

**Species Action Plan  
For the  
Balearic Shearwater *Puffinus mauretanicus*  
in Europe**



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# **Species Action Plan for the Balearic Shearwater *Puffinus mauretanicus* in Europe**

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## **Time table**

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## **Reviews**

Due to the long life of the species, the present Action Plan should be reviewed and updated every 5 years. An emergency review will be undertaken if sudden major environmental changes occur within the species range liable to affect the population.

## **Geographical scope**

The actions proposed in the Plan need to be implemented in Spain (mainly in the Balearic archipelago, but also in the Levantine coast), Portugal, Great Britain and France (in the post-breeding quarters in the Atlantic coast and West channel).

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## Summary

The Balearic Shearwater (*Puffinus mauretanicus*) is an endemic species from Balearic Islands. Formerly was considered as a race of the Manx Shearwater but its taxonomic position has been recently reviewed and considered to be a separate species. The total population is about 3.000 pairs, breeding mainly in Formentera cliffs.

The main part of the population breeds under boulders, in islands, caves and crevices of cliffs, where census is impossible except by indirect estimates. Breeding season stretches from September to late June. Just one egg are laid, with a reproductive success of 66,8 % in average. Is extremely philopatric.

The species feed on shoaling Clupeiforms, mainly *Sardina sp*, catch by pursue-diving. During the breeding season the main feeding areas are on the Eastern Iberian Peninsula coast.

The taxon is in danger of extinction, some colonies have disappeared in the second half of the XX century and the global breeding population has decreased.

## Threats and limiting factors

Lack of food resources - high

Lack of protection of breeding colonies - high

Predation by other introduced mammals - high

Oil spills - Potentially high

Illegal exploitation for human consumption - low/locally high

Predation by rats - low\*/medium

Human disturbances - low

Accidental catches - low

Pollution - unknown

Competition with other species - unknown

Predation and kleptoparasitism by Yellow-legged Gull - unknown

Lack of nesting habitat – unknown

## **Conservation priorities**

- Prevent oil spills and chemical pollution of the sea
- Ensure the protection of the breeding habitat.
- Promote adequate fishing practices which take account of the species conservation.
- Surveillance of the colonies in order to avoid exploitation.
- Control of rats and predators in the colonies affected by introduced mammals.
- Monitoring the population dynamic of the species.
- To undertake priority investigation lines on the conservation biology of the species.
- To develop a local awareness campaign in the Pitiusas to provide information on the species and its habitats value.

## Introduction

Most recent estimation trend suggests that the Balearic Shearwater *Puffinus (yelkouan) mauretanicus* is endangered. The species included in the Red Book of Spanish Vertebrates in the Vulnerable category (Blanco & González 1992) and in the *Llista Vermella dels Vertebrats de les Balears* (Amengual 1990) (Balearic Red List) in the same category.

It is classified as SPEC 4 and 'Secure' in Europe (Tucker & Heath 1994). The species is listed in the National Catalogue of Threatened Species as 'of Special Interest', in the Annex I of the European Union's Bird Directive 79/409, and on Annex II of the Bern Convention. In the Mediterranean Action Plan the Balearic Shearwater is considered threatened together with other 15 priority bird species.

This is the first Action Plan on the species and it is based largely on discussions held during the workshop in Majorca, on 3-5 September 1999 and on experience of related species. General aims of that workshop were to review all the available information on the population status and conservation problems, discussing the conservation measures and creating a working group. All the actions of the AP will take place in Spain, Portugal, United Kingdom and French coasts.

## Background Information

The Balearic Shearwater (*Puffinus mauretanicus*) is an endemic species of Balearic Islands. It was originally regarded as a race of the Manx Shearwater *P. puffinus* but its taxonomic position has been recently reviewed and considered to be a separate species (Walker *et al.* 1990, Wink *et al.* 1993, Heidrich *et al.* 1989, Mayol 1998) or a subspecies of the Levantine Shearwater *P. yelkouan* (Bourne *et al.* 1988). Because of this complex taxonomic position, these taxa are still mentioned as *Puffinus yelkouan mauretanicus* or even *P. puffinus mauretanicus* in many publications.

## Distribution and population

The Balearic Shearwater was very common before the human settlement in Pitiusas, which left many fossil remains since upper Pleistocene. Depredation by introduced mammals and harvesting for human consumption is the main factors responsible for population decline after the arrival of man (Alcover 1988; Alcover & Muntaner 1985). The total population was estimated at about 3.300 pairs (Aguilar 1997). An indication of recent population trends is not possible because of census difficulties. Nevertheless, the disappearance of some colonies in the second half of this century may indicate that the species is in danger of extinction.

## Life history

### *Breeding*

The species visit land for breeding from September to late June. Eggs are laid from the beginning of March and the last chicks do not fledge until July. Reproductive success has been measured in three accessible colonies. Results vary from 46 to 77,7 % (the last one after a rat control campaign), with an average of 66,8 % by pair (Aguilar 1997).

Adults begin to visit the colonies *in* their third year. The longevity record stands at 23 years old. The Balearic Shearwater is extremely philopatric, and no exchanges between colonies have been recorded.

### *Feeding*

The species feed mainly on shoaling Clupeiforms. Araujo *et al.* (1977) found remains of one fish digestive tract and squid (*Sepia orbignyana*) and observed concentrations feeding upon surface shoaling clupeiform fish in February and March. Aguilar (1997) reports 29 *Sardina sp.* from 33 identifiable pieces present in 12 regurgitations.

Its diving ability has proven through many observations of flocks performing a pursuit sequence of plunging, diving, running over surface, short flapping flight and plunging again. The species plunges from 1 or 2 m height (the common height of flying) with open wings, entering the water headfirst. The dives last up to 40 seconds. The maximum depth recorded is 26 m.

Capture of discarded fish has *also* been reported in Balearic waters, though not frequently. Uses of trawler discards appear to be important in the Mediterranean off the Iberian Peninsula during the breeding season and in the Bay of Biscay during the post-breeding period (Yesou 1985). Use of mid-water trawls have increased dramatically since the mid 1980's (Yesou pers. com.), and changes in post-breeding distribution can be related.

During the breeding season the main feeding areas are on the Eastern Iberian Peninsula coast. Recent displacement northward in their winter distribution has been reported by Gutiérrez & Figuerola (1995) and explained due to changes in the clupeiform abundance.

#### *Habitat requirements*

The main part of the population breeds under boulders, in caves and crevices of cliffs, where census is impossible except by indirect estimates. Some colonies occupy similar habitats in islets. Little excavation is reported, only a slight hollow in caves with clay ground. There is no significant material carried to the nest.

Nowadays the species seems to occupy sub-optimal habitats due to human disturbance and introduced predators. Fossil remains show that important colonies were on the mainland of the major isles. Breeding places of *P. mauretanicus* at 500 m far from coast in Cabrera Island has been described (Araujo *et al.* 1977). Bone remains have been found in caves far from the coast but at the present the species is extinct from this island.

### **Threats and limiting factors**

#### *Predation by other introduced mammals*

The Predation by wild cats and *Geneta geneta* (Araujo *et al.* 1977) seems to be especially severe and the cause of extinction in Cabrera Island, but few colonies are known in the mainland of Formentera and Menorca, where these predators exists.

Importance: *high*

#### *Oil spills*

Oil spills are a potential threat. The species is vulnerable because during moult the main part of the population concentrates in coastal areas near important harbours.

Importance: *potentially high*

#### *Predation by rats*

Predation of chicks and rats by rats is well documented for *P. yelkouan* (Fernandez 1979, Vidal 1985, Mayol 1986). Balearic Shearwater breeds in many islets where rats have colonised, often

with medium or high breeding success. Probably the effect of rat Predation is more important in the smaller islets, where rodents reach higher densities Alcover (1989) points out, *Puffinus nestori*, the possible ancestor of *P. mauretanicus*, lived together with rodents of similar size to *Rattus rattus* during the upper Pliocene of Ibiza.

Importance: *medium, locally high*

#### *Pollution*

No pollutant analyses have been made with Balearic specimens yet. Poisoning by toxic phytoplankton is also possible in some eutrophicated feeding areas.

Importance: *unknown*

#### *Direct human persecution.*

The harvesting of Shearwaters has been frequent until the end of the sixties, in Pitiusas (Ibiza and Formentera) (Mayol 1985). Mainly the adults were collected because many pulli occupied inaccessible holes. Between 2,400 to 2,700 adults per year were taken in Formentera until the 1960's. The increase in human standard of living has resulted in a decrease in this practice with, probably less than 100 adults/year harvested. Although the species has been protected since the seventies, it is certain that some colonies are still harvested.

Importance: *low, locally high*

#### *Competition with other species.*

The 38 colonies studied in the Balearic archipelago show significant trends have been found, suggesting that there is competition for nest cavities and that Cory's Shearwater is dominant (Capellà 1988). Cory Shearwater colonies are almost always located in islets without rats, while Balearic Shearwater occupies almost only islets where rats are present. Mixed colonies are rare. Understanding this interaction may lead to important decisions on conservation measures.

Importance: *unknown*

#### *Predation and kleptoparasitism by Yellow-legged Gull*

Attacks of *L. cachinnans* have been reported in some colonies (J. Mayol pers. comm.). These attacks, in some cases, produce regurgitation. Yellow-legged Gull also attacks wounded shearwaters. The quantitative importance of these attacks is unknown, but is suspected to affect colony behaviour making the adult presence more inconspicuous, reducing the "social stimulation" that attracts the recruitment.

Importance: *unknown*

#### *Accidental catches*

There is little data about accidental capture in long lines and fishing nets. In the Balearic Islands the accidental catch seems to affect *Puffinus* less than *Calonectris* (the latter with more than 1000 birds caught per year).

Importance: *low*

#### *Lack of nesting habitat*

Taking into account the distribution of the ancient colonies the species probably now occupies a sub-optimal habitat, restricted to inaccessible sites. Some colonies are thought to be saturated and density-dependent mechanisms could be responsible for reduced breeding success.

Importance: *unknown*

#### *Lack of food resources*

Depleting of fish stocks is suspected to be the cause of changes in winter and post-breeding distribution.

Importance: *high*

#### *Human disturbances*

The use of lights for some fishing practices can negatively affect the breeders' behaviour close to the colonies. Ambient light near important colonies can affect also adult behaviour and cause dazzling of fledglings.

Importance: *low*

#### *Lack of adequate protection of breeding grounds*

The main breeding colonies are still unprotected.

Importance: *high*

## Conservation status and recent conservation measures

### *Spain*

Included in the Red Book of Spanish vertebrates as ‘Vulnerable’ (Blanco & González 1992) and in the *Llista Vermella dels Vertebrats de les Balears* [Balearic Red List] (Amengual 1990) with the same status (see § Introduction). The entire population breeds in areas with non-adequate protection (ANEI), but only few colonies are within Natural or National Parks.

Colony	Pairs	EU Birds Directive	National and local protection figures	IBAs
Conills islet (Mallorca)	26-75	SPA 074	ANEI	IBA 323
Malgrats islet (Mallorca)	26-75	SPA 074	ANEI	IBA 323
Dragonera islet (Mallorca)	26-75?	SPA 077	ANEI, National Park	IBA 315
Sa Cella (Mallorca)	76-200	SPA 077	ANEI	IBA 315
Conills islet (Cabrera)	76-200	SPA 083	ANEI, National Park	IBA 324
Fonoll islet (Cabrera)	11-25	SPA 083	ANEI, National Park	IBA 324
Pobre islet (Cabrera)	0-10	SPA 083	ANEI, National Park	IBA 324
Rates islet (Cabrera)	0-10?	SPA 083	ANEI, National Park	IBA 324
Mola de Fornells (Minorca)	26-75?		ANEI	IBA 325
Mola de Maó (Minorca)	76-200		ANEI	IBA 325
Isla de l'Aire (Minorca)	11-25?		ANEI	IBA 325
Tagomago islet (Ibiza)	26-75	SPA 082	ANEI	IBA 310
Vedranell islet (Ibiza)	0-10?	SPA 078	ANEI	IBA 307
Vedrá islet (Ibiza)	11-25	SPA 078	ANEI	IBA 307
Espartar islet (Ibiza)	11-25		ANEI	IBA 308
Bosc islet (Ibiza)	11-25		ANEI	IBA 308
Conillera islet (Ibiza)	76-200		ANEI	IBA 308
Espardell islet (Ibiza)	76-200	SPA 084	ANEI, Natural Reserve	IBA 312
Espalmador islet (Ibiza)	0-10?	SPA 084	ANEI, Natural Reserve	IBA 312
Punta Prima (Formentera)	26-75?		ANEI	IBA 312
La Mola (Formentera)	>500		ANEI	IBA 314
Cap de Berberia (Formentera)	>500		ANEI	IBA 313

A Recovery Plan has been introduced and implemented by the Balearic Government since 1997. However, it is not a legally binding document. The main objectives are to ensure the viability of the population, to increase their numbers and their distribution range to the potential areas and to acquire further knowledge about their biology. In order to achieve these objectives 18 actions have been planned. These include:

- Wardening / policing of the colonies in order to prevent exploitation.

- Control of rats and predators in the colonies affected by introduced mammals. The Balearic Government since 1989 has developed three rat-control campaigns in Malgrats islets. Other rat-control campaigns have been implemented in Dragonera islet, Cabrera archipelago and the islets of Conillera and Tagomago (Ibiza).
- Installation of artificial nests where competition with other species for the breeding habitat may exist.
- Resettlement in adequate localities using artificial devices to attract breeders.
- Monitoring the reproduction, mortality and recruitment in almost all the colonies of the species. The Balearic Government, providing data on number of breeders, reproductive success, mortality rate and recruitment has monitored the most accessible colonies since 1997.
- -Periodic census of the total population to update the distribution map. The suitable habitat has been searched looking for new colonies without positive results since 1997.
- -Monitoring the species in their moulting and feeding grounds.
- -Study of diet and energy requirements during the breeding period, and food availability in the feeding grounds.
- -To agree and supports priority research on the conservation biology of the species.
- -To develop a program of environmental education for the Pitiusas and the public of all the breeding and feeding areas.
- -Land acquisition with important colonies. A big property has been bought in Formentera in 1997. A reintroduction project and a specialised thematic centre are planned in the area.

The Recovery Plan has received funding from LIFE program for 1997-2000, and is carried out by the Balearic Government, the Cabrera Archipelago National Park and the Conselleria de Medi Ambient of the Generalitat de Catalunya. Since 1998, SEO/BirdLife is developing most of the actions.

### ***France***

The species is legally protected. Regular censuses of the post-breeding concentrations have been made since 1982. Studies have been carried out on the biology of the species at sea

## **Aims and objectives**

### **Aims**

In the short term, to warrant the viability of the populations. In the medium to long term, to restore their numbers and distribution to former status and to increase the knowledge about its biology.

All the actions take place at the Balearic archipelago and the coasts of Spain, Portugal, the Atlantic coast of France, Ireland, the United Kingdom and probably the Moroccan coasts.

### **Objectives**

#### **1. Policy and legislation**

##### *1.1 To develop national coastal strategies*

All the Mediterranean countries should develop and implement coastal strategies to include integrated planning and consider development and use of the coasts in a sustainable way. Specifically for EU countries, important coastal habitats including islets and cliffs should be safeguarded.

Priority: medium  
Time-scale: ongoing

##### *1.2 Prevent oil spills and chemical pollution of the sea*

Adequate policies for prevention of oil pollution are required in the main areas of concentration. National and international legislation on chemical pollution and industrial treatment should be enforced and appropriate action undertaken to avoid chemical/oil release from both offshore and land-based sources.

The IMO and shipping insurance brokers (Veritas, Lloyds...) should be lobbied to establish a system of incentives for those oil tanker companies who agree to avoid sensitive marine ecosystems. Heavy fines should be imposed for the cleaning of oil tankers outside the areas especially designated for that purpose.

Priority: high  
Time-scale: medium

*1.3 To ensure the protection of the breeding habitat*

The complete protection to include an adequate management of all the breeding areas should be ensured.

Priority: high  
Time-scale: short/ongoing

*1.4 EU fishery policies should include considerations on seabirds, taking into account the impact on its populations.*

Priority: high  
Time-scale: medium

*1.5 To involve international conventions in the conservation of the Balearic Shearwater and its habitat*

1.5.1 The Barcelona Convention should seek to include all the important colonies and the areas where the species congregates in the Mediterranean SPAs.

1.5.2 National strategies drawn up under the Bio-diversity Convention should promote the conservation and sustainable management of coastal and island ecosystems.

1.5.3 Recommendation No.†62 on the conservation of regionally threatened birds in the Macaronesian and Mediterranean regions, of the Standing Committee of the Bern Convention, promotes the drafting and implementation of Action Plans for Mediterranean most threatened species that are not globally threatened.

Priority: high  
Time-scale: medium

*1.6. The new taxonomic status of the species must be included in future reviews of international conventions.*

Priority: high  
Time-scale: medium

## 2. Species and habitat protection

2.1 *To ensure adequate protection of breeding sites. All the IBAs and protected areas where Balearic Shearwater occurs should include specific measures for its effective conservation.*

2.1.1 Designation of all the colonies as protected areas. All IBAs qualifying for Balearic Shearwater should be declared as Special Protected Areas for Birds according to Bird Directive 79/409/CEE. Management plans should be prepared and implemented at all sites.

Priority: high  
Time-scale: medium

2.1.2 Prevent human harvesting and disturbances. Wardening is strongly recommended at the colonies of Pitiusas. The human disturbance should be prevented also by both wardening and physical barriers in some colonies.

Priority: medium  
Time-scale: medium/ongoing

2.1.3. Control of predators. Eradication campaigns against rats, feral cats and other alien species, which prevent reproduction, are urgently required in colonies where these occur.

Priority: medium, locally high  
Time-scale: ongoing

### 2.2 *Increase breeding numbers and breeding sites*

2.2.1. To create more available nesting sites in existing colonies. Either artificial nests or the adequate management of the existing ones would result in the creation of a suitable habitat for new breeders in order to attract the recruitment.

Priority: medium  
Time-scale: ongoing

2.2.2. Encourage the establishment of new colonies. Promote the establishment of new breeders in secure habitats through artificial “social stimulation”, artificial nests and fledgling translocation.

Priority: low  
Time-scale: ongoing

2.3.3 Promote adequate fishing practices which take account of the species conservation (these would include limiting fishing practices which negatively affect the species food availability at the feeding grounds), especially in the Eastern coast of Spain.

Priority: high  
Time-scale: medium

### 3. Monitoring and research

3.1. *To continue the monitoring program. To continue with the existing monitoring program (survey and census) to know the current distribution, numbers and status of breeding and non-breeding birds.*

Priority: medium  
Time-scale: ongoing

3.2 *To undertake research on feeding ecology over the whole species range*

3.2.1 To identify the most important prey items and feeding sites

Priority: high  
Time-scale: ongoing

3.2.2 Food availability monitoring. To monitor fishery landings of the main prey species in all the feeding grounds

Priority: high  
Time-scale: long/ongoing

3.3 *To promote studies with direct application to the conservation and management of the species*

3.3.1 Population dynamics

Factors affecting breeding success and survival should be determined and the mechanisms of those actions analysed. The results of genetic studies and other related studies should be used to understand the recent evolution of the population, its dynamics while helping to develop a predictive population model.

Priority: high  
Time-scale: ongoing

### 3.3.2 Impact of human disturbance

The effects of human disturbance on breeding success should be evaluated. It is necessary to set up a protocol for low-disturbance monitoring and research.

Priority: medium  
Time-scale: medium

### 3.3.3 To assess the impact of species interacting at breeding sites

The effect of Cory's Shearwater competition in the colonies where both species are present should be studied as well as the colonisation, after rat-control campaigns, of the rat-free islands by these species. The effect of big numbers of Yellow-legged Gull in many colonies should also be evaluated.

Priority: low  
Time-scale: long

### 3.3.4 Predators

The effect in the colonies where rats, cats and other predators are present together should be studied in order to estimate the real impact on breeding populations, resulting in the best management measures for every case.

Priority: high  
Time-scale: long

### 3.3.5 Accidental catches

To investigate the effect of fishery practices on species mortality.

Priority: medium  
Time-scale: ongoing

## 4. Public awareness

*4.1 To provide information and increase awareness on the species and its habitats value.*

4.1.1 To increase awareness among the public, especially in Pitiusas islands.

The species is well known by the public in Ibiza and Formentera, but their interest in conservation needs to be improved. A local awareness campaign should be organised to make the Balearic Shearwater the flagship species of the conservation in the islands.

Priority: high  
Time-scale: short

4.1.2 Increase awareness of the species among politicians and decision-makers

It is necessary to influence local authorities, landscape planners, fishery officers and others involved in decisions and activities, which could have an influence on the conservation of the species.

Priority: high  
Time-scale: ongoing

4.1.3 Prepare and distribute educational material.

Information and educational materials should be provided to the public, especially in Pitiusas.

Priority: medium  
Time-scale: short

4.1.4 Use of the media to increase awareness

Information on the species, the threats to it and the need for protection should be made available to newspapers, magazines, television and other media.

Priority: medium  
Time-scale: short/ongoing

*4.2 Promote information exchange*

A meeting to exchange information on the Balearic Shearwater and other related species should be regularly organised. Proceedings of the meetings should be published and disseminated.

Priority: high  
Time-scale: short/ongoing

#### *4.3 Enforce awareness on islands and rocky coasts of bio-diversity*

To enforce the public awareness on the rocky coasts and inhabited islets as important areas for birds plants reptiles and other irreplaceable organisms.

Priority: high  
Time-scale: short

#### *4.4 To make aware the new taxonomic status*

Information about new taxonomic status between scientific, conservation officers and decision-makers

Priority: low  
Time-scale: short

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## **ANNEX - Recommended conservation actions by country**

### **Spain**

#### 1.3 To ensure the protection of the breeding habitat

The complete protection of all breeding areas must be warranted to include adequate management. All the breeding colonies should be designated as SPAs.

2.1.2 Prevent human harvesting and disturbances. Wardening is strongly recommended at the colonies of Pitiusas. Wardening and physical barriers should prevent the human disturbance in some colonies also.

3.2.2 Food availability monitoring. To monitor fishery status of the main prey species in all the feeding grounds.

#### 3.3.3 To assess the impact of species interacting at breeding sites

The effect of Cory's Shearwater in the colonies where both species are present should be studied as well as the colonisation, after rat-control campaigns, of the rat-free islands by these species. The effect of big numbers of Yellow-legged Gull in many colonies should also be evaluated.

#### 3.3.4 Predators

The effect in the colonies where rats, cats and other predators are present together should be studied in order to estimate the real impact on breeding populations and to advise on the best management measures for every case.

#### 4.1.1 To increase the awareness among the public, especially in Pitiusas islands.

The species is well known by the public in Ibiza and Formentera, but their interest in conservation needs to be improved. A local awareness campaign should be organised to make the Balearic Shearwater the flagship species of the conservation in the islands.

#### 4.3 Enforce awareness on islands and rocky coast bio-diversity

To enforce the public awareness on the rocky coasts and inhabited islets as important areas for birds, plants reptiles and other irreplaceable organisms.

## **United Kingdom**

Balearic Shearwaters are reported annually in varying numbers from the coasts of UK and Ireland  
- in these areas they are protected by law