INTERNATIONAL ACTION PLAN FOR AUDOUIN'S GULL (*Larus audouinii*)

Compiled by:

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Timetable
Workshop: April 1994 - Montecristo, Italy
First draft: March 1994
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Reviews
This action plan should be reviewed and updated every three years. An emergency review will be carried out if sudden major environmental changes or threats, liable to affect the population, occur within the species' range.

Geographical scope
The action plan needs implementation in Algeria, Cyprus, France, Greece, Italy, Lebanon, Mauritania, Morocco, Senegal, Spain, Tunisia and Turkey.

CONTENTS

SUMMARY

Audouin's Gull *Larus audouinii* is a rare and localised species with a breeding population of about 15,000 pairs limited to the Mediterranean Sea. Because of the population increase in the western Mediterranean in the last twenty years it is now classified as Conservation Dependent (Collar *et al*. 1994). Most breeding sites are rocky cliffs and offshore islands or islets, the exception being the colony in the Ebro delta (Spain) which is on a saltmarsh/sandy seashore habitat. The most important colonies (c.90% of the total population) lie within protected areas. Wintering areas are poorly known and include Algeria, Mauritania, Morocco and Senegal.

Threats and limiting factors

* **Habitat alterations at breeding sites - high**

* **Changes in fishing practices - high**

* **Competition with the Yellow-legged Gull and other species - locally high**

* **Egg collection and human persecution - low**

* **Human disturbance - low**

* **Depletion of food resources - unknown, potentially high**

* **Chemical pollution and oil spills - unknown**

Conservation priorities

* **Policies (including fishing and shipping) compatible with the conservation of the species - high**

* **Legal protection for the species and its habitat - high**

* **Preparation of national species action plans - high**

* **Prevent habitat alterations at breeding sites - high**

* **Prevent and reduce human disturbance - high**

* **Survey and monitor the population particularly determining the status in the eastern Mediterranean - high**

* **Carry out research into population dynamics and impact of fishing - high**

* **Identify the most important passage and wintering sites - high**

* **Improve international cooperation for research and monitoring - high**

*** Involve tourists and fishermen in preventing disturbance - high**

INTRODUCTION

The world distribution of Audouin's Gull *Larus audouinii* is confined to the Mediterranean basin. It is classified as Conservation Dependent at a global level (Collar *et al.* 1994) and as Localised at European level (Tucker and Heath 1994). It is also included in Annex I of the EU Wild Birds Directive, in Appendix II of the Bern Convention and in Appendix I of the Bonn Convention. The population increase which has taken place in the western Mediterranean during the last 10 years has led to its removal from the list of globally threatened species (Collar *et al.* 1994).

A workshop on the conservation and management of Audouin's Gull in the Mediterranean was held on 28–29 April 1994 on the island of Montecristo (Italy). The meeting was organised by LIPU and BirdLife International, with the aims of: (1) pooling new information about the population status and conservation problems of Audouin's Gull, (2) discussing an action plan to secure its future and (3) creating a working group. In all, 16 participants represented Algeria, Germany, Italy, Morocco, Spain, Tunisia and U.K. This action plan relies largely on the discussions held during this workshop and on written contributions received afterwards.

PART 1. BACKGROUND INFORMATION

Distribution and population

Audouin's Gull breeds in Algeria, Cyprus, France, Greece, Italy, Morocco, Spain, Tunisia and Turkey. The most northerly colony is on the island of Gorgona (Tuscan archipelago, Italy, 43°2´35"N). Population figures are given in Table 1.

Table 1. Breeding population of Audouin's Gull, 1993. Figures are based on recent published data (de Juana 1994) and communications presented at the workshop in Montecristo.

	No. of pairs	No. of colonies
Algeria	600–600	4
Cyprus	10–20	1
France	90–90	2
Greece	200–300	min. 16
Italy	550–650	10
Morocco	50–50	1
Spain	14,000–14,000	8
Tunisia	70–70	4
Turkey	50–50	1
Total	15,620–15,830	48

The west-central Mediterranean (west of Sicily) holds more than 95% of the world breeding population. Two breeding colonies include c.14,000 pairs (86.7% of the world breeding population): 9,400 pairs in the Ebro delta (Spain) and 3,600 pairs in the Chafarinas Islands (Spain) (Ruiz *et al*. 1993).

The world population has increased dramatically in the last 20 years from an estimated 1,000 pairs in 1975 (Witt 1977) to c.15,000 pairs now. A 10% population increase per year has been estimated (de Juana and Varela 1993). Information about the species is good for the western Mediterranean (with the exception of Algeria), but is still fragmentary for the eastern part.

After the breeding season Audouin's Gulls migrate south and west, and winter along the coasts of Algeria, Mauritania, Morocco, Senegal and Spain (Cantos and Gómez-Manzaneque 1993, Oró and Martínez-Villalta 1994b).

Life history

* **Breeding**

  Audouin's Gull breeds in colonies ranging from a few pairs to several thousand. Large or medium-sized colonies are often divided into distinct sub-colonies.

  The colony-site fidelity is very high (Ruiz *et al.* 1993, Oró and Martínez-Villalta 1994b), while year-to-year fluctuation in nest-site selection and number of breeding pairs has been recorded in almost all colonies. Site fidelity is likely to be related to previous breeding success. On the Chafarinas Islands birds returned to nest in successive years at successful sites but deserted those which were unsuccessful (P. Bradley verbally 1994).

  Even if the location of nesting sites varies very much in subsequent years, breeding occurs quite regularly within traditional areas (e.g. an island or an archipelago) (Lambertini 1993). New colonisation sometimes occurs, as happened in the Ebro delta (Spain) where the colony went from 36 pairs in 1981 to 9,400 pairs in 1994.

  Egg-laying takes place from the second half of April until the beginning of May; this is almost one month later than in the sympatric Yellow-legged Gull *L. cachinnans*. A colony's laying period is spread over about two weeks. Fledging is mostly in the first two weeks of July (Witt 1977, Mayol 1978, de Juana *et al*. 1979, Guyot 1985, Lambertini 1993). The degree of egg-laying synchrony may depend on factors such as food availability (Oró *et al*. 1994).

  Breeding failures due to bad weather are reported (Lambertini *et al*. 1988). Yellow-legged Gulls can be responsible for high chick mortality (Bradley 1986) and nest-site competition (Monbailliu and Torre 1986), but this is not the case at all colonies or in all years (Ruiz *et al*. 1993, Oró and Martínez-Villalta 1994a). At present the main cause of chick mortality is food scarcity resulting from trawl-fishing moratoria in waters around the Ebro delta colony (Ruiz *et al*. 1993, in press).

* **Feeding**

It has long been thought that Audouin's Gull was a pelagic bird feeding mainly offshore, but more recent observations show that it feeds regularly along the coast. The diet is mostly fish (especially clupeids) and cephalopods, but small mammals, arthropods, birds and plant material are also taken. The concentration of breeding colonies in the western Mediterranean could be related to the lower water salinity and higher abundance of clupeids (Witt *et al.* 1981, Witt 1982). Birds from the Ebro delta feed extensively on discarded food from the local fishing fleet (Oró and Martínez-Villalta 1992, Paterson *et al*. 1992, Ruiz *et al*. in press).

* **Habitat requirements**

Colonies are located on rocky cliffs and on offshore islands or islets, with the exception of the Ebro delta colony which is on saltmarsh and sandy seashore.

Characteristics of habitats used differ from region to region and even within the same areas in different years: e.g. altitude ranges from close to sea level to over 100 m, vegetation cover varies from bare rocks to 85% bush cover, and slope from 0 to 90°.

Medium vegetation cover is preferred, and this probably allows chicks to find shelter from heat and predators. Chicks on bare sites leave the nest significantly earlier than those in areas with vegetation cover (Bradley 1986).

Threats and limiting factors

* **Habitat alterations at the breeding sites**

Houses, hotels and marinas for tourism are spreading in many areas occupied by the species and can destroy the habitat as well as increase disturbance during the breeding season. The problem is especially acute in the Balearic Islands, Sardinia, Tuscan Isles and in many areas in the eastern Mediterranean.
Importance: high

* **Changes in fishing practices**

The increase in numbers at the colony in the Ebro delta is apparently linked to the exploitation by Audouin's Gull of fish waste dumped from boats fishing nearby (Beaubrun 1983, Oró and Martínez-Villalta 1994b). The industrial use of fish waste to produce animal food, as occurs in other areas of the Mediterranean, could pose a great and immediate threat to the maintenance of the colony at the Ebro delta, which relies largely on this food resource.
Importance: high

* **Depletion of food resources**

Food availability is considered a major cause of population fluctuations and mobility of seabirds (Hunt 1972, Springer *et al.* 1986). Large-scale human-induced alterations in river discharges to the sea, as has occurred with the Nile and the Aswan dam in the eastern Mediterranean, can affect marine productivity. The regulation of the Ebro river (Spain) by a series of dams could result in a decrease of nutrients in one of the most

productive fishing areas of the Spanish Mediterranean coast, affecting severely the breeding success of Audouin's Gull.
Importance: unknown, potentially high

* **Interference with other species**
Interaction with the Yellow-legged Gull has been recognised as a limiting factor in several Mediterranean colonies. This includes competition for nesting sites and predation of eggs (Oró and Martínez-Villalta 1994a) and predation of nestlings and adults (Bradley 1986, Monbailliu and Torre 1986).

Stray cattle and dogs can also damage nests and young, and this is a big problem in several Italian colonies (Asinara, Piana, Mortorio, Caprera, Molara, etc.) (X. Monbailliu *in litt.* 1995). Rats, foxes, cats and some reptiles could also pose a threat to the species.
Importance: locally high

* **Human disturbance**
The breeding period of Audouin's Gull overlaps with the tourist season on the Mediterranean coasts, and the increasing disturbance which this causes may represent a major future hazard for the species (Mayol 1986, Thibault and Guyot 1989) and for other sympatric seabirds. The easy accessibility of many colonies and the conspicuousness of the gulls makes them very vulnerable to disturbance by tourists, either by boating near the shore or by direct intrusion on the nesting areas. Birdwatching and research activities can also cause serious disturbance. Illegal fishing with dynamite may be a problem locally. Man's negative effects on a nesting colony are well reviewed by Burger (1981).
Importance: low

* **Egg collection and human persecution**
Direct human impact such as the killing and/or collecting of eggs and chicks by local people and fishermen was formerly widespread but at present is of very little significance, although Audouin's Gull eggs are still highly regarded in North Africa for confectionery.
Importance: low

* **Chemical pollution**
Chemical contamination is heavy in Mediterranean waters and represents a serious hazard for seabirds (Lambertini and Leonzio 1986). High levels of heavy metals and chlorinated hydrocarbons (including dioxins, coplanar PCBs and dibenzofurans) have been found in Audouin's Gull samples. Among these, coplanar PCBs show higher toxicological incidence when concentration levels are expressed as I-TEF (International Toxicity Equivalent Factors) (Pastor *et al.* in press). High mercury levels were found in chicks in Asinara (Sardinia), and for several years the colony had a very low breeding success which finally led to its total disappearance (X. Monbailliu *in litt.* 1995).
Importance: unknown

* **Oil spills**
The high level of recorded oil pollution in the Mediterranean could have lethal and sublethal effects on adults and eggs through eggshell smearing. A serious oil spill during the breeding season near the two largest breeding colonies could be disastrous for Audouin's Gull.
Importance: unknown

Conservation status and recent conservation measures

* **Algeria**
Audouin's Gull went unrecorded in Algeria until the 1970s when the first colonies were discovered on the west coast of Orán (Jacob and Courbet 1980). Four colonies are still located in this area with c.400 pairs altogether (Boukhalfa in prep.). Overall, the breeding population in the past 15 years has declined by c.50%, but new sites have been colonised. The total breeding population is estimated at c.600 pairs and recently 100 pairs have settled in the Habibas islands (Boukhalfa 1990, 1992), the largest breeding colony in Algeria. The breeding sites are mainly rocky islands which remain undisturbed because of the difficult access.

In the winter of 1978, 824 individuals were counted (Jacob 1979). Audouin's Gull is protected under national legislation (Decree no. 83–509) but enforcement is poor. A good opportunity for the protection of the species and its breeding areas should be the creation of a network of marine nature reserves.

* **Cyprus**
The species breeds in small numbers and was first recorded in 1960 (COS 1960). In subsequent years the colony had six nests in 1961, none in 1966, one in 1968 and 15 in 1987 (de Juana and Varela 1993). Breeding is confined to the Klidhes islands (IBA 001) which are currently included in the Zafer Burnu National Park.

* **France**
The species is legally protected by measures implemented in 1976 and 1981. Audouin's Gull has been recorded in Corsica since the nineteenth century, and regular censuses have been carried out from 1979 (Thibault and Guyot 1989). The Cerbicales islands are the best known historical breeding site (IBA 145) but since 1988 the colony has been deserted because of competition with the increasing Yellow-legged Gull. The islands around Cape Corse (Finocchiarola) (IBA 153) hold the current breeding population which has fluctuated from 18 to 90 pairs over the past 15 years. In 1980 the Yellow-legged Gull bred on only one of the three islands of Cape Corse, but between 1980 and 1987 there was a 12% annual increase in the number of pairs, and in 1988 all three islands were occupied. The breeding failure in recent years is related to predation on chicks by Yellow-legged Gulls. An eradication program of that species is currently underway on the two islands which hold Audouin's Gull colonies, together with rat control (Thibault and Guyot 1989). The high number of non-breeding Yellow-legged Gulls greatly reduces the effectiveness of these actions (J. C. Thibault *in litt*. 1994).

All the occupied breeding sites in the islands of Finocchiarola as well as the historically occupied areas on the Cerbicales have been designated Nature Reserves. Other potential sites benefit from Prefecture and French Navy restrictions of access.

* **Greece**

There is little information about the past and present status of the species but surveys of uninhabited islands in the Aegean were carried out by HOS during 1995. It occurs in small colonies on islands of Crete (IBA 101 Nissi Dionisiades, Lasithi), Dodecaneso (IBA 102 Nissos Kasos), Cicladas (IBA 105 Northern Syros) and Sporades (IBA 107 Nissi Kyra/Panaghia/Ghioura/Piperi/Skantzoura). Most of the sites are unprotected. The currently supposed size of the breeding population is around 235 pairs, of which 135 are newly discivered in colonies in the Aegean. This total is probably an underestimate (Halmann *in* Grimmett and Jones 1989, de Juana and Varela 1993, HOS *in litt.*). The main threats are tourist development of the islands and disturbance from fishermen. Audouin's Gull is specially protected by Decision 414985/85 (Handrinos 1992).

* **Italy**

The status of Audouin's Gull remained relatively unknown until the 1980s, when more detailed surveys and investigations started. In c.10 years the breeding population had probably increased slightly but more slowly than in other parts of the range. The species breeds in Sardinia (IBAs 108, 109, 110, 113, 118 and 125) and the Tuscan archipelago, and since 1992 a small colony became established along the Puglia coast. In 1984 c.550 pairs were counted (Shenk and Meschini 1986) and in 1992 new surveys confirmed a breeding population of 600–700 pairs (M. Lambertini own data).

Fluctuation and mobility of the colonies is normal within each traditional area. In 1993 many colonies disappeared (e.g. 20 pairs instead of the previous 180 in the Tuscan islands). No relationship was found between population changes on the Tuscan and Corsican islands.

Audouin's Gull is specially protected under national legislation. Three of the five islands frequented in the Tuscan archipelago are already protected by a newly established National Park which may soon be enlarged. A good proportion of the islands and archipelagos in Sardinia where the species breeds will soon be included in regional or national protected areas. For some years (1984˜1988) the local municipality of Capraia Island (Tuscan archipelago) limited access to the colonies during the tourist season.

* **Lebanon**

A colony of c.10 pairs has been recorded since the nineteenth century on the Palm Islands (IBA 001, Marine Nature Reserve) off the port of Tripoli (de Bournonville 1964); 18 adults were present in April 1973 but none in 1975 (Evans 1994). In 1993 there were no Audouin's Gulls on the islands, which are disturbed by line fishermen and Sunday visitors. The area is of scientific interest for coastal flora and infralittoral organisms (X. Monbailliu *in litt.* 1995).

* **Morocco**

A single colony has recently been recorded in the Bokoyas Islands, with 29 pairs in 1989 (M. Dakki verbally 1994), but no data are available on other historical sites. Audouin's Gull winters along both the Mediterranean and Atlantic coasts of Morocco and the estimated total of wintering birds is 6,000 (M. Dakki verbally 1994); in 1993 over 1,000 were counted at Dakla alone. The most important wintering sites have been proposed for inclusion in the new list of protected areas. The Bokoyas Islands are included in the planned Al-Hoceima National Park. The species is protected by Moroccan law.

* **Spain**

Audouin's Gull is included in the Spanish Red Data Book as Rare (Blanco and González 1992) and legally protected under Law 4/1989 for the Conservation of Natural Areas and Wildlife. It is listed as Of Special Interest in the National Catalogue of Threatened Species (Royal Decree 439/90).

In 1993 the total number of breeding pairs was 13,724 in four main colonies: Ebro delta (9,373), Chafarinas Islands (3,540), Columbretes Islands (102) and Balearic Islands (709). All these colonies are now protected: Ebro delta as a Natural Park; Chafarinas as a Hunting Refuge; Columbretes as a Natural Park; Cabrera (Balearics) as a National Park; other Balearic islets as Natural Areas of Special Interest (though in this last case protective measures are not ensured).

In 1987 a conservation action plan was started involving the Regional Governments of Baleares, Cataluña, Valencia and Andalucía under the coordination of ICONA (now DGN). Activities undertaken within this plan have included surveys, monitoring of breeding success, culling of Yellow-legged Gulls (Chafarinas, Balearic and Medas Islands), rat control, colour ringing and monitoring of dispersal (ICONA 1993).

* **Tunisia**

Audouin's Gull has been reported as a breeding species only since the early 1980s (Gaultier and Ayache 1986). The more recent available data confirm two major breeding areas in La Galite archipelago and in Zembra National Park, with a total of 70 pairs (Essetti no date). There is strong competition with the Yellow-legged Gull on the island of Zembra and control measures are needed. Audouin's Gull is a protected species in Tunisia.

* **Turkey**

A single breeding colony of c.30 pairs was recorded in the 1970s along the south coast (Witt 1976) (IBA 048). In 1995 field surveys are to be carried out along the Mediterranean coast (M. Yarar *in litt.* 1995).

PART 2. AIMS AND OBJECTIVES

AIMS

1. In the short term to maintain the current population of Audouin's Gull throughout its range.

2. In the medium to long term, to conserve suitable habitats in order to promote the expansion of the species' range and numbers particularly in smaller colonies.

OBJECTIVES

1. POLICY AND LEGISLATIVE

1.1. To influence EU fisheries policies and regulations for the benefit of biodiversity conservation in the Mediterranean

Fishing moratoria should be set up in a way that is compatible with the subsistence of the major breeding colonies of Audouin's Gull.
Priority: high
Time-scale: ongoing

1.2. To develop National Coastal Strategies

The EU Coastal Strategy, currently in draft, has the potential to set targets for coastal management across the EU requiring member states to establish integrated processes to manage their coasts sustainably. Appropriate legal and financial instruments must accompany the strategy if it is to be effective. The targets set must ensure benefits for Audouin's Gull and its habitat.

All countries around the Mediterranean should develop and implement coastal strategies which plan and manage development and use of the coasts in a sustainable manner. Important coastal habitat must be safeguarded including all Audouin's Gull colonies and major roosting sites. Protection of important Audouin's Gull sites in Europe will be of limited value for safeguarding numbers and distribution if key sites which they depend on elsewhere are lost.
Priority: medium
Time-scale: medium

1.3. To ensure that Audouin's Gull and its habitat receive full protection through national and international legislation

Many Mediterranean islands are not protected and are the subject of housing and tourism development plans. It is essential to seek policies that promote sustainable development of inhabited Mediterranean islands through ecotourism and full protection of deserted offshore and coastal islands.

Annex I of the EU Habitats Directive lists Mediterranean cliffs as a habitat in need of protection; governments must ensure that this habitat is adequately covered under the network Natura 2000 and that all the islands where Audouin's Gull occurs or has occurred recently are designated as

SACs. The same should happen under the EU Wild Birds Directive through the establishment of SPAs.

Similar actions must be extended to coastal West African countries (Mauritania and Senegal), and also to North African and eastern Mediterranean countries which are not part of the EU.

Audouin's Gull must be considered as a protected species in the national legislation of all countries within its breeding, wintering and migration range. All breeding and wintering areas should be protected.
Priority: high
Time-scale: short/medium

1.4. Prevent chemical pollution of the sea and oil spills

National and international legislation on chemical pollution and industrial treatment should be enforced and appropriate action undertaken to avoid chemical release from both offshore and land-based sources.

The use of agricultural chemicals near breeding colonies should be carefully monitored, as should the release of chemicals in the feeding waters.

The IMO and shipping insurance brokers (Veritas, Lloyds) should be lobbied to establish a system of incentives for those oil tanker companies which 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: short/ongoing

1.5. To promote the preparation of national action plans

National action plans for Audouin's Gull should be prepared with the cooperation of GOs, NGOs and research institutions. Once finished, these plans should be endorsed by the national authorities for nature conservation.
Priority: high
Time-scale: short

1.6. To involve international conventions in the conservation of the species and its habitat

The Agreement on the Conservation of African-Eurasian Migratory Waterbirds under the Bonn Convention provides a valuable framework for international cooperation on the conservation of Audouin's Gull and its habitat.

The Ramsar Convention should seek ways and means to review its criteria for the inclusion of coastal and island areas, particularly those which harbour colonial waterbirds.

The Barcelona Convention should seek to include all Audouin's Gull colonies in the Mediterranean as SPAs.

National strategies drawn up under the Biodiversity Convention should promote the conservation and sustainable management of coastal and island ecosystems.

Priority: medium
Time-scale: medium

1.7. To promote international cooperation and funding from bilateral agencies

Bilateral agreements for establishing and managing protected areas and for research and monitoring of Audouin's Gull should be promoted among governments of Mediterranean countries. International NGOs should assist national NGOs to carry out projects for the conservation of globally threatened species.
Priority: high
Time-scale: short/ongoing

2. SPECIES AND HABITAT PROTECTION

2.1. To ensure adequate protection of breeding sites and remove major threats to breeding habitat

2.1.1. Designate all key sites as protected areas

All IBAs where Audouin's Gull breeds should be designated as protected areas. In islands and archipelagos with high colony mobility, temporary protection schemes should be promoted, preventing disturbance and avoiding human access to the colony year by year. Management plans should be prepared and implemented at all designated sites.
Priority: high
Time-scale: short/medium

2.2.2. Prevent habitat alteration at all regular breeding sites

Enforcement of the legal protection status of all sites already designated must be ensured. Where protection has not been completed, other land-use planning instruments should be brought into force to prevent development. The existence of breeding Audouin's Gulls should be taken into account when preparing planning regulations. All proposed land-use changes threatening occupied and traditional breeding sites should be submitted to environmental impact assessment.
Priority: high
Time-scale: short/ongoing

2.2. To undertake appropriate management at breeding colonies

2.2.1. Prevent and reduce human disturbance

The control of human access to colonies is essential in order to prevent breeding failure and site desertion. Whenever trekking, boating, sea bathing, birdwatching or any other activity is seen to disrupt the breeding gulls it should be reported to the authorities responsible for the area. If legal status is lacking, specific protection measures must be urged on local and national authorities. Wardening by volunteers or paid staff is strongly recommended at the colonies most sensitive to human disturbance.
Priority: high
Time-scale: short/ongoing

2.2.2. Control competitors and predators and assess effectiveness of control measures

Humane population control of Yellow-legged Gulls should be undertaken if there is evidence of competition and predation as a limiting factor for Audouin's Gull. The causes of the population increase of Yellow-legged Gull should be investigated.

If rats are known to be predating eggs and/or young on a scale that seriously threatens the viability of a colony, a control programme should be undertaken immediately using rodenticide in specially designed boxes. Predators such as foxes *Vulpes* which could cause great damage to particular colonies should be eliminated or relocated. Stray cattle and dogs should be removed.
Priority: medium
Time-scale: medium/ongoing

2.2.3. Prevent egg-collecting
The location of Audouin's Gull colonies which are not adequately protected should be treated with confidentiality. In the already known colonies the best way to prevent egg-collecting is through surveillance during the breeding period and enforcement of existing sanctions.
Priority: low
Time-scale: short/ongoing

2.3. To protect Audouin's Gull and its habitat in the winter quarters and along the migration route

2.3.1. Seek protection for all regular wintering sites
All sites which regularly hold more than 200 Audouin's Gulls should receive legal protection. In the meantime, housing and industrial developments, pollution or any other kind of habitat alteration should be prevented. The fishing industry in the vicinity of the major wintering sites should be monitored and overfishing avoided.
Priority: medium
Time-scale: medium

3. MONITORING AND RESEARCH

3.1. To set up and implement a monitoring programme

3.1.1. Monitor population status and range trends

Monitoring of Audouin's Gull already takes place in several range-states within the framework of wider monitoring programmes. However, better international coordination is necessary to ensure an overall view of population and range trends. It is suggested that the working group for Audouin's Gull meets every 2–3 years to coordinate monitoring activities and review progress with the implementation of the action plan.

Priority: high
Time-scale: short/ongoing

3.1.2. Determine current distribution and population status

The eastern and southern Mediterranean regions need more detailed population surveys; the current number of breeding pairs in this region is unknown and there may be a few colonies still to be discovered. An accurate census of the world population should be undertaken and repeated every three years. An effort should be made to identify all breeding sites.

Priority: high
Time-scale: short

3.1.3. Determine the extent and location of discrete populations

A colour-ringing scheme at selected colonies should be undertaken to ascertain the relationship between different colonies and the degree of population interchange. Colour-ringing is regularly done at some Spanish colonies but should be extended to other Mediterranean countries. Good international coordination is essential for the success of such a scheme, and one particular organisation has to be appointed to centralise information, decide on colour codes, store data and disseminate results; MEDMARAVIS is suggested as a likely organisation to undertake this task. Colour-ringing should be prevented at colonies where disturbed chicks can flee to the sea and at those with a low reproductive rate.

Priority: medium
Time-scale: ongoing

3.2. To undertake research on dispersal patterns and winter ecology

3.2.1. Identify the most important passage sites and wintering areas

Intensive ringing (including colour-ringing) campaigns should be promoted in order to permit a better understanding of movements and migration routes; these campaigns should be carefully planned to minimise disturbance. The winter quarters must be defined geographically and data on numbers and dispersal of the wintering population are needed. One point of special importance is the determination of survival rates of young and adult birds in winter.

Priority: high
Time-scale: medium

3.2.2. Feeding ecology and habitat use in winter

Very few data exist on the winter ecology of Audouin's Gull, as on the species' habits outside the breeding season. A better knowledge of habitat selection and habitat use can provide useful information for conservation management. There is also very little baseline information about possible threats in the winter quarters.

Priority: medium/high
Time-scale: short/medium

3.3. To promote research which is of direct application to the conservation and management of Audouin's Gull

3.3.1. Study population dynamics

The factors that influence and regulate breeding success and survival should be determined, and the patterns and mechanisms of action of those factors analysed. Colour-ringing can also be used to ascertain survival rates of different age groups, especially adults and sub-adults. The results of this and other related studies should be used to build a predictive population model.

Priority: high
Time-scale: short/medium

3.3.2. Undertake comparative studies of breeding biology and colony-site selection in different habitats

High colony mobility can compromise many conservation efforts. A protected area network could be invalidated by colony displacement from year to year. It is important to know the mechanisms of site selection and to evaluate breeding success in different habitats. It is also necessary to establish site-selection preferences of young Audouin's Gulls born and raised in atypical habitats for the species, such as the saltmarshes of the Ebro delta.

Priority: medium
Time-scale: medium

3.3.3. Determine the diet in different parts of the Mediterranean

The diet of adults and chicks can be studied through pellet analysis or food regurgitation. Inter-colony and inter-individual variability within colonies should be taken into account. These studies should be compared with the abundance and availability of food at sea during different periods of time.

Priority: medium
Time-scale: medium

3.4. To assess major threats and their effects

3.4.1. Chemical pollution and oil spills

Blood and tissue samples should be collected to assess levels of heavy metals, PCBs and other pollutants.

Priority: medium
Time-scale: medium

3.4.2. Fishing policies

The effects of fishing policies and regulations should be evaluated. In particular, data about fishing methods, fishing effort, fishing periods and captures should be collected from different parts of the Mediterranean and compared with the species' population status and breeding success.

Priority: high
Time-scale: medium

3.4.3. Habitat requirements

Habitat selection studies should be undertaken to ascertain the habitat requirements of Audouin's Gull. The results will be of direct application in management of the sites.

Priority: medium
Time-scale: medium

3.4.4. Human disturbance

Effects of human disturbance on breeding failure and egg/chick mortality should be evaluated. Given the difficulty of obtaining data for such studies it is recommended that researchers working on Audouin's Gull colonies undertake self-assessments of the disturbance they provoke.

Priority: medium
Time-scale: medium

3.4.5. Competitors

Studies of population dynamics, feeding and habitat selection of the Yellow-legged Gull are necessary in order to evaluate that species' impact on Audouin's Gull. Attempts at control of Yellow-legged Gulls should be based on sound scientific evidence that the species is a limiting factor for Audouin's Gull.

Priority: medium
Time-scale: medium

3.4.6. Predators

The impact of predation by foxes, dogs, cats, reptiles, rodents, etc., should be estimated and monitored. Control programmes should be undertaken in the event of predation becoming a threat for the survival of a colony. The possibility of providing artificial refuges to Audouin's Gull chicks should be explored.

Priority: medium
Time-scale: medium/ongoing

3.4.7. Monitor fishing activities for possible impact on breeding and wintering Audouin's Gulls

In the long term, depletion of fish stocks could have a strong negative impact on Audouin's Gull, which relies mainly on clupeids and other seafood. The impact of the fishing industry and the methods used must be monitored and restricted for the sustainability of the industry itself and of seabird populations. Policies must be developed and implemented which prevent a direct impact of overfishing on Audouin's Gull.

Priority: high
Time-scale: short/ongoing

3.5. To agree a protocol for low-disturbance monitoring and research

Negative effects of intensive field studies on the breeding of colonial waterbirds have been reported by several authors. Audouin's Gull must be considered a highly sensitive species in this respect because of its restricted range and its exceptional colony mobility. A protocol for low-disturbance monitoring and research must be agreed by all involved in research or management of the species.
Priority: medium
Time-scale: short

4. PUBLIC AWARENESS AND TRAINING

4.1. To provide information and increase awareness

4.1.1. Increase awareness about Audouin's Gull among politicians and decision-makers
In many range-states it is necessary to influence decision-makers, local authorities, landowners, landscape planners and others involved in decisions and activities which could have an influence on the conservation of the species.
Priority: medium
Time-scale: short/ongoing

4.1.2. Inform the general public about the plight of Audouin's Gull
National and international NGOs should play a major role in increasing public awareness of Audouin's Gull, a species which is still largely unknown and ignored by people, even those living near the breeding colonies.
Priority: medium
Time-scale: short/ongoing

4.1.3. Involve tourists and fishermen in preventing disturbance
Some colonies are very close to human settlements and frequently visited by tourists in summer, thus suffering heavy disturbance. Education campaigns should be undertaken at such sites, intended to inform tourists and local people (especially fishermen) about the sensitivity of Audouin's Gull and to prevent disturbance. Local municipalities must also be involved and asked for legal measures for the temporary or long-term protection of breeding sites.
Priority: high
Time-scale: short/ongoing

4.1.4. Prepare and distribute educational material
Information and educational services to the public should be provided in areas frequented by Audouin's Gull. Leaflets, videos and posters should be made available, including information on the species and its habitat, as well as guidelines and rules to prevent disturbance.
Priority: medium
Time-scale: short/ongoing

4.1.5. Use 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 and other media. This should be combined with lectures and slide/video presentations in areas which hold breeding colonies.

Priority: medium
Time-scale: short/ongoing

4.2. To use Audouin's Gull as a flagship species

Being a rare and elegant bird, endemic to the Mediterranean, Audouin's Gull should be used as a flagship species when campaigning for the conservation of Mediterranean coastal habitats and islands. Its importance as an indicator of healthy marine ecosystems and unspoilt rocky sea cliffs and islands should be highlighted. An international awareness campaign and a specific event should be organised to attract the attention of the international community.

Priority: medium
Time-scale: medium

4.3. Promote information exchange

A meeting to exchange information, debate problems, update the action plan and coordinate fieldwork should be organised every 2–3 years. Proceedings of the meetings should be published and disseminated.

Priority: high
Time-scale: short/ongoing

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ANNEX 1. RECOMMENDED CONSERVATION ACTIONS BY COUNTRY

* Algeria

1.3. Encourage appropriate measures to enforce the status of protection afforded by Decree no. 83–509.

1.3. Promote enforcement of the environmental national law no. 83 and seek the designation of coastal and marine nature reserves, particularly on the Habibas islands.

2.2.2. Promote control measures for rodents at the main colonies.

3.1.2. Assess the status and distribution of the breeding population through adequate and extensive field work.

3.2. Undertake research on population numbers and habitat use during winter.

4.1.1. Increase awareness among decision-makers and the public about the rarity and vulnerability of Audouin's Gull.

* Cyprus

3.1.2. Undertake a survey of suitable sites and confirm breeding at the Klidhes islands.

* France

2.2.2. Undertake active control of the Yellow-legged Gull near the breeding areas of Audouin's Gull, especially the closing of all open refuse dumps.

* Greece

1.2. Promote the formulation of a National Coastal Strategy in accordance with the EU Coastal Strategy and ensure that areas where Audouin's Gull occurs are managed sustainably.

1.3. Encourage the designation of all breeding colonies as SACs within the network Natura 2000 of the EU Habitats Directive.

3.1.2. Undertake field surveys to assess current distribution and population status.

* Italy

1.2. Promote the formulation of a National Coastal Strategy in accordance with the EU Coastal Strategy and ensure that areas where Audouin's Gull occurs are managed sustainably.

1.3. Encourage designations of all colonies as SACs within the network Natura 2000 of the EU Habitats Directive.

1.4. Promote a ban on tankers in the Bocche di Bonifacio Straits between Sardinia and Corsica, and around the Tuscan Islands.

2.1.1. Encourage the designation of all breeding sites which are not already protected as protected areas under Italian law 394/91 on National Parks and Protected Areas.

2.1.2. Prevent housing and development plans which would adversely affect the Audouin's Gull in the Tuscan and Sardinian Islands.

2.2.1. Prevent disturbance to those colonies in the Sardinian and Tuscan Islands which are close to human settlements and tourist resorts, involving local authorities, fishermen, tourists and volunteers.

3.4.1. Undertake research on the effects of chemical pollutants, crude oil and human disturbance.

3.5. Promote the formulation of a protocol on low-disturbance monitoring and research among INFS, CISO, the universities involved in research on colonial waterbirds and LIPU˜BirdLife Italy.

4.1.4. Seek support from public and private organisations to prepare educational materials (including a video tape) and organise local and national events and communications through press and other media.

*** Lebanon**

2.1.2./2.2. Promote management of Nakhl Islands (Palm Islands), especially the restoration of the natural drainage system and of the abandoned saltpans. No landing facilities should be built on the Nature Reserve.

*** Morocco**

2.3.1. Promote inclusion of the most important wintering sites in the developing protected areas network.

3.1.2. Undertake extensive fieldwork to assess the status and distribution of the breeding population.

3.2.1. Undertake more regular counts of wintering birds and define geographically the most important sites for migration and wintering.

*** Spain**

1.1. Ensure that fishing moratoria are set up in a way which is compatible with the subsistence of the breeding colonies.

1.2. Promote the formulation of a National Coastal Strategy in accordance with the EU Coastal Strategy and ensure that areas where Audouin's Gull occurs are managed sustainably.

1.3. Encourage the review and updating of the National Catalogue of Threatened Species.

1.5. Encourage the formulation of regional action plans.

3.1.1. Continue with regular monitoring of the population and review management activities in the light of the latest research findings.

4.3. Update and reinforce the existing Coordinated Action Plan.

*** Tunisia**

2.1.1. Promote the declaration of La Galite archipelago as a National Park and enlarge the buffer marine zone around Zembra.

2.2.1. Promote restriction of access to Zembra and Zembretta and submit the plans for development of tourism on Zembra to impact assessment.

3.1.2. Assess the status and distribution of the breeding population through adequate and extensive fieldwork.

3.2.1. Undertake regular counts of wintering Audouin's Gulls and define geographically the most important sites for migration and wintering.

3.2.2. Promote research on habitat use and distribution patterns of the wintering population.

3.4.5. Undertake research on the effects of competition and predators, particularly on Zembra, and define control measures.

4.1. Publish and distribute educational materials and raise public awareness.

*** Turkey**

2.1.1. Promote the designation as protected areas of all Audouin's Gull breeding sites.

2.2.2. Promote the prevention of grazing on the islands off the south-east coast where Audouin's Gull breeds.

3.1.2. Undertake a survey of the Mediterranean coast and determine the current distribution and population status.