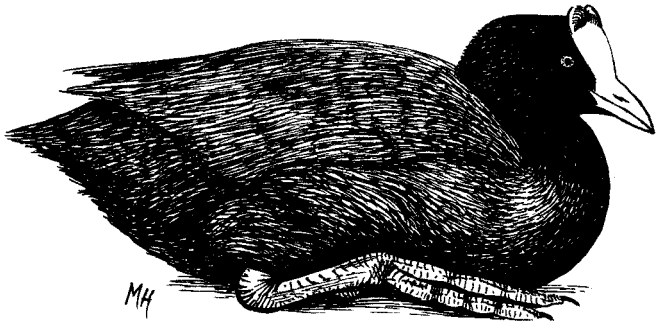
International Species Action Plan

Crested Coot *Fulica cristata*



Final Draft, December 1999

Prepared by BirdLife International on behalf of the European Commission

International Species Action Plan for Crested Coot (*Fulica cristata*)

Compiler: Concha Raya Gómez

Contributors
J. Criado (SEO/BirdLife Spain)
C. Dolz (Consejeria de Medio Ambiente -Generalitat Valenciana)
J. Mª Fernández Palacios (Consejería de Medio Ambiente -Junta de Andalucía)
U. Gallo-Orsi (BirdLife International)
L. García (Estación Biológica de Doñana -Consejo Superior de Investigaciones Científicas)
H. Garrido (Estación Biológica de Doñana -Consejo Superior de Investigaciones Científicas)
C. Gil de Viedma (Consejeria de Medio Ambiente -Generalitat Valenciana)
M. Giménez (SEO/BirdLife Valencia, Spain)
J. A. Gómez (Consejeria de Medio Ambiente -Generalitat Valenciana)
A. Green (Estación Biológica de Doñana -Consejo Superior de Investigaciones Científicas)
M.A. Maneiro (Parque Natural de Doñana)
M. Máñez (Reservas Naturales de las Lagunas de Cádiz -Consejería de Medio Ambiente - Junta de Andalucía).)
F. Oliveros (Parque Natural de Grazalema-Consejería de Medio Ambiente - Junta de Andalucía).
P. Pereira (Parque Nacional de Doñana)
M. Rendón (Reservas Naturales de las Lagunas de Málaga -Consejería de Medio Ambiente - Junta de Andalucía).
P. Rodríguez Parada (Reserva Concertada "Cañada de los Pájaros")

Timetable
First draft: 31st July 1999
Workshop: 10-12 September 99
Final draft: 31st December 1999

Reviews
This Action Plan should be reviewed and updated every 5 years. An emergency review will be undertaken if sudden major environmental changes, affecting the population, occur within the species' range. This action plan is intended to include Crested Coot in Appendix II of the Agreement on the Conservation of African-Eurasian Migratory Waterbirds under the Bonn Convention.

Geographical scope
This Action Plan needs to be implemented in the following range state of the Crested Coot: Spain, Morocco, Algeria and Portugal.

Contents

Summary

The Crested Coot (*Fulica cristata*) is listed as a SPEC 3 and considered Endangered in Europe due to their number (Tucker & Heath 1994). It is also listed in Annex I of the EC Birds Directive and Appendix II of the Bern Convention.

The current global distribution of Crested Coot is fragmented in two spatially isolated centres: Eastern and Southern Africa, and Western Mediterranean; Europe is a northernmost extreme of this distribution range.

During the 20th century, the regional range in the Western Mediterranean of the Crested Coot *Fulica cristata* has decreased significantly and the population has undergone a marked decline. At present, the species is almost extinct on the Iberian Peninsula, the only region where the species occurs in Europe. This decline has mainly been due to habitat destruction and degradation. Hunting and other factors, such as the marginal character of the population, have also contributed to some degree to this decline. Another weakness is that there is a disregard about current status of Crested Coot populations in the centres of distribution and the species are not known to public awareness. The conservation of the species in Europe and in the Western Mediterranean (Morocco and Algeria) requires action on several fronts.

The most important need is the effective conservation of the most important wetlands for the species, paying particular attention to breeding sites. A large proportion of these breeding sites have already some figure of legal protection but they are still being degraded by a variety of factors, such as hydrological changes within catchments. In view of the ongoing habitat loss in the major breeding grounds of the Crested Coot in Morocco, it is imperative that this Action Plan will be successfully implemented to conserve the remaining populations in the western Mediterranean. The restriction of hunting in key sites where Crested Coot is regularly registered is also important due to the difficulties to distinguish it from Common Coot (*F. atra*), a very popular game waterbirds.

Threats and limiting factors

Habitat degradation- critical

Habitat loss – critical

Livestock – high

Hunting – medium

Fishing – medium

Disturbance – low

Flamingos – unknown

Introduction of other species – unknown

Lead poisoning – unknown

Conservation priorities

Restoration and conservation of the habitat at all key sites for the Crested Coot - essential

Research into the species' ecology, habitat requirements and movements - essential/high

Monitoring the evolution and state of the population of Crested Coot - essential/high

Increasing public awareness of the need to protect the Crested Coot and its habitat - high

Development and implementation of the Regional Recovery Plans of the species - high

Hunting restriction of Common Coot (*Fulica atra*) at sites where the Crested Coot is regularly recorded - high

Legal protection of the species and the key sites - high

Increasing the extent of available habitat - high

Preventing Crested Coot mortality from causes other than hunting - medium

Keeping a breeding population of Crested Coot in captivity to ensure a genetic stock of individuals, as well as increasing the productivity of the wild population by the systematic reintroduction of captive individuals into its natural habitats - medium

Introduction

The Crested Coot *Fulica cristata* is not a Globally Threatened species because of its populations in South Saharan Africa. However, in the Western Mediterranean the species is isolated and populations are in decline with fewer than 10.000 individuals (Scott & Rose 1996); according to A. Green (i*n litt.* 1999) the current sizes of Crested Coot populations in Western Mediterranean are 5.000 birds. The species is considered to be threatened by extinction at regional level (IUCN 1994).

The Crested Coot is listed as SPEC 3 and Endangered species in Tucker & Heath (1994), indicating that it is a species whose population is not concentrated in Europe, but has an unfavourable conservation status. The species occurs in small numbers in Southern Europe with fewer than 250 breeding pairs.

The species is listed in Annex I of the EU's Birds Directive and Appendix II of the Bern Convention. It is not listed in Appendix II of the Bonn Convention, nor in the Washington Convention (CITES).
On 25 and 26 February 1999, a workshop took place in Grazalema (Cádiz/SPAIN) to discuss the Recovery Plan of Crested Coot in Andalucía region (SPAIN). The workshop was organised by the Consejería de Medio Ambiente (Andalucía/SPAIN); it was attended by experts from Spain. Another workshop took place in Valencia (September 1999), it was organised by SEO/BirdLife. This action plan is based on discussions held during the workshop and a recent comprehensive report on the species in Morocco (Green *in litt.* 1999).

A limitation of this plan is that it was not possible to have active involvement of representatives from Morocco and Algeria, two countries within the scope o f this plan that support very important breeding populations of the species. All dates from Morocco on this plan belong to a report on the species in this country carry out by A. Green (*in litt.* 1999).

Background Information

Distribution and population

The current global distribution of the Crested Coot is separated into two geographically isolated areas. The major centre of distribution is located in Eastern and Southern Africa, where the Crested Coot is not endangered, and a small centre of distribution in the Western Mediterranean (Spain, Morocco, Algeria?, Portugal).

The last available census (Table 1) from eastern and southern Africa was of 27.113 and 32.685 individuals recorded in July 1996 and January 1997 respectively (Dodman *et al.* 1997).

Table 1 - Maximum counts in 1996 and 1997 in eastern and southern Africa

COUNTRY	July 1996	January 97
Eritrea	?	0
Ethiopia	?	1.253
Kenya	0	2.364
Seychelles	0	0
Sudan	?	0
Tanzania	0	0
Uganda	0	19
Botswana	290	372
Madagascar	3	0
Malawi	1	2
Mozambique	?	5
Namibia	373	774
South Africa	25.729	26.903
Swaziland	23	2
Zambia	664	529
Zimbabwe	30* 1.389**	492
TOTAL	**27.113**	**32.685**

The western Mediterranean populations are represented by the Iberian Peninsula (Spain and Portugal) and Morocco; they constitute the only enclaves for the species in all Paleartic (Cramp & Simmons 1980). In the XIX century, when the breeding population were more abundant and was present also in Algeria and Tunisia, erratic birds could be observed during the winter in Portugal, southern France, Sardinia, Sicily and Malta (Cramp & Simmons 1980).

The species' current status in western Mediterranean is the result of a drastic decline occurred from the end of the XIX century and along the whole XX century mainly caused by the human impact on its habitat. The species almost disappeared from Spain in the middle of the XX

century and diminished in the rest of its northern range. As consequence the Crested Coot have small, isolated, declining populations of less than 10.000 individuals in the west Mediterranean (Rose & Scott 1997); this population can be considered to be threatened with extinction according to the latest IUCN criteria (IUCN 1994), and are thus high priorities for conservation at a regional level. These populations qualify as Vulnerable under criterion C2b.

In the last decades there are no records of Crested Coot from Algeria or Tunisia (Heim de Balsac & Mayaud 1962) or Portugal, and a very small population survives in Spain. On this basis Green (*in litt.* 1999) considers an estimate of 5.000 birds for the western Mediterranean population of this species should be used by the Ramsar Convention or for identifying IBAs (Important Bird Areas) for this species (A. Green *in litt.* 1999).

TABLE 2: Estimates of current sizes of Crested Coot wintering and breeding populations in Europe and North Africa, based on data collected from 1990 to 1999.

Country	Winter population	Breeding pairs
Algeria	?	?
Morocco	5.000	500 – 1.000
Portugal	?	?
Spain	25 – 50	5 – 10

The Iberian population has declined strongly during the twentieth century (Bernis 1972), and Crested Coot is now only accidental in Portugal (CODA-SEO 1985). By the 1960s it disappeared in Spain from La Janda (Alonso Lopez 1985) as a consequence of the drainage of this wetland, and was nearly extinct at Doñana (Valverde 1960). This trend continued at Doñana where just 17 winter records were registered by the Biological Reserve staff between 1977 and 1986 (García *et al.* 1987). In the following years the species showed a small recovery with 10-20 breeding pairs at Doñana in 1987 (Máñez 1991) and an estimated total of about 50 adults in 1990 (De Juana 1992). Since 1990 the Crested Coot has not bred in Doñana and the presence of the species in the area is reduced only single birds.

At present the species' European breeding range is limited chiefly to a few lagoons, mostly within 50 km of Doñana National Park, although a few are over 100 km far. This population is estimated in 5-10 pairs (Table 3) and is resident but the birds do make local movements, especially when they disperse due to the drying out of seasonal wetlands (Fernandez-Palacios & Raya 1991).

Table 3 - Breeding population of the Crested Coot in Europe

	BREEDING POPULATION			BREEDING RANGE TREND
	Size (pairs)	year	trend	
Spain	5 - 10	98	- 1	F
Total (approx.)	5 - 10			

Trends: (1970-1999)
+2 large increase
+1 small increase
0 stable
X Extinct.
- 2 large decrease
-1 small decrease
F Fluctuating
N New breeders

Life history

Breeding
The mating system is monogamous. Paired birds can be observed in winter, which suggests that this link can be maintained for a long period. The timing of nesting is variable and clutch size varies between 5 and 7 eggs (a second brood is possible). Hatching takes place from the second half of February to the first half of September, with a peak between May and June (similar to Common Coot *Fulica atra*). In Morocco Hatching occurs all around the year (Green *in litt.* 1999). Incubation takes 18 to 25 days and is shared between the sexes.

An elder sibling collaboration in the care of the chicks has been observed (Grimes 1976, Dean 1981). The family unit remains intact during winter, despite the chicks' having reached maturity. This has been recorded also in South Africa by Dean (1981).

Feeding
The very limited data available indicate an omnivorous diet consisting of a mixture of plant material and invertebrates, mainly based on submerged vegetation. Feeding techniques of Crested Coot are similar to those of Coot (Fernandez Palacios & Raya 1991), with an emphasis on aquatic methods, such as diving down and pulling up submerged vegetation. Crested Coot also feed from the surface and graze on short grass near water, especially when food is scarce, but much less so than Common Coot (Del Hoyo 1996).

Habitat requirements
Habitat requirements are not well known. Crested Coot mainly uses open fresh water or slightly brackish wetlands, typically with dense submerged and emergent vegetation. More permanent wetlands (or those that are flooded between October and July at least) seem to be favoured by the species.

During the breeding season, the species uses areas with abundant submerged vegetation. Emergent vegetation could play a secondary role for the provision of nesting material and shelter where the submerged vegetation is not dense. In Morocco, the Crested Coot occurs in

wetlands with at least 20% of their surface area covered by emergent vegetation (Green pers. comm.).

At other times of the year the species also occurs in more open-water habitats (Wood 1975, Del Hoyo 1996, Cramp & Simmons 1980, Fernandez-Palacios & Raya 1991).

Movements
The Crested Coot is mainly resident in those wetlands which offer appropriate conditions all year round. But the birds can make local movements, especially during dispersal after breeding due to the drying out of seasonal wetlands (e.g. Marismas del Guadalquivir/Spain).

Strong periods of drought (e.g. 1981-1983 and 1992-1995) resulted in the drying out of suitable habitats and in a marked decrease in the number of birds present. During such periods the species occurs on artificial wetlands, such as ponds, dams, sewage ponds etc., and the larger part of the population makes opportunistic movements attempting to find more suitable wetlands.

In Southern Africa the Crested Coot is resident on existing wetlands, but birds may move considerable distances outside the breeding season. At Barberspan, South Africa, factors influencing fluctuations in numbers include rainfall, water levels and availability of preferred food (*Potamogeton pectinatus*) and 70%of birds ringed between 1955 and 1978 were recovered within 300 Km from the first capture site (Skead 1980).

According to ringing recoveries in South Africa (Oschadleus 1999 *in litt.*) between 1954 and 1991, birds have been recovered as far as 5.000 Km. from where they were ringed.

Because of the short distance between suitable habitats in Morocco and Spain it is very likely that birds move from one country to the other.

Threats and limiting factors

Habitat loss
During the 20th century, large surface areas of wetlands of vital importance for the species have been completely destroyed or degraded. In Andalucía alone, the habitat currently available to the Crested Coot represents only 18% of that which existed in the 1950s (EBD 1994). This habitat loss is probably the most important cause of the decrease in the range as well as of the decline in the population of Crested Coot in the Western Mediterranean.

Importance: critical

Habitat degradation
Many wetlands have been severely degraded without disappearing altogether, resulting in a loss of value for the Crested Coot. Changes of the hydrological regime, over-exploitation of catchments and sedimentation have altered the period of flooding of a lot of wetlands (Guadalquivir Marshes, lagoons of Cádiz, Seville and Málaga). Agricultural, industrial and domestic pollution also represents a threat to many wetlands. Activities, such as overgrazing,

introduction of other species and burning reed, as well as high concentrations of Flamingos, have reduced the quality of the habitat.

Importance: critical

Livestock
Numerous cattle herds graze in the marshes of the Doñana National Park. In summer, they concentrate around the few water ponds available, where they cause indirect or direct damage to the surface habitats, to the emergent and submerged vegetation and the fauna, thereby reducing the quality of the wetlands.

Importance: high

Hunting
The Crested Coot is very vulnerable to hunting due to the difficulties in distinguishing it from Common Coot, a very popular game waterbird. Despite a lack of accurate information, it is thought that either legal or illegal hunting is a problem at sites within the distribution area. Since the Spanish population is very small, each individual is important for the conservation of the species.

Importance: medium

Fishing
Nets set for crayfish and other fishing nets result in high mortality rates among adults and juveniles, mainly in the Guadalquivir Marshes.

Importance: medium

Disturbance
Disturbance caused by human presence and activities may have a negative impact on breeding success or survival rates at a number of sites.

Importance: low

Interaction with Greater Flamingos (Phoenicopterus ruber roseus)
There are indications that flamingos have a negative impact on submerged vegetation vital to Crested Coot (Montes & Bernúes 1991; Casas & Ramos 1991)

Importance: unknown

Introduction of other species
The introduction of the Louisiana Swamp Crayfish (*Procambarus clarkii*) into one of the most important Crested Coot areas in Spain, the Guadalquivir Marshes, is probably affecting the

quality of this area due to the impact this has on the different species of flora and fauna using the wetland. The *Procambarus clarkii* generates changes in the trofic systems of the wetlands because it cause the disappearance of the submerged vegetation which support to a rich community of aquatic organisms (Alonso, Amat & Montes 1985).

The introduction of *Ciprinidae* fish species could be an important source of competition because of a reduction in food availability for the Crested Coot, something which has occurred at other sites within its distribution area. It is unknown to what extent the impact of this fish species is similar to that of the Red Crab. Competition between fish and waterfowl for common prey organisms may occur; in lakes with high densities of cyprinid fish, submerged vegetation may be grazed to such an extent that the feeding conditions for waterfowl are impaired (Eriksson 1983); on the other hand, high predation pressure from fish on plankton communities may initiate a eutrophication process (Andersson *et. al.* 1978 in Eriksson 1983).

Importance: unknown

Lead poisoning

Although there is no definitive proof, hunting is intense at many key sites, so that the ingestion of lead shot could result in significant Crested Coot mortality at some of these sites due to lead poisoning.

In the Camargue (France), twenty per cent of Coot (*Fulica atra*), which has a feeding technique similar to the Crested Coot, contained ingested shot. Coot contained a larger quantity of grit (x = 4.38 g) than other species investigated, 3.6 % of which was > 2 mm (Pain 1990). In Spain, the per cent of Coot with ingested shot was 4% (Mateo Soria 1998).

Importance: unknown

Conservation status and recent conservation measures

Spain

The Crested Coot is fully protected and listed as Endangered in the National Catalogue of Threatened Species (Royal Decree 439/ 90). The preparation of regional Recovery Plans according to Law 4/89 is therefore compulsory. The species is also listed as Endangered in the National Red Data Book (Blanco & González 1992).

On the Iberian Peninsula the main centre of distribution of the Crested Coot is in the South (Andalucía region), mainly in the wetlands of the Lower Guadalquivir (Lagoons of Cádiz, Seville, Málaga, and Guadalquivir Marshes). There is also a breeding population in the East (Alicante province, Valencia region) which is very little known. In Portugal, there have been some observations of a few birds in the marshes of Castromarín (mouth of the Guadiana river) and in a lagoon of the Low Alentejo, but these records have recently become less frequent. Some observations are reported at Reserve Paul de Boquilobo (NE Lisbon)(Máñez, *comm. pers.)*

There has been a decrease of at least 60 % of pairs since the last estimation of Spanish population, which was about 10-25 pairs (Fernandez-Palacios *in* Tucker & Heath 1994). During the first half of XX century the Crested Coot was very abundant in the La Janda

lagoons, the marshes Guadalquivir river and another wetlands around those marshes. By the 1960s the species suffered a drastic decline: it had disappeared from La Janda and was nearly extinct at Doñana, although the Cádiz, Seville and Málaga lagoons complexes should have played an important role as refuge areas for the species. Thereafter it was recorded a small recovery and Doñana breeding population was estimated in 10-20 pairs in 1987. Since 1990s the Crested Coot has not bred in Doñana and the presence of the species in the area is reduced single birds.

By 1991, the breeding population was estimated in some 10-25 pairs, located in the lagoons of Cádiz province (the lagoons of Espera, the Puerto of Sta. Mª, Chiclana and Medina)(Tucker & Heath 1994). After that year and as a consequence of several continuous dry periods, the population decreased as the wetlands become drier. Therefore, between 1992 and 1995 there was no evidence of breeding and the population decreased just to a few isolated individuals.

Coincidental with periods of abundant rain since 1996, the population of Crested Coot has experienced a small recovery, leading to the establishment of a new breeding nucleus in the Natural Reserve of the Ratosa lagoon (Málaga). Despite the fact that the lagoons seem to have recovered their good condition, breeding is restricted to only two lagoons: Dulce de Zorrilla (Cádiz) and Ratosa (Málaga). It seems that the mere presence of water in the lagoons is not enough to satisfy the habitat requirements of the Crested Coot.

Table 4: Main areas for the Crested Coot in Spain (Sources: Mañez 1997; M. Rendon pers. com.)

SPAIN	BREEDING POPULATION	
	Size (pairs)	Year
Marshes of Guadalquivir (Andalucía; IBA 259, SPA 24)	10-20	1987
	0	1990-99
Espera lagoon complex (Andalucía; IBA 261, SPA 26)	9	1990-91
	0	1992-95
	5-10	1996-99
Puerto Sta. Mª lagoon complex (Andalucía; IBA 253, SPA29)	4	1990-91
	0	1992-99
Chiclana lagoon complex (Andalucía; SPA 28)	2	1990-91
	0	1992-99
Medina Lagoon (Andalucía; IBA 252, SPA 27)	1	1990- 1991
	0	1992-99
Ratosa Lagoon (Andalucía; SPA)	1	1997-99
Embalse de El Hondo (Valencia; IBA 215, SPA 58)	1+	1993
	?	1994-1999

Table 5: Key sites for Crested Coot in Spain and their protection status

Site (Province)	**IBA**	**SPA**	**Protected area**	**RAMSAR**
Espera lagoon complex (Cádiz)	IBA 261	SPA 26	Reserve Natural	
Doñana National Park (Huelva-Seville)	IBA 259	SPA 24	Biosphere Reserve	Ramsar site
Puerto Santa María lagoon complex (Cádiz)	IBA 253	SPA 29	Reserve Natural	Ramsar site (only Salada lagoon)
Doñana Natural Park (Seville, Huelva, Cádiz)	IBA 259	SPA 24	Natural Park	Ramsar site
Chiclana lagoon complex (Cádiz)		SPA 28	Reserve Natural	
Medina lagoon (Cádiz)	IBA 252	SPA 27	Reserve Natural	Ramsar site
Ratosa lagoon (Málaga)		SPA	Reserve Natural	
Campillos lagoon complex (Málaga)		SPA	Reserve Natural	
Cantaritas (Seville)				

Although most sites are protected, they still face serious threats which could be exacerbated by successive years of low rainfall. The situation is particularly critical in the marshes of Doñana National Park, where a reduction of suitable habitat has led to the abandonment of this area in

the last eight breeding seasons. The rest of the key sites, where the Crested Coot still remains or has remained until recently, are also threatened.
As a result of the different factors, the lagoons, which were classified as permanent in the middle of the century, have experienced a change in their flood regime and today can be considered as semi-permanent or seasonal (Granados 1991). Therefore, the current situation of the Crested Coot in Spain is considered critical.

The Junta de Andalucía has prepared a Regional Recovery Plan for the conservation of the Crested Coot in the Community of Andalucía, although this plan awaits approval and implementation.

Captive breeding programmes of Crested Coot are being developed in Andalucía (Reserva Concertada "Cañada de los Pájaros"), and in Valencia, with the purpose of reintroduction. Between 1992 to 1996 more than 80 birds from the centre of Andalucía were released, of which some returned to "Cañada de los Pájaros". The results of these releases are not well known because there has been no continuous monitoring of this programme.

The Autonomous Community of Valencia has received LIFE funding for the reintroduction of Crested Coot in two SPAs of the Valencia region. Among the most important actions foreseen in the project are:
Captive breeding programme with a minimum of 12 pairs. Production of at least 60 individuals per year for reintroduction.
Control of genetic variability of individuals bred in captivity.
Design and building of acclimatisation facilities in the reintroduction areas.
Control and management of the habitat in the reintroduction areas.
Development of a monitoring system of reintroduced birds and a periodical evaluation of it.
Development of a Recovery Plan for the Crested Coot in the medium to long term.
General and scientific dissemination of the project. Running of awareness campaigns specially aimed at hunters in the Region of Valencia.

Morocco

Morocco hosts the most important population of Crested Coot in the western Mediterranean and the species in this country is locally abundant and breeds regularly. In winter Crested Coot is mainly concentrated in the coast wetlands, though some individual stay in the mountain lakes.

In October 1997 a record 3,475 birds were recorded in Morocco, 1,226 of which at the Marais Bas Loukkos (Green 1997). The previous record was of 3.317 individuals, of which 3.000 at Marais Bas Loukkos, recorded in the midwinter census of 1991 (Green *in litt.* 1999). On the base of these data, Green (*in litt.*1999) estimated the regional population to be 5.000 individual. Data on the breeding population of crested Coot in Morocco are scarce. In May 1999 2.623 Crested Coot were counted in the country, 1,113 of them at Aguelman Afenourir (Green *in litt.* 1999).

According to criterion 3c of the Ramsar Convention any wetland regularly supporting "1% of the individuals in a population of one species or subspecies of waterfowl" (Rose & Scott 1997) can be considered of international importance. Therefore Green (*in litt*. 1999) suggests

that any Moroccan wetland where the 1% threshold (i.e. 50 individuals) has been reached at least once during the 1990s can be considered to be internationally important for the species.

Table 6: Maximum counts during the 1990s for Crested Coot where exceed the 1% of the western Mediterranean population. Those wetlands can be considered to be key sites for Crested Coot in Europe. All data provided by A. Green (*in litt.* 1999)
Co: Breeding confirmed during the 1990s.

Wetland	**Date**	**Individuals**	**Breeding**
Aguelmam Afenourir	V-VI/99	1113	Co
Marais Bas Loukkos	3/I/91	3000	Co
Dayat Aaoua	V-VI/99	878	Co
Sidi Bou Ghaba	X/97	557	Co
Aguelmam Sidi Ali	25/XII/96	"des centaines"	
Aguelmam Tifounassine	X/97	195	Co

All the above sites could be designated as Ramsar sites on the basis of criterion 3c. However only Sidi Bou Ghaba and Aguelmam Afenourir are currently listed as Ramsar sites (Table 7), but even those sites are critically threatened.

Table: 7: Key sites for conservation of Crested Coot (*Fulica cristata)* in Morocco. All these sites regularly hold more than 1% of the population of Crested Coot (50 individuals).

Wetlands	**Status Protection**
Aguelmam Afenourir	Biological Reserve and Ramsar site
Marais Bas Loukkos	
Dayat Aaoua	
Sidi Bou Ghaba	Biological Reserve and Ramsar site
Aguelmam Sidi Ali	
Aguelmam Tifounassine	

In Morocco the Crested Coot habitat is seriously threatened. Large part of Marais Bas Loukkos has been reclaimed to agriculture and water is extracted from several wetlands in the Middle Atlas (Dakki & Aziz 1993). A new coastal highway between Larache and Casablanca might threaten the wetlands from north Morocco coast. Urbanisation, pollution and the tourist developments are threatening Sidi Bou Ghaba and the wetlands of the Middle Atlas. No specific conservation programmes have yet been conducted for the species in Morocco.

Aims and Objectives

Aims

In the short term, to maintain the current population and area of distribution of the Crested Coot throughout its range. In the medium term, to promote the population increase of the species within its current range. In the long term, to promote the expansion of the breeding population to other suitable areas.

Objectives

1. Policy and legislation

1.1. To ensure that policies at international level benefit the Crested Coot.

1.1.1. Ensure that all relevant international conventions give Crested Coot maximum protection.

Range states should be encouraged to sign the Agreement on the Conservation of African-Eurasian Migratory Waterbirds (under the Bonn Convention), which will provide a framework for international co-operation for the conservation of the Crested Coot. The Crested Coot should be promoted for inclusion into Appendix II of the Bonn Convention.

Priority: medium
Time-scale: medium

1.1.2. Ensure that international policies and legislation promote the conservation of suitable wetlands within the range of the Crested Coot.

The Ramsar Convention, MEDWET initiative, European Union and other international aid and subsidy programmes have a role to play along with international policies and legislation on agriculture, transport, tourism, etc. International co-operation and exchange of information should be encouraged.

Priority: medium
Time-scale: medium

1.2. To ensure that policies at national and regional level benefit Crested Coot.

1.2.1. Promote the development and implementation of National Action Plans and Regional Recovery Programmes

Priority: high
Time-scale: short

1.2.2. Ensure that the Crested Coot receives maximum legal protection in all range states.

Priority: high
Time-scale: short

1.2.3. Promote the integrated management of wetlands and ensure that broad policies, such us agriculture, transport, tourism, etc. do not have a negative impact on the Crested Coot and its habitat.

All range states should be encouraged to develop and implement an effective national wetland conservation strategy. Such a strategy should set clear targets and priorities for the protection and integrated management of potential Crested Coot habitats. National policies and legislation on agriculture, transport and tourism should all be finely tuned to the needs of wetland conservation.

Priority: medium
Time-scale: medium/ongoing

2. Species and habitat protection

2.1. To ensure adequate protection for key Crested Coot sites

2.1.1. Seek protected-area designation for all sites regularly holding Crested Coot.

This is particularly important for sites where Crested Coot breeds regularly.

Priority: high
Time-scale: medium

2.1.2. Prevent destruction or degradation of all sites regularly holding Crested Coot.

Legal protection of wetlands should be enforced, and any damaging developments to the hydrology, vegetation, water quality, etc. of key sites should be prevented whenever possible. Full environmental impact assessments should be conducted for any new development schemes at these sites.

Priority: essential
Time-scale: short/ongoing

2.1.3. Ensure that maximum benefit is obtained from international conventions in protecting sites for Crested Coot.

All key sites should be designated as Ramsar Sites

Priority: high
Time-scale: medium

2.2. To manage habitats to increase Crested Coot breeding success and reduce mortality.

It is very important that the degradation of habitats is stopped. The main habitat requirement for Crested Coot is probably the presence of submerged vegetation; therefore it is necessary to eliminate the main factors affecting it, such as high livestock densities, sedimentation, agricultural contaminants, etc.

Adequate wetland management can really increase breeding success and reduce mortality, for example by limiting the areas with livestock, by providing more vegetation for nesting, by maintaining stable water-levels during the breeding season or by reducing disturbance. These needs should be addressed by the production and implementation of management plans for key sites, which include specific objectives and prescriptions for Crested Coot.

Priority: essential
Time-scale: short/ongoing

2.3. To create new breeding and wintering habitats for the Crested Coot.

If new wetlands are created within the distribution range of the Crested Coot, they should be designed to provide suitable habitats for the species. The remaining area of suitable habitat in Andalucía (Spain) in years of low rainfall is so limited that there is a real need for the creation of artificial sites specifically designed for the species.

Priority: low
Time-scale: long

2.4. To actively prevent the hunting of the Crested Coot at key sites throughout the range.

2.4.1. Seek gradual hunting decrease at all sites where the species is regularly recorded.

This is also important for sites where the Common Coot *Fulica atra* is recorded in high numbers to avoid incidental killing of Crested Coot.

Priority: high
Time-scale: short

2.4.2. Increase wardening at key sites and levy penalties on offenders.

This is particularly important for sites where hunting occurs during the breeding season. Wardens should enforce hunting bans or, at sites where hunting is permitted, ensure that no Crested Coots are shot.

Priority: high
Time-scale: short

2.4.3. Where hunting bans cannot be established, use other methods to minimise the number of Crested Coot shot.

It will be politically impossible to ban hunting totally at all sites where Crested Coot occur regularly. The number of Crested Coots shot can be reduced through effective hunter education, restricting the number of hunters and banning the hunting of the look-alike species *Fulica atra*. Crested Coot are easily confused with Common Coot under normal hunting conditions. Hunting of Common Coot should be prohibited throughout the Crested Coot range.

Priority: high
Time-scale: short

2.5. To phase out the use of lead shot at all key sites throughout the range.

It is important to reduce the threat of lead poisoning to Crested Coot.

Priority: medium
Time-scale: medium

2.6. To prevent mortality of Crested Coot from other causes.

Crayfish nets are causing mortality in certain areas. This problem can be reduced by the use of alternative existing net designs (which are just as effective for catching crayfish, but which catch no waterbirds at all).

Priority: medium
Time-scale: short

2.7. To keep a breeding population of Crested Coot in captivity.

It is necessary to ensure a genetic stock of individuals, as well as to increase the productivity of the wild population by the regular reintroduction (following IUCN guidelines) of captive individuals into the wild.

Priority: medium
Time-scale: short/ongoing

3. Monitoring and research

3.1 To develop and implement national and international programmes to monitor the status and distribution of the Crested Coot.

3.1.1 Conduct regular surveys at known breeding and wintering sites.

Although many wintering sites are censused annually in mid-winter during the International Waterbird Census, it is important that birdwatchers make an effort to recognise the Crested Coot within mixed flocks with Coot. Furthermore, less attention is given to surveys of breeding sites, and data on breeding numbers and distribution are collected in an uncoordinated fashion. Regular monitoring would help to identify local declines in time to address the causes.

Priority: high
Time-scale: short/ongoing

3.1.2 Conduct surveys at possible breeding and wintering sites

Because Crested Coots are readily confused with Common Coot it is possible that breeding sites are still undiscovered elsewhere in the range. In order to conserve these sites, they must first be identified.

Priority: high
Time-scale: short/ongoing

3.1.3 Conduct regular and simultaneous surveys of all important sites at national level.

Simultaneous surveys of all important sites at different times of the year will clarify the population size, the importance of different sites and the nature of movements between them. It is especially important for this action to be carried out in Morocco where the Crested Coot population is higher.

Priority: high
Time-scale: ongoing

3.1.4 Encourage foreign birdwatchers to survey Crested Coot sites where the status of the species is uncertain and to submit their records to national BirdLife Partners.

The status of Crested Coot in Algeria is completely unknown.

Priority: medium
Time-scale: ongoing

3.2 To promote biological and other research which is useful for the conservation of the Crested Coot.

3.2.1 Undertake studies on the species' ecology and habitat requirements.

The understanding of habitat requirements throughout the life cycle is very important in order to address habitat conservation and management measures.

Priority essential
Time-scale: short/ongoing

3.2.2 Undertake applied studies of hydrology, pollution impacts, socio-economic needs etc. at key sites.

At many key sites the threats and their significance are poorly understood. It is important to know these in order to assess changes to the hydrology, the impact of agro-chemicals, livestock, crayfish or flamingos, or disturbance by local people.

Priority: high
Time-scale: medium

4. Public awareness and training

4.1 To increase public knowledge of the need to protect the Crested Coot and its habitat.

The species is poorly known at all levels of society. Its small population and difficulties in distinguishing it from Common Coot *Fulica atra* have contributed to this ignorance. There is a need to educate decision-makers, hunters, birdwatchers and the local population surrounding the sites that regularly support the species.

Managers and decision-makers should be made aware of the need to conserve wetlands for Crested Coot because it will also conserve other globally threatened waterbirds occurring in the region, such as White-headed Duck (*Oxyura leucocephala*), Marbled Teal (*Marmaronetta angustirostris*) and Ferruginous Duck (*Aythya nyroca*).

A joint education campaign between Morocco and Spain is needed to educate hunters in both Crested Coot range states. Hunters need to be educated about the importance of the Crested Coot and its plight. Furthermore, because Crested Coot are readily confused with Common Coots under normal hunting conditions, it is very important to educate hunters about the banning of Coot hunting at all Crested Coot key sites. Such a programme should emphasise the status and plight of the species within the Western Mediterranean and will assist in promoting a campaign through national, regional and local hunting organisations.

The contacts between scientific and technical staff working in different Crested Coot range-states should be promoted. A working group of researchers on the species should be created.

Priority: high
Time-scale: short

References

Alonso López J.A. (1985). Avifauna del sur de Cádiz: Campo de Gibraltar y Comarca de La Janda. Tesis Doctoral. Universidad Complutense de Madrid. 544 pp.

Alonso M., Amat J.A. & Montes C. 1985. Aspectos ecológicos de las zonas palustres de España. *Información Ambiental* 8: 1-15.

Bernis F. (1972). Breve reseña geográfica, migratoria y demográfica sobre algunas aves acuáticas censadas. Ardeola 17/18: 207-230.

Blanco J.C. & González, J.L. (1992). Libro Rojo de los Vertebrados de España. Colección Técnica. ICONA-MAPA. Madrid.

Casas J. & Ramos B. 1991. *Bases para la valoración de la posible incidencia del Flamenco rosa* (Phoencopterus ruber roseus) *en los ecosistemas del Parque Nacional de Doñana*. Reunión Técnica sobre la situación y problemática del Flamenco rosa en el Mediterráneo occidental y África noroccidental: 157-164.

Chapman A. & Buck, W.J. (1910). Unexplored Spain. London.

CODA-SEO. (1985). Situación de la Avifauna de la Península Ibérica, Baleares y Macaronesia. Madrid

Cramp S. & Simmons K.E.L. (Ed.) 1980. *The Birds of the Western Paleartic*. Vol. 2. Oxford Univ. Press.

Dakki M. Y Aziz El Agbani M. 1993. Les Zones humides du Maroc: Types de milieux et actions anthropiques. *Jordanas Técnicas Internacionales: Bases actuales para la restauración de humedales en la cuenca mediterránea.* La Rábida, Huelva. Junio 1993. AMA. Junta de Andalucía.

De Juana E. (1992). Aves de España. La Garcilla 84: 40.

Dean W.R.J. (1981). Brood division by Redknobbed Coots. The Ostrich 51: 125-126

Del Hoyo J., Elliot A.& Sargatal J. (Eds.) (1996). Handbook of the Birds of theWorld. Vol. III. BirdLife International. Lynx Editions.

Dodman T., De Vaan C., Hubert E. & Nivet C. 1997. *African Waterfowl Census 1997. Les Dénombrements Internationaux d'oiseaux d'eau en Afrique 1997.* Wetlands International, Wageningen, The Netherlands. 260 pp.

Estación Biológica De Doñana (Equipo de seguimiento de Procesos naturales). 1994. Acciones para prevenir la mortalidad evitable de la Focha cornuda (*Fulica cristata*) en la Comunidad Europea. IWRB.

Fernandez-Palacios J. & Raya C. (1991). Biología de la Focha cornuda (Fulica cristata) en Cádiz y otros humedales del Bajo Guadalquivir. Plan Rectos de Uso y Gestión de las Reservas Naturales de las Lagunas de Cádiz. A.M.A. Junta de Andalucía. Pp: 97-117.

García L., Calderón J. & Castroviejo J. (1987). Invernada y presencia ocasional de aves en el Parque Nacional de Doñana, con especial referencia a la temporada de 1985-86. Publ. Patronato del Parque Nacional de Doñana. 136 pp.

Granados M. (1991). Antecedentes ecológicos de los humedales de la provincia de Cádiz. Pp : 13-23. Plan Rector de Uso y Gestión de las Reservas Naturales de las Lagunas de Cádiz. A.M.A. Junta de Andalucía.

Green A. 1999. In litte. *Programa de Conservación y Recuperación de especies amenazadas de la avifauna acuática en Marruecos y Andalucía.* Informe Final. Convenio entre la Consejería de Medio Ambiente – CSIC.

Grimes N.G. (1976). The ocurrence of cooperative breeding behaviour in Africa birds. The Ostrich 47 (1): 1-15

Gutierrez-Yurita P.J., Sancho G., Bravo M.A., Baltanás A. & Montes C. 1998. Diet o f the Red swamp crayfish (*Procambarus clarkii*) in natural ecosystems of the Doñana National Park temporary fresh-water marsh (Spain). *Journal of Crustacean Biology* 18(1): 120-127.

Heim de Balsac H. & Mayaud N. 1962. Les oiseaux du Nord-Ouest de l'Afrique. Lechevalier, París.

Irby H. (1895). The Ornithology of the Strait of Gibraltar. R.H. Porter. London.

Máñez M. (1991). Estado actual en el Parque Nacional de Doñana de las especies de aves incluidas en la Lista Roja de los Vertebrados de España, dentro de las categorías de en peligro y vulnerables. Actas de las Jornadas sobre zonas húmedas de Andalucía. Málaga, abril 1990 : Asoc. Andalus, Fund. Bios y Fina El Retiro.

Mateo Soria R. 1998. *La intoxicación por ingestión de perdigones de plomo en aves silvestres: aspectos epidemiológicos y propuestas para su prevención en España.* Tesis Doctoral. Univ. Autónoma de Barcelona. 1998

Montes C. & Bernúes M. 1991. *Incidencia del Flamenco rosa (*Phoenicopterus ruber roseus) *en el funcionamiento de los ecosistemas acuáticos de la marisma del Parque Nacional de Doñana (SW España).* Reunión Técnica sobre la situación y problemática del Flamenco rosa en el Mediterráneo occidental y África noroccidental: 105-110.

Mountfort G. (1957). Portrait of a wilderness: the story of the Coto Doñana expeditions. London: Hutchinson.

Pain, D.J. 1990. Lead shot ingestion by waterbirds in the Camargue, France: An investigation of levels and interspecific differences. *Environmental Pollution* 66: 273-285.

Rose P.M. & Scott D.A. 1997. *Waterfowl Population Estimates*. Second Ed. Wetlands International Publication 44. Wetlands International, Wageningen, the Netherlands.

Scott D.A. & Rose P.M. (1996). Atlas of Anatidae populations in Africa and Western Eurasia. Wetlands International Publication 41. Wetlands International, Wageningen, The Netherlands.

Skead D.M. 1980. Recovery Distribution of Redknobbed Coots Ringed at Barberspan. *The Ostrich* 52 (2): 126-128.

Tait W. (1924). The Birds of Portugal. London: H. F. Y G. Witherby.

Tucker G.M. & Heath M.F. (Eds.) (1994). Birds in Europe: Their Conservation Status.Cambridge, U.K. : BirdLife International (BirdLife Conservation Series nº 3).

Urban E.K., Hilary C. & Keith S. (1986). The Birds of Africa. Vol. II. Ed. Academy Press. London.

Valverde J.A. (1960). Vertebrados de las Marismas del Guadalquivir. Archivos del Instituto de Aclimatación de Almería, vol. 9. CSIC.

Verner W. (1909). My life among the wild birds in Spain. London: John Bale, Sons y Danielsson.

Wood N.A. (1975). Habitat preference and behaviour of Crested Coot in winter. British Birds 68 (3): 116-118.

Yeates P.R. (1946). Birds life in two deltas: diaries of a birds' photographer in the estuaries of the Guadalquivir and the Rhone and their neighbourhoods. Faber and Faber. London.

Annex - Recommended conservation actions by country

Spain

1.2.1 Encourage the approval and implementation of the Recovery Plan prepared for the species in the Autonomous Community of Andalucía by Consejería de Medio Ambiente.

1.2.1 Encourage the preparation, approval and implementation of a Recovery Plan for the Crested Coot in the Autonomous Community of Valencia.

1.2.1. Prepare a joint management plan between Spain and Morocco.

1.2.1 Promote the approval of Regional Catalogues of Threatened Species in all the Autonomous Communities in Spain, where the critical situation of Crested Coot is recorded.

1.2.2 Encourage the preparation of a co-ordinated action plan for the conservation of the Crested Coot between the central and regional administrations, in which local experts and NGOs are involved, within the Committee of Flora and Fauna of the Environment Ministry.

2.1.1. Encourage the protection of the following sites through designations as follows:

a) Provide legal protection to the Laguna de los Tollos as Reserva Natural or Paraje Natural (Natural Reserve or Natural Site).
b) Include the Laguna de Vocesa (Seville) within the Reserva Natural (Natural Reserve) of the Lagunas de Lebrija-Las Cabezas.
c) Include the Lagunas Redonda and Marcela (Málaga) within the Reserva Natural (Natural Reserve) of the Lagunas de Campillos.
d) Include the areas of Cantaritas within the Doñana Natural Park.

2.1.1 Increase the legal protection of Caño Guadiamar (Natural Park of Doñana) by modifying its current zoning classification (Zonificación) from (B) to (A).

2.1.3 Encourage the designation as Special Protection Areas (SPAs), under the European Union Birds Directive, the following sites: Doñana Natural Park, Los Tollos Lagoon, Lebrija-Las Cabezas Lagoons, Campillos Lagoons and Ratosa Lagoon.

2.1.3. Encourage the designation of the following wetlands as Ramsar sites:
- Doñana Natural Park (Sevilla/Cádiz)
- Natural Reserve of Espera Lagoons (Cádiz)
- Natural Reserve of Campillos Lagoons (Málaga)

2.2. Promote habitat management improvement measures in existing wetlands within the Guadalquivir Marshes to create more suitable breeding habitat:

a) Management of water-levels:
b) Provision of islands and appropriate vegetation at Sanlúcar Saltpans, Doñana National Park and Veta La Palma.
c) Density and concentration of livestock must be limited in key areas from Doñana National Park (Caño Dulce, Caño Travieso, Buen Tiro and Lucio de los Ánsares). This is specially important during breeding time when the marshes start to dry off.
d) Accurate control of water quality of the rivers which feed into the marshes.
e) Recover shore vegetation of these rivers to reduce sedimentation.

2.2. Promote restoration of suitable habitat in wetlands of Cádiz, Seville and Málaga provinces (adequate management of vegetation and hydrology; financial support for landowners to abandon agricultural activities in the surrounding areas).

2.3. Promote the creation of more suitable wetlands within the zone of influence of the former La Janda lagoon by recovery and restoration of lakes which have been degraded and by the creation of artificial ones. These wetlands could be alternative sites during periods of strong drought, when natural habitats are scarce.

2.4.3. Promote a ban on hunting of the look-alike Common Coot (*Fulica atra*) in Andalucía.

2.4.3./4.1. Carry out effective education of hunters about the critical situation of the Crested Coot, concentrating on its identification and its differences from the Coot.

2.6. Promote the reduction of mortality caused by crayfish nets in the Guadalquivir Marshes by enforcing the modification of net design.

2.7 Promote a joint captive breeding program between Andalucía and Valencia Regions, with a total of 50 pairs. This programme should include:

- Control of genetic variability of individuals obtained in captivity
- Sanitary control of individuals in captivity
- Production of individuals for reintroduction

2.7. Promote a reintroduction programme following IUCN guidelines. A working group of scientists and technical staff interested in the species should be created to co-ordinate the reintroduction in both Andalucía and Valencia Regions, and should consider as a minimum:

- Number of individuals to release
- Choice of appropriate release sites
- Choice of appropriate release season
- Establishment of the release methodology
- Promotion of a monitoring plan with marked individuals

3.1.4. Conduct simultaneous censuses at Crested Coot sites in Spain and Morocco and promote joint research between the two countries.

3.2.1. Conduct research into the ecology and biology of the Crested Coot, especially into habitat requirements, breeding ecology and the nature of movements within and beyond Spain.

Morocco

1.2.1. Encourage the preparation of a joint fly way management plan between Morocco and Spain.

2.1.1. Encourage the protection of additional sites: Dayet Aaoua, Marais Bas Loukkos, Aguelmam Sidi Ali and Aguelmam Tifounassine.

2.1.2. Encourage the designations of the following wetlands as Ramsar sites:
- Marais Bas Loukkos (Larache)
- Dayat Aaoua (Azrou)
- Aguelmam Sidi Ali (Timahdite)
- Aguelmam Tifounassine (d'Ifrane)

2.2. Promote the establishment of management plans for key sites and the implementation of existing plans.

2.3. Recommended management at Aguelmam Afenourir, Dayat Aaoua, Aguelmam Sidi Ali, Aguelmam Tifounassine and Marais Bas Loukkos:

- All five sites should be given a strict protection status (only Aguelmam Afenourir has protected status but even this site is critically threatened) that includes the watershed of the lake and guarantees the high quality and quantity of water required to maintain this delicate ecosystem.
- Further deforestation should be prevented and any pollution sources tightly controlled.
- Fully equipped wardens should be provided.
- No further fish introductions should be permitted, and all hunting should be prevented.
- Grazing and reedcutting should be carefully controlled to permit the regeneration of emergent vegetation in the periphery (e.g. by fencing some areas), and to prevent soil erosion.

2.4.2. Encourage the strict application of the hunting legislation

2.4.3./4.1. Educate hunters and the general public about the importance of the Crested Coot and its habitat.

3.1.1./3.1.2. Survey know and possible breeding and wintering sites: to clarify the size and distribution of the breeding population and discover, as yet unknown sites. The key sites should be surveyed at least once a year during the breeding season for Crested Coot, as well as during the midwinter census.

3.2.1. Conduct research into the ecology and biology of the Crested Coot specially on the ecological requirements as an essential aid to effective conservation programmes, since it identifies the detailed factors limiting population size and distribution.

3.2.1. Conduct a detailed comparative study of habitat selection, breeding ecology and diet of Crested Coot and the Common Coot is required.

3.2.1. Conduct a marking programme with neck collars to study movements between different Moroccan wetlands.