, to minimise disturbance to corncrakes and other breeding birds. In addition, as this would make harvesting of hay easier, it should be ensured that it does not promote more intensive management of the land, with early cutting. Currently, BirdWatch Ireland negotiates management agreements with islanders on an annual basis. Longer term agreements would be more useful, as they could ensure that suitable management for corncrakes can be planned and kept up over a number of years.

Tory Island

Tory differs considerably from Inishbofin, as it is inhabited year-round, and most of its land is actively, albeit extensively, farmed. It appears that the corncrake population on Tory was stable, at around 8 singing males, for a number of years before the start of the Corncrake Conservation Project (MACKIE 1993). The land use on Tory appears to ideally suit corncrakes. A traditional farming practice exists where cattle and sheep graze the whole island throughout the winter months, and are penned up or tethered between April and October. This prevents damage to crops such as oats and potatoes, and not only ensures that corncrakes have adequate cover during the breeding season, but the winter grazing also prevents the vegetation from becoming too rank. Any hay cut on Tory is generally cut in September (MAGEE 1995).

In 1995 it was considered that, as the growing season tends to be late on Tory, a lack of cover early in the season might be the limiting factor for corncrakes on the island. In September of that year, early cover was created by fencing off small areas to prevent winter grazing and nettle patches were created and extended using mushroom compost (MAGEE 1995). In total five sites were created, of which three were used by corncrakes in 1996. A fourth early cover site was occupied in 1997. This habitat management work coincided with the removal by islanders of a large number of feral cats. The corncrake population increased from 12 in 1995 to 21 in 1996, a rise of 75%. The island has maintained this high corncrake population, with 19 singing males in 1998 (JONES 1998).

Mayo islands

Inishkea South

Inishkea South is an uninhabited 140 hectare island off the south-west tip of the Mullet Peninsula. The whole island is intensively sheep-grazed in summer. Due to its proximity to the Mullet, Inishkea was chosen for habitat management trial in 1997. It was considered that if suitable habitat could be provided, corncrakes might choose

to nest here, where protection could be more easily provided than on the mainland. An area of 6 ha was fenced to exclude sheep (under agreement with landowners, who received grant payment). Some small scale nettle and iris transplantation was carried out in the enclosure in autumn 1997.

It was thought that due to continued grazing by over-wintering geese, meadow suitable for corncrakes would take more than one season to become established. However, two singing male corncrakes were recorded in the enclosure throughout the breeding season in 1998 (GORDON 1998). It is not known whether these corncrakes bred successfully, but their arrival on the island after just one year opens up huge possibilities for habitat management on the many other west coast islands which are currently unsuitable for corncrakes as a result of overgrazing.

Discussion - The future of the corncrake in the core areas

On the Mayo and Donegal mainland, payment rates under the Corncrake Grant Scheme are too low to attract farmers taking two cuts of silage, and uptake to the grant scheme is low in these areas. A substantial increase in the grant rate would be required to increase uptake in these areas. Such a large increase is not possible under the current grant scheme.

There are at present no mainland corncrake SPAs in Mayo and Donegal, with the result that, on average over the last five years, 33.5 % of the Irish population have been present in Mayo and Donegal in non-designated areas. A project has just been completed (see ongoing or planned conservation or study projects) involving mapping of areas in Mayo and Donegal that have potential for SPA designation.

The Corncrake Grant Scheme will continue to offer protection for corncrakes in the core areas in the short term. It is envisaged that medium term protection for corncrakes could be achieved through a mixture of long term management agreements in easily defined, designated areas (the Shannon Callows and the West Coast Islands),

the designation of further SPAs and the continuation of the Corncrake Grant Scheme, with modifications to improve uptake, outside designated areas.

With grant uptake low on mainland Mayo and Donegal, attention has turned to the potential of the West Coast islands for corncrakes. The West Coast islands are farmed less intensively than mainland corncrake sites and uptake to the Corncrake Grant Scheme on them is high. The importance of the West Coast islands for corncrakes is highlighted by the numbers recorded on Tory and Inishbofin (Donegal) in 1998. 35 corncrakes were recorded in total, representing over 20 % of the national population. A feasibility study looking into the potential of other West Coast islands for corncrakes is planned for Autumn 1999 (see Ongoing or planned conservation or study projects).

c) Estimate on future national population (trend) in 5 years (10 years)

National corncrake numbers decreased by 80 % between 1988 and 1993, and 7 % between 1993 and 1998. This considerable slowing down in the rate of decline is probably due to conservation measures brought in on a phased basis since 1992. It is hoped that with the continuation of these conservation measures that the results of the next national census in 2003 will show a positive trend.

5. Threats to corncrake population

The main threat to the corncrake population is the conversion of hay to silage. Abandonment of hay meadow and conversion of hay to pasture has also reduced the amount of suitable habitat. Loss of habitat through development is a threat, especially in some areas such as North Donegal.

6. Conservation status

Fully protected, being listed on schedule 1 of the Wildlife Act 1976. Listed in the Irish Red Data Book as endangered (WHILDE 1993). This pro-

tection remains. The corncrake is also up for inclusion on the red list in the forthcoming document "Birds of Conservation Concern in Ireland" (based on the RSPB's Birds of Conservation Concern UK).

7. Conservation projects

Following large declines in corncrake numbers in former strongholds, the Corncrake Conservation Project in Ireland was set up in 1991. Corncrake Grant Schemes were introduced in the core areas from 1992 (1992 in Donegal, 1993 in the Shannon Callows and 1994 in Mayo and West Connaught), offering incentives to farmers with corncrakes on their land to delay mowing and adopt safer mowing methods, and provide early and late cover. These schemes are run by Bird-Watch Ireland fieldworkers in each core area, with funding from RSPB. Fieldworkers publicise the project, carry out a corncrake census, and are responsible for administering the grant scheme and providing advice to farmers on "corncrake-friendly" farming methods. The grant scheme payment totalled £94,000 in 1998, with £30,000 from RSPB and £64,000 from the Irish Government (Dúchas, National Parks and Wildlife). These measures have been in place now for several years, and following modifications based on new research findings, have shown success in some areas, most notably the West Coast Islands, and the Shannon Callows.

8. Ongoing or planned conservation or study projects

Corncrake Conservation Project

It is hoped that the Corncrake Conservation Project currently operating will continue as long as necessary. It was originally put in place as an interim measure, until Irish Government policies were adequate to take care of corncrake conservation. Despite the introduction of REPS (the Rural Environment Protection Scheme), the ecological requirements of corncrakes are still not adequately addressed by agri-environment measures. The future operation and shape of the Corn-

crake Conservation Project will depend on progress by the Irish Government in adequately protecting corncrakes both within and outside of SPAs.

Mapping Project

In 1999, the European Commission requested information from Ireland on the extent to which a set of 11 dispersed species, including the corncrake, were protected in SPAs. Corncrakes are confined to three core areas in Ireland; the Shannon Callows, Donegal, and Mayo and West Connaught. Corncrakes in the Shannon Callows core area are present in well defined callow areas, and over 90 % of the Callows corncrake population occurs within the Shannon Callows SPA. However, suitable corncrake habitat on the mainland of Mayo and Donegal is more patchy, with populations in these areas dispersed at low densities over a wide area. As a result, there are no mainland SPAs for corncrake in Mayo or Donegal. Over the last five years an average of 33.5 % of the Irish population have been recorded in these areas.

A desk study was carried out involving mapping of corncrakes in Mayo and Donegal for the period 1993-1998. The results of this showed that there are areas in both Mayo and Donegal which could be called "clusters", where there have been an average of 4 - 8.4 singing male corncrakes in the last five years, and which may qualify for SPA designation. Information on the amount of suitable corncrake habitat present in these areas is required before they are considered for SPA designation. BirdWatch Ireland, with funding from Dúchas - National Parks and Wildlife, has just completed a project involving mapping of the extent of suitable corncrake habitat within these areas, in order to determine which sites are suitable for SPA designation. The results of this study are being written up and it is hoped that the outcome will be the designation of corncrake SPAs on the Donegal and Mayo mainland.

Feasibility Study

BirdWatch Ireland plans to carry out a feasibility study in Autumn 1999 to look at the potential of

West Coast islands for corncrakes. This will involve collecting information for each island on such aspects as access, extent of potential habitat etc.

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