



MANAGEMENT PLAN for CURLEW (*Numenius arquata*) 2007 –2009

Directive 79/409/EEC on the conservation of wild birds

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Executive summary

The Curlew *Numenius arquata* is listed on Annex II/2 of the EU Birds Directive as a species for which hunting can be permitted in Denmark, France, Ireland and UK. Since 1994 there have only been open seasons for Curlew in France, Ireland and the UK (Northern Ireland).

Curlew is a relatively abundant but declining wader species. It has been identified as having unfavourable conservation status within Europe, where its global population is also concentrated (more than 75% of the global population breeds in northern Europe). It is thus a Category 2 Species of European Conservation Concern (SPEC). It is classified as “Declining” due to its moderate continuing population decline both in Europe as a whole and in EU25 which holds 61-73% of the European breeding population. 420,000 birds are thought to winter in EU.

Changes in land-use, agricultural practices and nest predation are considered the most significant causes responsible for the decline of Curlew in the EU. Such habitat loss and modification has suppressed breeding success and thereby lead to population decline. Human disturbance on breeding and wintering areas is believed to be of secondary importance. Hunting is not considered to be a major cause for the decline in the EU but the shooting that takes place in France, where most Curlew are taken, may have consequences for those segments of the populations that pass through.

This Management Plan presents a framework for the restoration of Curlew populations in EU and its habitats. It is aimed at all Member States with breeding, staging or wintering populations. It is the responsibility of the relevant authorities of each Member State to decide how to implement the management prescriptions of this plan. The plan should be followed by new versions with revised objectives that take into account the results achieved during the first phase.

The long-term objective (10 years) of the plan is to restore the Curlew to a favourable conservation status in the EU. The short-term (3 year) objectives, which are outlined in this plan is to (1) improve management and protection of breeding and wintering sites, (2) improve the protection from disturbance and (3) to collect more robust data to better understand the potential importance of hunting and other types of population regulations. To achieve these short-term objectives the plan specifies the following results to be reached during the initial three-year period:

1. An estimate of the annual number of Curlew shot is available from all Member States where hunting is permitted.
2. Protection and restoration of “traditional” Curlew breeding sites is initiated in all Member States where this species is in decline to maintain and increase range.
3. The use of effective agro-environmental schemes is promoted to encourage favourable management of agricultural areas that holds breeding Curlew including support for evidence-based prescriptions designed to benefit Curlew.
4. Management Plans or Schemes have been prepared and implementation initiated at key Curlew breeding areas to ensure no further loss of numbers and distribution and to increase reproductive success and colonising ability.
5. All staging and wintering areas of international importance for Curlew within the EU are identified and designated SPAs.
6. Management Plans are prepared and implementation initiated for designated sites (SPAs) of importance for staging and wintering.

7. Conservation and wise-use is promoted in wetlands other than SPAs supporting staging and wintering Curlew to maintain range and to ensure no net loss of Curlew numbers and distribution.
8. Hunting and disturbance-free areas are established in a minimum of two SPAs of international importance for wintering and/or staging Curlew in all Member States with sites of international importance for this species. Each of these disturbance-free areas should include both feeding and roosting habitat.
9. Annual mid-winter census of all areas of international importance for wintering Curlew within the EU are carried out as part of the International Waterfowl Census with the support of the authorities responsible for the implementation of the provisions of the Birds Directive in each Member State.
10. A study has been carried that includes an estimate of the impact of hunting in Member States on Curlew populations in EU. Among other things the study should analyse changes in population size to variation in hunting mortality temporally (between years) and spatially (between areas).
11. National ringing activities on breeding, staging and wintering areas and analyses of existing ringing data to identify population units is supported by national authorities in all Member States with important breeding, staging or wintering numbers of Curlew.

0. Introduction

The Curlew *Numenius arquata* is listed on Annex II/2 of the EU Birds Directive as a species for which hunting can be permitted in Denmark, France, Ireland and UK. Since 1994 there have only been open seasons for Curlew in France, Ireland and the UK (Northern Ireland).

The Curlew has been identified as having unfavourable conservation status within Europe, where its global population is also concentrated (more than 75% of the global population breeds in northern Europe). It is thus a Category 2 Species of European Conservation Concern (SPEC) (BirdLife International 2004a). It is classified as “Declining” due to its moderate continuing population decline both in Europe as a whole and in EU25 which holds 61-73% of the European breeding population (BirdLife International 2004a,b).

It is therefore important to assess the current conservation status of this species and available research information in order to appraise the current effectiveness of conservation actions, identify reasons for the observed trends and recommend options for future management to reverse the downward trend in numbers. Hence, this plan will focus upon the full implementation of the provisions of the Birds Directive as these apply for this species.

The overall format of this management plan follows a Single Species Action Plan format developed by BirdLife International for the UNEP/AEWA Secretariat. However, some parts of the plan including some tables have been modified to make it meet the specific need of a plan that covers a relatively widespread species in the EU.

Ideally, the management prescriptions of this plan should cover the entire geographical range of Curlew. However, as the implementation of the plan is part of the fulfilment of the EU Birds Directive the geographical scope of the plan is at this stage limited to the 25 EU Member States.

The first chapter of the management plan briefly presents key information on Curlew populations. The second chapter provides tables with information on breeding and wintering populations that occur in Europe with the focus on the 25 EU Member States. Chapter 3 analyses the threats that are believed to be the causes of the decline, while chapter 4 lists the policies and legislation relevant for Curlew management in Europe.

Chapter 5 evaluates the status of Curlew in the EU and sets out long-term and short-term objectives for its future management.

Chapter 6 describes the actions to be taken in the EU in the short term (initial three year period). These activities cover all Member States with breeding, staging or wintering Curlew.

It is the intention that this management plan shall be revised after three years.

1. Biological Assessment

<p>General information</p>	<p>The Curlew occurs in two sub-species in the Western Palaearctic, breeding in the boreal, temperate and steppe regions of Europe and Asia from Britain to Central Russia. More than 75% of its global population breeds in Europe. The wintering area includes North Sea coasts, the Atlantic and Mediterranean coastline, Arabia, the Indian Ocean and south-east Asia.</p> <p>The Curlews which breed in the Palaearctic are highly migratory throughout their range, except in Britain and Ireland, where birds may be more or less resident.</p> <p>The Curlew is listed on Annex II/2 of the EU Birds Directive as a species for which hunting is permitted in some Member States (France, Denmark, Ireland and the UK). It is currently a quarry species in France, Ireland and the UK (Northern Ireland only). However, the Curlew has been identified as declining within the EU (BirdLife International 2004a), based upon the fact that Curlew breeding populations are showing decreasing trends in many Member States, especially the UK, Ireland, Sweden, Finland, Estonia, Lithuania, Germany and the Netherlands (BirdLife International 2004a).</p>
<p>Taxonomy</p>	<p>Two sub-species occur in Europe, the nominate form breeds in Europe and western Siberia, whilst <i>N.a. suschkini</i> breeds in southern Ural lowlands and Kazakhstan (Engelmoer and Roselaar 1998).</p> <p>Curlews breeding west of the Urals and east from around 40 dg. E gradually intergrades into <i>N.a. orientalis</i> (Engelmoer and Roselaar 1998).</p>
<p>Populations</p>	<p>Following Thorup (2005) all Curlew breeding west of the Urals are treated as belonging to the nominate form <i>N. a. arguata</i>. The core breeding areas of this population are the British Isles, Fennoscandia and north and central European Russia. This population winters in western and southern Europe and western Africa south to Senegambia (Stroud <i>et al.</i> 2004), although the proportion of birds wintering in western Africa is unknown (Thorup 2005).</p> <p>Between 220,000 and 360,000 pairs of Curlew breed in Europe of which 160,000 – 220,000 pairs occur in EU (BirdLife International 2004a,b).</p> <p>The overall winter population estimate of <i>N. a. arguata</i> derived from the breeding totals is 700,000-1,000,000 birds (Thorup 2005, Delany 2005). During recent winter counts 420,000 birds have been recorded from Europe/EU (Stroud <i>et al.</i> 2004, BirdLife International 2004a).</p>

<p>Population developments</p>	<p>Breeding numbers are declining in the countries, which support the majority of the European population (e.g. UK, Finland, Sweden and Ireland). Populations on the southern or south-west edge of the breeding area e.g. Switzerland, Austria, southern parts of Germany and north-east parts of France (Alsace) are endangered (Boschert 2004).</p> <p>According to country-wide line transect censuses in Finland, the population increased from the 1940s to the 1970s, especially in southern parts of the country, but thereafter it has considerably declined (Väisänen <i>et al.</i> 1998). Local studies conducted between the 1930s and 1973, and repeated in 1984 and annually continued in one of the areas, confirm this development (Mehtälä <i>et al.</i> 1985, Tiainen <i>et al.</i> 1985, Ylimaunu & Siira 1985, Yrjölä <i>et al.</i> 1986, Tiainen & Pakkala 2000, 2001). The decline during the 1980s and 1990s was 20 % country wide and locally 40 % in the south (Tiainen & Pakkala 2000, 2001).</p> <p>The slight decline in Great Britain and greater decline in Ireland reported from the 1980s (Gibbons <i>et al.</i> 1993, Hagemeyer & Blair 1997) has since accelerated and the species declined 13% between 1990 and 2000 (BirdLife International 2004a). In Northern Ireland, which has historically supported important populations of breeding waders (Partridge and Smith 1992), a massive 58% decline in breeding Curlew was recorded from 1987 and 1999 (Henderson <i>et al.</i> 2002).</p> <p>In the Netherlands populations increased in agricultural areas but decreased in dunes, heath and moor land (Bijlsma <i>et al.</i> 2001, Gerritsen 2002).</p> <p>In summary, Curlew is a widespread breeder across much of northern Europe (including western Russia), which probably holds more than ¾ of its global breeding population (BirdLife International 2004a). Its European population underwent a moderate decline (> 10%) between 1970 and 1990 and although some smaller populations were stable or increasing during 1990-2000, key populations in the UK, Finland Sweden, Ireland and the Netherlands all declined (BirdLife International 2004a).</p> <p>The overall trends for wintering Curlew in Europe is stable, but with large variations between countries. While the populations in Ireland and the Netherlands have remained largely stable during the second part of the 1990s, numbers of wintering Curlew have increased in the UK and Spain and fluctuated in France (BirdLife International 2004a).</p>
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<p>Distribution throughout the annual cycle</p>	<p>Curlew of the nominate race is mostly migratory, though Irish birds are presumed to be largely resident and some British birds remain close to breeding areas. The Irish wintering population includes birds from Britain and all parts of northern Europe except the coastal north of Norway.</p> <p>Birds breeding in Fennoscandia, the Baltic region, north-west Russia winter from the Netherlands, Britain and Ireland to western France, with some further south to northern Spain and Portugal and in West Africa south to Senegambia (Stroud <i>et al.</i> 2004).</p> <p>Fennoscandian birds are thought to mostly move to Britain (Henriksen 1991) although ringing recoveries indicate that Curlew breeding in southern Finland winter to a great extent in France while more northern breeders winter in the UK (J. Valkama <i>in litt</i> 2005). Small numbers of Curlew also overwinter in northern Norway (Strann 1993). The main wintering areas of German and Dutch breeders are western France and Iberia, with some in Britain and Ireland, and some further south in Morocco. Birds wintering in the Mediterranean are thought to originate from central and southern Europe including southern Russia (Smit & Piersma 1989, Boschert 2001). Since the beginning of the 1970s there has been an increase in the wintering populations in southern Germany (Trösch 2003).</p> <p>According to Cramp & Simmons (1983) timing of movements are broadly as follows: annual passage of west European birds begins in late June (although in southern Germany many females start to leave the breeding grounds by the beginning of June (Boschert 2004)) with most adults arriving in North Sea estuaries to commence moult in July - August. In Russia main departures are July - August. Juveniles from the continent arrive in mid- to late September whilst movements of British birds take place from August to October. Movements of eastern European birds continue into October and November.</p> <p>Return migration by adults to western and southern breeding grounds takes place as early as late January but mainly in February – March. Many birds from Fennoscandia, the Baltic States and Russia remain in western European wintering areas until April - May. Many first year birds also remain all summer on wintering grounds.</p>
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<p>Survival and productivity</p>	<p>There are no European-wide monitoring schemes to measure annual <u>mortality</u> of Curlew nor is there any mechanism to gather bag statistics on numbers killed annually. Several states support ringing schemes, which generate recoveries from which annual estimates could be generated.</p> <p>Annual mortality in the first year ranges from 53-64%, and 26-55% in subsequent years according to Cramp & Simmons (1983) but it seems likely that these were underestimating true annual survival, based on subsequent use of resighting data from individually marked birds.</p> <p>More recent studies found adult annual mortality to be 17.9% in a Swedish breeding study, with no significant difference between the sexes (Berg 1994), 12% in Finland, according to the proportion of ringed non-returning individuals (n = 72) (Ylimaunu <i>et al.</i> 1987) and 16.8%, 13.4% in winter and 3.4% on migration and during the breeding season in a study of Curlews breeding in the UK (Evans 1991). Curlews are known to be sensitive to hard winter weather, which affects survival rates.</p> <p>These studies suggest that the species is relatively long-lived, compared to for instance smaller wader species.</p> <p>At present, no European-wide monitoring schemes exist to measure annual <u>productivity</u>. A number of local studies on breeding biology have been carried out at sites throughout Europe.</p> <p><u>Hatching success</u> in Germany has been reported as between 23% (Baines 1989) and 24.4% (32 of 131 clutches, Boschert & Rupp 1993) but the hatching success has since decreased dramatically in many breeding areas in the Upper Rhine Valley: for the Elzplain it is now only 11% (Boschert 2004). Only 35.6% of the pairs were estimated to hatch young (Cramp & Simmons 1983). Hatching success in agricultural grassland in the Netherlands was 36-75% (Gerritsen 1998), while in western-central and northern Finland, 20-22% and 55% of the nests were lost during the incubation period, respectively (Ylimaunu <i>et al.</i> 1987).</p> <p><u>Survival of chicks</u> before fledging varies between 28.3% (1.33 per pair, n=127 eggs in 35 clutches, Cramp & Simmons 1983) and 20.3% (Boschert & Rupp 1993).</p> <p><u>The overall reproductive success</u> in Finland was 0.32 and 0.72 fledglings/pair in a southern and northern study area, respectively, which was calculated to be too low to maintain a stable population (Valkama & Currie 1999, Ylimaunu <i>et al.</i> 1987).</p> <p>In Sweden, the mean production of young was only 0.25 fledged young per pair in mixed farmland sites and arable farmland sites combined (too low to maintain a stable population, Berg 1994).</p> <p>In Northern Ireland, UK the productivity at two sites between 1993 and 1995 was estimated to 0.14-0.47 fledglings/pair, which is believed to be lower than required to maintain a stable population (Grant <i>et al.</i> 1999).</p> <p>In Germany (during 1977-1986), the fledging rate of 0.28 to 0.53 was well below the calculated value required for maintaining the population level (Dornberger & Ranftl 1986). At the Upper Rhine Valley in the Elzplains in Germany the fledging rate during</p>
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1977-1990 was 0.32 (Boschert & Rupp 1993), for the years 1991-2003 this rate was only 0.05 (Boschert 2004). Also in the **Netherlands** has the breeding success on farmland is declining regionally (Gerritsen 2002).

Predation of nests and chicks has been identified as an important factor responsible for declines in breeding numbers from both **Northern Ireland** (Grant *et al.* 1999), work on **Dutch** dune grasslands (E. Osieck *in litt.* 1998) and work on **Finnish** farmland habitats (Valkama & Currie 1999).

In summary, the breeding success of Curlew in several Member States has declined significantly during the last decades. This appears to be the case in both the traditional breeding sites such as peatland and wet meadows and for birds breeding in arable land.

Life history	Breeding:	Feeding:	Outside breeding season:
	<p>This species is single brooded, but eggs may sometimes be replaced if lost (replacement of replacement clutches are also known), depending on stage of breeding and timing of loss (Boschert 2004).</p> <p>In Fennoscandia egg laying is from early May (von Haartman <i>et al.</i> 1963–72, Ylimaunu <i>et al.</i> 1987), while in the Baltic countries laying begins at the end of April or early May (Snow & Perrins 1998). In the Netherlands laying starts at the beginning of April (Gerritsen 2002).</p> <p>There is a shift in laying the first eggs from south to north and from west to east (Boschert 2004). In southern Germany the first eggs are regularly found in late March while further north in Europe the first eggs are observed at the beginning of May.</p> <p>Nest on ground, often on tussock or low hummock with a little protection to one side. Also in grass or growing crops (Cramp & Simmons 1983).</p> <p>Clutch size is usually 4 (range 2-5) with an incubation of 28-34 days (in southern Germany)(Boschert 2004).</p> <p>In Germany (Elzplains), average clutch size was 3.8 eggs (n=125)(Boschert & Rupp 1993) but the clutch size has subsequently decreased to 3.42 for the period 2000-2005 (n=33)(Boschert 2004 and unpublished. No such decrease in clutch size was found in other plains in Germany.</p> <p>The fledging period is 35-38 days (Gerritsen 2002, Boschert 2004).</p>	<p>Feeding mainly during the day (Glutz <i>et al.</i> 1977) but probably also feeding during full moon nights in breeding areas (M. Boschert <i>in litt.</i> 2005).</p> <p>Curlews are omnivorous in the breeding area. The most important groups of prey were earthworms, several beetle families, crickets, grasshoppers and locusts; but their diet also encompassed a wide range of other prey, especially insects such as flies, particularly crane-flies, ants or other invertebrate groups such as snails, millipedes and spiders. Vertebrates such as small rodents were rarely found. Several factors affected prey choice in the breeding area. During the breeding season the diet changed from prey living within the soil to prey living on the soil or in vegetation (Boschert 2004).</p> <p>Seasonal variations in diet partly reflect seasonal differences in habitat (Cramp <i>et al.</i> 1983) with crabs, worms and large molluscs being important food items in tidal areas while in grassland earthworms and larvae of craneflies (<i>Tipula</i> spp.) are taken (van Beusekom pers. comm.).</p>	<p>Commonly solitary; some birds are territorial on tidal flats (Ens 1979).</p> <p>It is also sometimes gregarious with flocks of tens and sometimes hundreds reported. At high tide or during the night they may form roosting flocks of several thousand.</p>

<p>Habitat requirements</p>	<p><i>Breeding/moulting</i></p> <p>Curlew preferred breeding habitats are fens, peat-bogs, heathlands, coastal marshes, large swampy river valleys, and damp steppes where it chooses damp or wet terrain with dry patches especially near water as breeding sites (Cramp & Simmons 1983). However, it has also adapted well to agricultural grasslands and arable fields, particularly in lowland areas in Fennoscandia and parts of Germany. Altitudinal range extends from sea level up to 700 m where open landscapes are preferred with wide visibility although low scrub is tolerated provided it is sufficiently spaced out (Boschert 2001).</p> <p>Two thirds of the Swedish and 90 – 95% of Finnish Curlew populations breed in farmland and meadows (Berg & Sjöberg 1990, Väisänen <i>et al.</i> 1998). In Finland, breeding Curlews prefer mixed agricultural land with field pastures and hay fields or leys, and grazed shore meadows. In arable areas, tall grassland occurs more frequently in Curlew territories than expected by its availability (Valkama <i>et al.</i> 1998). Adults and chicks intensively use grassland during foraging (for details see Tuellinghoff & Bergmann 1993). Curlews also breed in arable fields in the Netherlands (mainly wheat and potato)(van Beusekom <i>in litt.</i> 2005) and Germany (Boschert 2004). Habitat choice and habitat use of Curlew families is determined by the age of the chicks, hatching time, food supply and availability, vegetation structure, supply of water, and by the presence of not-too-intensively-grazed meadows. Optimal habitats were found to be extensively-grazed fresh meadows (Boschert 2004).</p> <p>The breeding density of Curlews is between 5–10 territories km⁻² in Finnish farmland but in the southernmost parts of the country only 1–3 territories km⁻² (Piiroinen <i>et al.</i> 1985, Tiainen <i>et al.</i> 2004). On Swedish farmland, highest densities occurred on mixed farmland sites with some traditional farming (mean 0.61 territories km⁻²) and lowest densities on modern arable sites (mean 0.11 territories km⁻²). These differences probably reflect differences in the extent of grassland in the different study areas (which is an important foraging and nesting habitat) and wetness between sites throughout most of the period. Highest Swedish breeding densities occur on saltmarsh and the chalk grasslands of Øland (Pettersson <i>et al.</i> 1986, Fritz & Waldenström 1988).</p> <p>In the Netherlands the highest densities are in grassland, for instance 439 pairs on 9200 ha (4.8 territories/ km⁻², Gerritsen 2002). In some areas even higher densities are measured (16.1 territories/ km⁻², Gerritsen 2002).</p> <p>In Britain, and elsewhere, the species breeds in upland areas on moorland, where it is often associated with <i>Molinia caerulea</i> grassland (Haworth & Thompson 1990) and tall heather <i>Calluna vulgaris</i> (Stillman & Brown 1994). Highest densities in Britain and Ireland are found on heather moorland in Orkney (Gibbons <i>et al.</i> 1993). The mean breeding density across Northern Ireland (another key area in Britain) where Curlew mainly breed in bog/mire and unimproved grassland was 0.13 pair km⁻² in 1999 (Henderson <i>et al.</i> 2002).</p> <p>As a peculiarity a small breeding population in Austria is found on dry steppe grassland (Fumano-Stipetum), sporadic surveys indicate good breeding success (Berg & Bieringer 2001) and in the Netherlands is also breed in cut reedlands (van Beusekom <i>in litt.</i> 2005).</p>
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Habitat requirements	<p><i>Winter</i></p> <p>Around North Sea coasts, the preferred wintering habitats are large estuarine mudflats (Lack 1986). However, in Britain, Ireland and the Netherlands, substantial numbers feed on grasslands at high tide, and in some areas, the autumn shift from estuary habitat to inland grassland has been linked to the opening of the shooting season (e.g. Bainbridge and Minton 1978). Large numbers in these three countries also winter inland, and males make more use of inland feeding areas than females (N. Aebischer <i>in litt.</i> 1998). Large numbers of Curlew also winter along the non-estuarine coasts of Britain and Northern Ireland, especially in Orkney.</p> <p>In Europe, some inland wintering areas also exist, e.g. at the Lake Constance in Southern Germany, Western Austria and North-east Switzerland with at last up to 1.200 individuals (Trösch 2003). Curlews have wintered at this lake since the beginning of the 1970s.</p>
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Table 1. *Geographical distribution of Curlew during the year (EU 25 only)*

Breeding	Formerly breeding <i>(date of extinction)</i>	Migrating <i>(July – October & February – May)</i>	Non breeding visitor <i>(October – March)</i>
<ul style="list-style-type: none"> • Austria • Belgium • Czech Republic • Denmark • Estonia • Finland • France • Germany • Hungary • Ireland • Italy • Latvia • Lithuania • Netherlands • Poland • Slovakia • Slovenia • Spain • Sweden • UK 	-	<p>More or less all EU Member States but the following have areas of particular importance for staging Curlew during migration:</p> <ul style="list-style-type: none"> • Sweden • Denmark • Germany • Netherlands • Belgium • France • Spain • Portugal • Lithuania 	<ul style="list-style-type: none"> • Austria • Belgium • (Cyprus) • France • Germany • Ireland • Italy • Netherlands • Portugal • Spain • UK

2. Available key knowledge

In a number of tables this chapter provides a summary of up-to-date knowledge on the size of breeding and wintering populations, distribution and trends of the populations of Curlew that occur in the EU. Furthermore knowledge of bag statistics is shown in Table 4.

Table 2. European breeding population of Curlew *Numenius arquata*

Country	Breeding pairs	Quality	Year(s) of the estimate	Breeding Population trend	Baseline population (year)	Reference
Austria	100 - 120	1	1998-2002	0	-	BirdLife International 2004a
Belarus	950-1,200	1	1997-2000	+ 1	-	BirdLife International 2004a
Belgium	500 - 700	1	2000 - 2002	+ 1	-	BirdLife International 2004a
Czech Rep.	1 - 3	1	2000	- 2	-	BirdLife International 2004a
Denmark	390 - 550	1	1990 - 1997	(+ 1)	-	BirdLife International 2004a
Estonia	1,000 – 3,000	3	1998	- 2	-	BirdLife International 2004a
Finland	35,000 – 50,000	2	1998-2002	- 1	-	BirdLife International 2004a
France	1,500 – 1,800	1	1998 - 2002	0	-	BirdLife International 2004a
Germany	3,200 – 3,500	2	1997 - 2003	- 2	-	Boschert 2005
Hungary	20 - 60	3	1990 - 1993	- 1	-	BirdLife International 2004a
Iceland	0 - 50	3	1990 - 2000	?	-	BirdLife International 2004a
Ireland	2,500 – 10,000	2	1988 - 1991	- 2	-	BirdLife International 2004a
Italy	1	1	2000	+1	-	BirdLife International 2004a
Latvia	150 - 200	2	1990 - 2000	(0)	-	BirdLife International 2004a
Lithuania	300 - 400	2	1999 - 2001	(-2)	-	BirdLife International 2004a
Netherlands	6,400 – 7,400	1	1998 - 2000	-2	-	BirdLife International 2004a
Norway	5,000 – 10,000	3	1997 - 2002	(-1)	-	BirdLife International 2004a
Poland	650 - 700	1	1995 - 2000	+ 1	-	BirdLife International 2004a
Romania	40 - 60	3	1990 - 2002	(F)	-	BirdLife International 2004a
Russia	48,000 – 120,000	1 ¹	1990 - 2000	- 2	-	BirdLife International 2004a
Serbia & MN	0 - 5	3	1990 - 2002	(0)	-	BirdLife International 2004a
Slovakia	3 - 30	2	1980 - 1999	- 2	-	BirdLife International 2004a

¹ In BirdLife International 2004 this is given as 1, but in fact it should be 2 given the large range of the two values (J. Valkama *in litt* 2005).

Slovenia	5 - 15	1	1990 - 2000	- 2	-	BirdLife International 2004a
Spain	1 - 5	2	1998 - 2002	(F)	-	BirdLife International 2004a
Sweden	10,000 – 20,000	2	1999 - 2000	- 2	-	BirdLife International 2004a
Switzerland	1 - 4	1	1998 - 2002	- 2	-	BirdLife International 2004a
Ukraine	50 - 100	2	1990 - 2000	- 2	-	BirdLife International 2004a
UK	99,500 – 125,000	1	2000	- 1	-	BirdLife International 2004a
Totals	220,000 – 360,000					

Breeding population data quality:

1: reliable quantitative data, 2 incomplete quantitative data, 3 no quantitative data

Breeding population trend:

- 2 Large decrease, - 1 Small decrease, + 2 large increase, +1 small increase, 0 Stable, F Fluctuating.

Table 3. *Wintering population numbers of Curlew Numenius arquata in Europe.*

Country	Wintering population (individuals)	Quality	Year(s) of the estimate	Trend in numbers	Baseline population	Reference
Austria	500 – 1,000	1	1995 - 2003	F	-	V. Blum <i>et al.</i> /BirdLife Austria 2005
Belgium	3,000	1	1995 – 2000	+ 1	-	BirdLife International 2004a
Cyprus	< 50	1	2000-2004	-	-	BirdLife Cyprus <i>in litt.</i>
France	18,000 – 22,000	1	1998 – 2002	F	-	BirdLife International 2004a
Germany	40,000 - 150,000	1	1995 – 2000	F	-	BirdLife International 2004a
Ireland	41,000 – 50,000	1	1994 – 2000	0	-	BirdLife International 2004a
Netherlands	140,000 – 150,000	1 ¹	1999 – 2001	0	-	BirdLife International 2004a SOVON Vogelonderzoek Netherland 2005
Spain	2,000 – 8,700	1	1990 – 2001	+ 2	-	BirdLife International 2004a
UK	164,700	1	1994 – 1999	+ 1	-	BirdLife International 2004a
Totals	> 420,000					BirdLife International 2004a

Wintering population data quality:

1: reliable quantitative data, 2 incomplete quantitative data, 3 no quantitative data

Wintering population trend: + 2 large increase, + 1 small in crease, - 2 Large decrease, - 1 Small decrease, 0 Stable, F Fluctuating.

¹ In BirdLife International 2004a this is given as 2, but in fact it should be 1 as it is based on the reliable, well-organised mid winter counts of SOVON (R van Beusekom, I Burfield in litt)

Table 4. National conservation and hunting status bag statistics of Curlew in EU.

Key: P = protected; H = species is huntable and open season declared; NH = species is huntable, but no hunting season is established; L = species protected, but may nevertheless be killed with government authorisation (licence) under conditions defined by national legislation.

Country	Status in national Red Data Book	Year of protection status	Hunting Status	National open season	Annual bag size (period)	Annual Statutory Bag Statistics	Highest responsible national authority
<i>Austria</i>	CR	Differs acc. to province	NH/P	-	-	-	Provincial government
<i>Belgium</i>	Flanders: not on red list – non-threatened		P	-	-	-	
<i>Cyprus</i>	-	-	P	-	-	-	Game Fund, Ministry of Interior
<i>Czech Republic</i>	CR	1962	P	-	-	-	Ministry of Environment
<i>Denmark</i>	-	1994	P	-	10-55,000 (pre 1994)	yes	Ministry of Environment
<i>Estonia</i>	-	-	P		-	-	
<i>Finland</i>	-	-	P		-	-	Ministry of Environment
<i>France</i>		-	H	2 nd 10 day period in Aug. – 2 nd 10 day period in Feb. ¹ 1 th 10 day period in Sep. – 2 nd 10-day period in Feb. ²	10 – 15,000 ³	No	Ministry of Environment

¹ Public marine areas (coastal zone)

² Elsewhere in France

³ Wetlands International Hunting Specialist Group unpublished data provided for Ecoscope Ltd. In the drafting of Ecoscope (1996).

<i>Germany</i>	2 (EN)	-	P		-	-	-
<i>Greece</i>	-	-	P	-	-	-	
<i>Hungary</i>	-	-	P	-	-	-	
<i>Ireland</i>	-	-	H	1/11 – 30/11	3,200 (1996) ¹	-	
<i>Italy</i>	-	1992	P	-	-	-	
<i>Latvia</i>	-	-	P	-	-	-	
<i>Lithuania</i>	2 (V)	1979	L	-	-	-	Ministry of Environment
<i>Luxembourg</i>	-	-	P	-	-	-	
<i>Malta</i>	-	-	P	-	-	-	
<i>Netherlands</i>	Not on red List	-	P	-	-	-	
<i>Poland</i>	-	-	P	-	-	-	
<i>Portugal</i>	-	-	P	-	-	-	
<i>Slovakia</i>	-	-	P	-	-	-	
<i>Slovenia</i>	-	-	P	-	-	-	
<i>Spain</i>	-	-	P	-	-	-	
<i>Sweden</i>	-	-	P	-	-	-	
<i>UK - GB</i>	Amber List	-	L	-	-	No	
<i>UK - NI</i>	Amber List	-	H	1/9 – 31/1	Unknown – but believed to be small	No	
Total					13,000 – 18,000		

¹ Y. Lecocq (FACE) *in litt.* 2005

3 Threats

This chapter gives an overview of current human activities that are believed to have a negative impact on the European population of Curlew. To describe the importance of threats to the EU Curlew population, the following categories are used:

Critical: a factor causing or likely to cause **very rapid declines** (>30% over 10 years);

High: a factor causing or likely to cause **rapid declines** (20-30% over 10 years);

Medium: a factor causing or likely to cause relatively **slow, but significant, declines** (10-20% over 10 years);

Low: a factor causing or likely to cause **fluctuations**;

Local: a factor causing or likely to cause negligible declines;

Unknown: a factor that is likely to affect the species but it is unknown to what extent

1. Habitat loss/degradation (human induced)

Breeding

Throughout most of the EU loss and modification of breeding habitat is a main cause for large declines in Curlew populations. In particular intensification of arable and grassland farming, land drainage and afforestation leading to poor breeding success has been attributed to the declines. Nest predation is a further important cause of breeding failure.

In **Sweden** where the population has been declining since the 1950s changes in land use, resulting in decreasing grassland (especially meadow) area and increased habitat fragmentation have reduced both breeding and foraging opportunities (Berg 1992a, 1992b). The decreasing area of leys and the abandoning of traditional meadow grassland in Sweden has further contributed to more recent declines (Å. Berg *in litt.* 1998) as well as the complete cessation of farming in marginal areas where agriculture is no longer profitable (Å. Berg *in litt.* 1998). Also increased emissions and downfall of nitrogen in recent decades, in many areas in particularly southern Sweden has changed the competitive relationship between plant species and has promoted the establishment of tree species which means that breeding habitats for Curlew have been degraded (T. Larsson *in litt.* 2005).

In **Finland** the main reason for the decline is attributed to the decline of dairy farming and the structural change of agriculture from traditional mixed farming to specialized cultivation of cereals and other crops which results in a decrease of field pastures, leys and hay fields (see e.g. Tiainen 2001, Tiainen & Pakkala 2001).

The most important decline in **Lithuania** was recorded during the last two decades of the 20th century after the collapse of the Soviet agricultural scheme (collective farms network). During this period a lot of agricultural land (including alluvial meadows and small open fens in between the farmland which were key breeding sites of Curlew) became derelict and overgrown with shrubs and tall grass. The loss of this breeding habitat led to a halving of the breeding population during the last decade of the 20th century (Kurlavicius and Raudonikis 1999, 2001). Current declines are also linked to habitat loss (overgrowing of small bogs, drainage, intensification of agriculture). According to a very rough estimation, 30-50 years ago more than 30 breeding sites with a population of about 100 pairs were destroyed after the implementation of drainage schemes and peat excavation (L. Raudonikis *in litt.* 2005).

Massive declines and range contractions in Northern Ireland, **UK** has been associated with intensified pastoral farming and loss and fragmentation of peatland habitat (Henderson *et al.* 2002). Increased livestock densities, drainage, regular cutting and high fertiliser leading to

reduced food availability, increased predation and loss of nests and chicks through trampling by livestock or mechanical cutting are considered main causes for the observed low breeding densities and breeding success (Henderson *et al.* 2002). Loss, degradation and fragmentation of peatland are further causes for the large decline (Henderson *et al.* 2002). Curlew in Northern Ireland has also been affected by increased predation on clutches and broods by foxes and avian predators (Grant *et al.* 1999).

In **Germany**, changes in the timing and frequency of meadow mowing has reduced breeding Curlew numbers and their continuous decline may be more or less the result of this change (Pfeifer & Brandl 1991). In the Upper Rhine Valley the decrease of the Curlew population correlated with habitat loss, mostly loss of grassland (meadows) to arable farmland, mostly maize (intensifying the agricultural regime, including with drainage), but also to expansion of industrial areas, villages, recreational areas (e.g model aircraft strip) and gravel pits. Nowadays, as a second factor, predation is the most important threat factor (Boschert 2004, 2005). Nest failures to agricultural practices are reduced in several breeding areas in the Upper Rhine Valley by intensive measures.

In **Dutch** grasslands agricultural activities and increased predation pressure are causes of declining reproduction in some areas (van Beusekom *in litt.*2005). However, the causes of decline in heath- and moorland populations in the Netherlands are unclear; reproduction decreased in some areas, but not everywhere. A relationship with overgrazing by cattle, decreased openness and hydrological regimes has been suggested as important. (van Beusekom *in litt.*2005) In Dutch dune areas, declines have been attributed to increased grass coverage and scrub invasion and to increased levels of fox predation.

In the Saone Valley where one third (5-600 pairs) of the whole **French** population breeds, changes in habitat have been responsible for overall declines in numbers, especially where abandonment of traditional grazing practice has resulted in scrubland. By contrast, increases in population density have occurred in areas where wet meadows have been best conserved (Boyer & Roche 1991).

In summary, for Curlew breeding in heath- and moorland and natural grassland loss, fragmentation, overgrowth and drainage are the main problems. For the Curlew breeding in arable land the abandoning of traditional farming methods and intensification of agriculture has been reported the main problem. Nest predation by foxes and birds, which may have benefited from recent changes in land-use, is a major cause of breeding failure in some Member States.

Wintering

As with all species associated with coastal wetlands, habitat loss and modification threaten the Curlew. For instance, construction of proposed tidal barrages could eliminate considerable parts of existing Curlew feeding areas.

It has been suggested that the provision of grassland near the tidal coastal wintering areas for high tide feeding could also be significant (N. Aebischer *in litt.*1998). Dutch grasslands near the Waddensea are very important as main feeding areas, not just for high tide feeding: up to 9.6% of the NW-European population might use these areas (van Beusekom *in litt.* 2005).

Importance of habitat loss/degradation

- For **breeding areas** in the EU the importance of habitat loss/modification is set at High.
- For the **winter areas** in the EU the importance of habitat loss/modification for the European wintering group is set at Medium.

Harvesting

Breeding/staging

Almost nothing is known about the extent of hunting en route to the EU and on the non-EU breeding areas of the species where especially shooting in Russia is of concern.

Winter

Hunting is not considered to be the major cause of Curlew decline in the EU but some doubts remain regarding the impact, as none of the Member States with Curlew hunting record the bag size on an annual basis. Overall the number taken annually in the EU is estimated to be between 13,000 and 18,000 birds i.e. some 3 – 4 % of the European/EU wintering population. However, for a declining species such as the Curlew, being long-lived with low productivity and therefore especially sensitive to adult mortality, this is of considerable concern.

Since 1994 only **Ireland, France** and **UK** (Northern Ireland) have allowed an open season for Curlew while in previous years, the species was hunted also in Great Britain and Denmark.

The harvest size for **UK** (Northern Ireland) is unknown, while around 3,200 birds were shoot in **Ireland** during the 1998/99 hunting season (Y. Lecocq *in litt.* 2005) amounting to about 6-8% of the national wintering population.

The levels of hunting taking place in **France**, in particular, may have consequences for those segments of the populations that pass through at some stage of their life cycle and is not compatible with the goal of returning this species to favourable conservation status. An estimated 10,000-15,000 Curlew are shot annually in France¹ out of a total national wintering population of 18,000-22,000 i.e. 55-68%, although of course the bag will include some passage birds. Even so the population that might migrate through France to the western Mediterranean and the West African coast is estimated at only 50,000 so still French hunters would be taking some 36-44%. It has been argued that these percentages might be too high, as most Curlew hunting in France takes place early in the season before the mid-winter counts (B. Trollet *in litt.* 2005). Ringing recoveries indicate that Curlew breeding in southern and south-eastern Finland winter to a great extent in France while more northern breeders winter in the UK. The decline of Curlew has been most acute in southern Finland so this may be linked to the high hunting pressure in France (J. Valkama *in litt.* 2005).

Importance

- For the European wintering group the importance of hunting is provisionally set at Medium

¹ Wetlands International Hunting Specialist Group unpublished data provided for Ecoscope Ltd. In the drafting of Ecoscope (1996).

3. Pollution

Recent evidence from studies of snipes (Beck & Granval 1997) suggest that ingestion rates of lead shot in some wader species may be as high as amongst Anatidae, but there have been no specific studies of Curlew to date.

However, accumulated PCB residues have been found in Curlew (Denker & Buthe 1995) and their clutches (Boschert 1992, 2004), including some showing very high levels, but generally little is known about the susceptibility of the species, and PCBs are not considered a major threat in most countries.

In western Finland it was found that heavy metal contents of Curlew eggs were higher in a polluted area than in two control areas, and within the polluted area the heavy metal concentrations of eggs were highest close to the pollution source (Currie & Valkama 1998).

As with all estuarine and intertidal wader species, concentrations of Curlew into such habitats make it vulnerable to sudden pollution events.

Importance

- For **areas of breeding** in the EU (almost exclusively birds belonging to the European wintering group) the importance of pollution is set at Unknown.
- For the **winter areas** in the EU the importance of pollution is set at Unknown but potentially medium.

4. Human disturbance

Summer

Human disturbance of breeding Curlew has been reported of importance in some Member States, in particular among populations breeding in the southern part of the European range.

In **Germany** about 30% (39 of 131) of nests were lost due to human disturbance in the southern Upper Rhine Valley (Boschert & Rupp 1993) and also normal arable farming activity can destroy all nests in arable fields (Tuellinghoff & Bergmann 1993). Nest losses in the study of Boschert & Rupp (1993) were due to a range of human disturbances e.g. normal agricultural activity, recreational time activities, military use, but also due to predation and weather. In a study of the Upper Rhine Valley the flying of model aircraft and density of road traffic were also shown to have an impact on the nesting and feeding distribution (respectively) of breeding Curlew (Boschert 1993). Disturbance exerts a direct influence on breeding activities as well as indirect influences on e.g., food supply (Boschert & Rupp 1993).

Human disturbance may further cause higher predation rates when crows return quicker to a disturbed area with unguarded Curlew nests. The latest research results from Upper Rhine Valley show that predation is now the most important factor as 70 out of 136 nests between 2001-2005 were predated (Boschert 2004, 2005 and unpublished).

Generally in the **UK**, upland nesting Curlew were always associated with areas of low potential disturbance (Haworth & Thompson 1990) while in the **Netherlands** much disturbance occur on heath- and moorland from walkers and dogs. The significance of this for

Curlew reproduction is unknown, but might be considerable (van Beusekom *in litt.*2005).

In summary, disturbance at breeding sites appear to be mainly a problem in the southern part of the range where only a small part of the EU population breed. Although this can be a significant problem locally, the impact on the EU population is limited.

Wintering

Curlew are considered (together with Redshank) as amongst the most “nervous” of waders on wintering grounds (Davidson & Rothwell 1993), with escape flight distances amongst the greatest of studied inter-tidally feeding wader species (Smit & Visser 1993), although this is highly site-dependent (e.g. Fitzpatrick & Bouchez 1998) and related to the hunting intensity in the country concerned.

In the **Netherlands** it is known to be sensitive to disturbance from walkers, low-flying planes and human activity near high tide roots. For instance a loss of 10% of available foraging time has been measured because of disturbance from air planes (van Beusekom *in litt.*2005).

The impact of disturbance on wintering Curlew populations is unknown, but might be considerable (van Beusekom *in litt.*2005). More research on the site specific susceptibility to disturbance and the capacity for habituation is therefore required to offer meaningful guidelines to managing the effects of this potential source of loss of available of habitat.

Importance

- For **areas of breeding** in the EU the importance of disturbance is set at Low/Medium.
- For the **winter areas** in the EU the importance of disturbance is set at Medium/High.

4. Policies and legislation relevant for management

Table 5. *International conservation and legal status of the Curlew.*

World Status ¹ (Criteria)	European Status ²	SPEC category ³	EU Birds Directive Annex	Bern Convention Annex	Bonn Convention Annex	African-Eurasian Migratory Waterbird Agreement	Convention of International Trade on Endangered Species
Not listed	Declining	2	Annex II/2	Appendix III	Appendix II	Column C1	Not listed

Member States / Contracting parties obligations

Curlew is listed on Annex II/2 in the EU Birds Directive, which indicates that it can be hunted in all those Member States, which have defined a hunting season for this species.

¹ BirdLife International/IUCN Red List assessment.

² BirdLife International (2004a). *Birds in Europe: their Conservation Status*. Cambridge UK: BirdLife International (BirdLife Conservation series no. 3)

³ BirdLife International (2004a). *Birds in Europe: their Conservation Status*. Cambridge UK: BirdLife International (BirdLife Conservation series no. 3)

SPEC 2: Species whose world populations are concentrated in Europe, but which have an unfavourable conservation status in Europe.

National policies, legislation and ongoing activities

Table 6. Brief overview of management measures and restoration planning processes currently underway, which benefit Curlew in Member States.

MEMBER STATE	TITLE	CATEGORY	HUNTING ACTIONS	HABITAT/ SPECIES ACTION	OTHER ACTIONS
Austria	Distelverein Ramsar Project (LIFE)	I		hamds	rps
Austria	WWF restoration plan	I		P/I:hm	
Austria	ÖPUL: agri-environment payments for late mowing in Burgenland, Lower Austria	I		P:hms	pres
Belgium	Flemish Region: DANAHE-project: nature restoration on military training sites			H,a,d,s	P,e,s
Germany	Financial programme to support management of agricultural habitats	I		amd	
Germany	Long lease and purchase of pasture in Schleswig-Holstein	I		P:hamds	s
Germany	Eider, Treene and Sorge river systems	I		C:hamds	ps
Denmark	Wetland restoration by state and private persons				
France	Acquisition by Federation des Chasseurs de France		g	I:hs	
France	Establishment of Réserve de chasses (hunting-free areas)		C:g		s
Italy	Valli da Pesca-Azinde Faunistico, Venatorie management	I	C:dhb	C:hds	s
Italy	Wetland creation/restoration by hunters	I	C:dr	C/I:hads	
Italy	Wetland creation/restoration by authorities	I		C:hds	
Italy	Habitat improvement financed by hunting tax			I/P:hads	
Italy	Regional laws limiting hunting		o		
Lithuania	Preparation of the management plans for important breeding sites in the frame of the SPAs network	I	C:g	P:pdo	rs
Lithuania	Habitat management in the protected areas by state	I		P: haso	
Netherlands	Agri-environmental schemes for agricultural grassland habitats	I		hamdo	resp
Netherlands	Control of foxes and crows			p	
Netherlands	Creation and restoration of (tidal) wetlands and heathlands	I		h	resp
Netherlands	Catchment management plans	I		Hdso	resp
Sweden	Restoration of 12000 hectares of wetlands by 2010	-	-	h	-
United Kingdom	Catchment management plans	I		hms	s
United Kingdom	SSSI/ASSI management plans	I		hamds	s
United Kingdom	EAS	R		ham	s

United Kingdom	Integrated estuary management plans	I		hmds	pes
United Kingdom	Water level management plans	I		ham	s

Category: I = integrated management plan.

Action status: C = completed, P = in progress.

Hunting actions: g = general hunting ban, b = bag limits, r = regional hunting ban, s = shortened hunting period, d = limit to hunting days, h = limit to hunting hours, o = other.

Habitat/species actions: h = habitat improvement, a = modifications to agricultural activity, m = minimisation of adverse effects of harvesting, roads, etc., p = predator control, d = prevention of disturbance, s = site safeguard, o = other.

Other actions: r = research, p = public awareness, e = education campaigns, s = survey, census and monitoring, o = other.

5. Framework for Action

Priority statement/evaluation

The Curlew is a relatively abundant but declining wader species. More than 3/4 of the global population breed in northern Europe where the breeding range continues to contract, and numbers in many countries continue to decline. About 420,000 birds are thought to winter in EU.

Changes in land-use, agricultural practices and nest predation are considered the most significant causes responsible for the decline of Curlew in the EU. Such habitat loss and modification has suppressed breeding success and thereby led to population decline. Human disturbance on breeding and wintering areas is believed to be of secondary importance. The Curlew remains a huntable species in France, Northern Ireland and Ireland and the hunting taking place in France, in particular, may have consequences for those segments of the populations that pass through.

This Management Plan presents a framework for the restoration of Curlew populations in EU and its habitats. But to become effective each of the countries with breeding and/or wintering population should develop its own national plan that describes management activities on the basis of what is presented here.

Purpose of the EU Action Plan

Recognising that the Curlew has an Unfavourable Conservation Status in EU (and Europe) due to a moderate continuing decline the long-term objective (10 years) of this plan is:

To restore the Curlew to a favourable conservation status in the EU¹.

This plan aims to address the most urgent issues to halt the decline of the Curlew population in the EU but at the same time restrict the activities to be carried out to a realistic level. Thus, the short-term objectives outlined in the plan will focus on:

- Improved management and protection of breeding and wintering sites
- Better protection from disturbance
- Collection of more robust data to better understand the potential importance of hunting and other types of population regulations.

The plan applies for a three years period after which it should be evaluated and reviewed. This

¹ The EU Habitats Directive (92/43/EEC) states that a species's conservation status will be taken as Favourable when:

- Population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats; and
- The natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future; and
- There is, and will probably continue to be, a sufficiently large habitat to maintain its population on a long-term basis.

should include an assessment of the results achieved during the first three years. During this process the objectives for the short-term objectives for the next Curlew EU Management Plan should also be identified that most effectively will lead to the recovery of the European Curlew population and the achievement of the long-term objective to restore the Curlew to favourable conservation status.

Results for the period 2006-2009

This section outlines the Results to be achieved during the first 3-year period of Curlew management within the EU. The Results outlined below (and the corresponding Activities in Chapter 6) are targeted at the authorities responsible for the implementation of the provisions of the Birds Directive in the Member States. In the Logical Framework Analyses (LFA) table on page 40, the Results with corresponding Activities, verifiable indicators, means of verification and assumptions are summarised.

Policy and legislative actions

An essential component when managing a huntable species is detailed information on the number of birds shot per year and the proportion this constitutes of the flyway population. This type of information is currently lacking from all the Member States where Curlew hunting is permitted. Collection of reliable and updated bag data is therefore a key Activity of this plan.

Results of the implementation of this Management Plan should therefore be that by the end of 2009:

1. An estimate of the annual number of Curlew shot is available from all Member States where hunting is permitted.

Management and protection of breeding, staging and wintering populations

Loss, degradation and changes to breeding habitats are considered the main cause of the Curlew decline in the EU. This affects both traditional Curlew breeding habitats such as bogs/moorlands and arable land. Site safeguard measures that can be put in place under existing environmental law using EU (e.g. Birds Directive and Habitats Directive) and domestic legislative frameworks, should therefore be supplemented with measures for conservation of populations in the wider countryside. Furthermore, management plans for key breeding areas such as the Countryside Management Schemes (CMS) in Northern Ireland should be developed. Such management plans and schemes should target “traditional” Curlew breeding habitats where waterlevel and afforestation may be important, but also arable and grassland agriculture where the main issues typically include livestock densities, drainage, cutting regimes and fertiliser input.

Results of the implementation of this Management Plan should therefore be that by the end of 2009:

2. Protection and restoration of “traditional” Curlew breeding sites are initiated in all Member States where this species is in decline in this habitat to maintain and increase range.
3. The use of effective agro-environmental schemes is promoted to encourage favourable management of agricultural areas that holds breeding Curlew including support for evidence-based prescriptions designed to benefit Curlew.
4. Management Plans or Schemes have been prepared and implementation initiated in key Curlew breeding areas to ensure no further loss of Curlew numbers and distribution and to increase reproductive success and colonising ability.

Large numbers of Curlew winter in the EU with the highest numbers occurring in the UK, the Netherlands, Germany, Ireland and France. Being very site-faithful they are particularly vulnerable to habitat loss. Results of the implementation of this Management Plan should therefore also be that by the end of 2009:

5. All staging and wintering areas of international importance for Curlew within the EU are identified and designated SPAs.
6. Management Plans are prepared and implementation initiated for designated sites (SPAs) of importance for staging and wintering.
7. Conservation and wise-use is also promoted in wetlands other than SPAs supporting staging and wintering Curlew to maintain range and to ensure no net loss of Curlew numbers and distribution.

Management of human activities

Wintering Curlew are especially subject to disturbance as they are considered as amongst the most “nervous” of waders on wintering grounds with escape flight distances amongst the greatest of studied inter-tidally feeding wader species. Consequently special measures should be taken to secure areas without human disturbance in the wintering areas.

8. Hunting and disturbance-free areas are established in a minimum of two SPAs of international importance for wintering and/or staging Curlew in all Member States with sites of international importance for this species. Each of these disturbance-free areas should include both feeding and roosting habitat.

International co-operation

Inventories of key sites in Member States for Curlew outside the breeding period is important to increase the knowledge on numerical distribution in EU during winter. This information is also of particularly importance for the analyses of the possible impact of hunting on Curlew (Result 10).

9. Annual mid-winter census of all areas of international importance for wintering Curlew within the EU are carried out as part of the International Waterfowl Census

with the support of the authorities responsible for the implementation of the provisions of the Birds Directive in each Member State.

Research and monitoring

Some doubts remain concerning the potential impact of hunting on the Curlew in the EU. Research is therefore urgently needed to assess, based on existing but in particular new data on bag size, if the present level of hunting in Member States hinder the recovery of the Curlew populations in EU.

A further pressing issue is the need for better understanding of the relationship between wintering range and breeding populations. For instance this will assist the assessment of the likely impact of hunting on breeding populations. Existing ringing/recovery information provides much useful information that need to be better utilised but more ringing is also needed.

Short-term priorities for Curlew research should therefore be that after three years:

10. A study has been carried out, that includes an estimate of the impact of hunting in Member States on Curlew populations in EU. Among other things the study should analyse changes in population size to variation in hunting mortality temporally (between years) and spatially (between areas).
11. National ringing activities on breeding, staging and wintering areas and analyses of existing ringing data to identify population units is supported by national authorities in all Member States with important breeding, staging or wintering numbers of Curlew.

6. Activities

In the following two tables are listed the Results to be achieved by the end of 2009 for breeding and staging/wintering Curlew, respectively, with the corresponding activities to be carried out by the relevant Member States.

Table 7. *Prioritised result and actions with time scale for all EU Member States with breeding population of Curlew (the scale for Priority and Time Scale is given on page 39).*

Result	Priority	National activities	Time scale	Means of verification
Protection and restoration of “traditional” Curlew breeding sites is initiated in all Member States where this species is in decline to maintain and increase range.	High	Initiate protection and restoration of “traditional” breeding sites for Curlew in all Member States where this species is in decline to maintain and increase range.	Short	Publication/web-site of relevant national authority in Member States and report to Ornis Committee by national delegate.
The use of effective agro-environmental schemes is promoted to encourage favourable management of agricultural areas that holds breeding Curlew including support for evidence-based prescriptions designed to benefit Curlew.	High	Promote the use of effective agro-environmental schemes to encourage favourable management of agricultural areas supporting breeding Curlew to maintain range and abundance.	Short	Publication/web-site of relevant national authority in Member States and report to Ornis Committee by national delegate.
Management Plans or Schemes have been prepared and implementation initiated in key Curlew breeding areas to ensure no further loss of Curlew numbers and distribution and to increase reproductive success and colonising ability.	Medium	Prepare Management Plans and Schemes and initiate the implementation in key sites for breeding Curlew to ensure no further loss of numbers and distribution and to increase reproductive success and colonising ability	Medium	Publication/web-site of relevant national authority in Member States and report to Ornis Committee by national delegate.

<p>A study has been carried that includes an estimate of the impact of hunting in Member States on Curlew populations in EU. Among other things the study should analyse changes in population size to variation in hunting mortality temporally (between years) and spatially (between areas).</p>	<p>High</p>	<p>Support a study that includes an estimate of the impact of hunting in Member States on Curlew populations in EU.</p>	<p>Short</p>	<p>Report available to the Commission by the end of 2008.</p>
<p>National ringing activities on breeding, staging and wintering areas and analyses of existing ringing data to identify population units is supported by national authorities in all Member States with important breeding, staging or wintering numbers of Curlew.</p>	<p>Medium</p>	<p>Support ringing activities on breeding, staging and wintering areas and analyses of existing ringing data to better identify population units.</p>	<p>Medium</p>	<p>Papers and/or reports produced documenting new information.</p>

Table 8. *Prioritised result and actions with time scale for all EU Member States with staging and/or wintering population of Curlew (the scale for Priority and Time Scale is given on page 39).*

Result	Priority	National activities	Time scale	Means of verification
An estimate of the annual number of Curlew shot is available from all Member States where hunting is permitted.	High	Ensure that an annual estimate of Curlew harvest is available (France, Ireland and the UK).	Short	Publication/web-site with official bag statistics in relevant Member States available by the end of 2008 and report to Commission by national Ornis Committee delegate.
All staging and wintering areas of international importance for Curlew within the EU are identified and designated SPAs.	High	Identify and designate as SPAs all staging and wintering areas of international importance for Curlew within the EU.	Short	All staging and wintering sites in the EU, which regularly supports more than 1% of the European Curlew population (corresponding to 420 birds) are designated as SPAs.
Management Plans are prepared and implementation initiated for designated sites (SPAs) of importance for staging and wintering.	Medium	Prepare Management Plans and initiate implementation for designated sites (SPAs) of importance for staging and wintering.	Medium	Publication/web-site of relevant national authority in Member State and report to Commission by national Ornis Committee delegate.
Conservation and wise-use is promoted in wetlands other than SPAs supporting staging and wintering Curlew to maintain range and to ensure no net loss of Curlew numbers and distribution.	Medium	Promote conservation and wise-use in wetlands other than SPAs supporting staging and wintering Curlew to maintain range.	Medium	Publication/web-site of relevant national authority in Member State and report to Commission by national Ornis Committee delegate.

<p>Hunting and disturbance-free areas are established in a minimum of two SPAs of international importance for wintering and/or staging Curlew in all Member States with sites of international importance for this species. Each of these disturbance-free areas should include both feeding and roosting habitat.</p>	<p>High</p>	<p>Establish hunting and disturbance-free areas in a minimum of two SPAs of international importance for staging and/or wintering Curlew in all relevant Member States.</p>	<p>Short</p>	<p>Publication/web-site of relevant national authority in Member State and report to Commission by national Ornithology Committee delegate.</p>
<p>Annual mid-winter census of all areas of international importance for wintering Curlew within the EU are carried out as part of the International Waterfowl Census with the support of the authorities responsible for the implementation of the provisions of the Birds Directive in each Member State.</p>	<p>High</p>	<p>Support annual mid-winter counts of all areas of international importance for wintering Curlew in all relevant Member States.</p>	<p>Short</p>	<p>Data for annual Curlew mid-winter counts from all sites of international importance in EU are present in IWC database.</p>
<p>A study has been carried that includes an estimate of the impact of hunting in Member States on Curlew populations in EU. Among other things the study should analyse changes in population size to variation in hunting mortality temporally (between years) and spatially (between areas).</p>	<p>High</p>	<p>Support a study that includes an estimate of the impact of hunting in Member States on Curlew populations in EU.</p>	<p>Short</p>	<p>Report available to the Commission by the end of 2008.</p>

National ringing activities on breeding, staging and wintering areas and analyses of existing ringing data to identify population units is supported by national authorities in all Member States with important breeding, staging or wintering numbers of Curlew.	Medium	Support ringing activities on breeding, staging and wintering areas and analyses of existing ringing data to better identify population units.	Medium	Papers and/or reports produced documenting new information.
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The **Priority** of each Result is given, according to the following scale:

- Essential: an action that is needed to prevent a large decline in the population, which could lead to species or subspecies extinction.
- High: an action that is needed to prevent a decline of more than 20% of the population in 20 years or less
- Medium: an action that is needed to prevent a decline of less than 20% of the population in 20 years or less
- Low: an action that is needed to prevent local population declines or which is likely to have only a small impact on the population across the range.

The **Time scales** attached to each Activity use the following criteria:

- Immediate: completed within the next year.
- Short: completed within the next 1-3 years
- Medium: completed within the next 1 – 5 years.
- Long: completed within the next 1 – 10 years
- Ongoing: an action that is currently being implemented and should continue.
- Completed: an action that was completed during the preparation of the Management Plan.

Table 9. Summary of objectives/results and activities of the Curlew Management Plan 2006-2009.

DESCRIPTION	VERIFIABLE INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS
<p>Overall objective: To restore the Curlew to a favourable conservation status in Europe</p>	<p>The Curlew population has a favourable conservation status.</p>	<p>The European Threat Status classification of Curlew.</p>	<p>Curlew Management Plan approved and supported by EU and Member States.</p>
<p>Short-term Results:</p> <ol style="list-style-type: none"> 1. Data on annual number of Curlew shot in Member States (with hunting on this species) is available. 2. Protection and restoration of “traditional” Curlew breeding sites is initiated in all Member States. 3. The use of effective agro-environmental schemes is promoted. 4. Management Plans and Schemes have been prepared and implementation initiated in key Curlew breeding areas. 5. All staging and wintering areas of international importance for Curlew within the EU are identified and designated SPAs. 6. Management Plans are prepared and implementation initiated for designated sites (SPAs) of importance for staging and wintering. 7. Conservation and wise-use is promoted in wetlands other than SPAa supporting staging and wintering Curlew. 	<ol style="list-style-type: none"> 1. Data on annual number of Curlew shot in the EU is available. 2. Peatland and unimproved grassland sites with breeding Curlew are protected and/or restored. 3. Numbers and productivity of breeding Curlew in agricultural areas increased due to management. 4. Management Plans and Schemes are being implemented at key Curlew breeding sites. 5. All staging and wintering sites, which regularly support more than 420 Curlew are designated SPAs. 6. Management Plans are being implemented in all SPAs with staging and/or wintering populations of international importance for Curlew. 7. Management recommendations developed and implemented for Curlew breeding habitats in Member States with important populations. 	<ol style="list-style-type: none"> 1. Publication/web-side with official bag statistics in relevant Member States available. 2. Publication/web-side of relevant national authority in Member States and report to ORNIS Committee by national delegate. 3. Publication/web-side of relevant national authority in Member States and report to ORNIS Committee by national delegate. 4. Publication/web-side of relevant national authority in Member States and report to ORNIS Committee by national delegate. 5. Publication/web-side of relevant national authority in Member States and report to ORNIS Committee by national delegate. 6. Publications produced and distributed to private landowners, local authorities and others. 7. Publication/web-side of relevant national authorities in Member States and report to Ornis Committee by national delegate. 	<p>Member States have adequate resources and commitment to take responsibility for Curlew management in accordance with the Birds Directives obligations.</p>

<p>8. Hunting and disturbance-free areas are established in a minimum of two SPAs of international importance for wintering and/or staging Curlew in all Member States with sites of international importance for this species.</p> <p>9. Annual mid-winter census of all areas of international importance for wintering Curlew within the EU is carried out.</p> <p>10. A study has been carried that includes an estimate of the impact of hunting in Member States on Curlew populations in EU.</p> <p>11. National ringing activities on breeding, staging and wintering areas and analyses of existing ringing data to identify population units is supported.</p>	<p>8. In Member States with Curlew staging or wintering in numbers of international importance at least two disturbance-free areas established by end 2008.</p> <p>9. Annual mid-winter counts from all sites, which supports more than 1% of the relevant Curlew publication submitted to the International Waterbird Census (IWC) database managed by Wetlands International.</p> <p>10. Report is available by end 2008 with assessment of the importance of hunting for the recovery of EU Curlew populations.</p> <p>11. New information on Curlew population units and mortality within the western Palearctic and specifically within the EU Member States is available.</p>	<p>8. Publication/web-side of relevant national authorities in Member States and report to Ornis Committee by national delegate.</p> <p>9. Wetlands International publication.</p> <p>10. Report available to the Ornis Committee.</p> <p>11. Papers and/or reports produced documenting new information.</p>	
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