ACTION PLAN FOR THE GREAT BUSTARD *(Otis tarda)* IN EUROPE

Compiled by:

HANS PETER KOLLAR (Austria)

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This action plan is dedicated to the late Julia Antonchikova, who contributed so much to Great Bustard conservation in Russia.

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Timetable

Workshop: May 1994 - Tiszafüred, Hungary
First draft: May 1994
This version: April 1996

Reviews

This action plan should be reviewed and updated every three years. An emergency review will be undertaken if sudden major environmental changes, liable to affect the population, occur within the species' range.

Geographical scope

The action plan needs implementation in Albania, Austria, Bulgaria, Croatia, Czech Republic, Germany, Hungary, Poland, Portugal, Romania, Russia, Slovakia, Spain, Turkey Ukraine and Yugoslavia.

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SUMMARY

The Great Bustard *Otis tarda* is a globally threatened species listed as Vulnerable by Collar *et al.* (1994). In Europe it is present in Austria, Bulgaria, Croatia, Czech Republic, France, Germany, Greece, Hungary, Italy, Moldova, Portugal, Romania, Russia, Slovakia, Spain, Turkey, Ukraine and Yugoslavia. The European population is estimated to be between 23,790 and 30,483 individuals (data gathered at the 1994 workshop) but there has been a rapid decline in much of central and eastern Europe. Its habitat is intensively used agricultural land and mixed extensive agricultural and pasture/fallow land. Conservation measures must focus on active habitat management and on the maintenance of large areas of non-intensive farming systems.

Threats and limiting factors

* **Habitat loss - critical**

* **Low breeding - high/critical**

* **Predation - medium/high**

* **Collision with powerlines - medium/high in some areas**

* **Human disturbance - medium**

* **Application of pesticides - low/locally medium**

* **Illegal hunting - low**

* **Wire fences - low**

Conservation priorities

* **Maintain open areas of non-intensive farmland through agricultural and forestry policies as well as protected areas and legislation - high/essential**

* **Protection and management of breeding areas - essential**

* **Maintain the ban on hunting - high**

* **Ensure availability and quality of habitat in the winter quarters - high**

* **Prevent collisions with powerlines - high**

* **Monitoring of population size, trends and effects of habitat management - high**

* **Research into mortality and factors limiting breeding success - high**

* **Promote international cooperation on research and monitoring - high**

* **Raise public awareness amongst farmers, landowners and the general public - high**

INTRODUCTION

The Great Bustard *Otis tarda* is a grassland species that has changed its habitat preferences to agricultural habitats and pastures throughout its European range. It is globally threatened, classified as Vulnerable (Collar *et al.* 1994), and is included in Annex I of the EU Wild Birds Directive, Appendix II of the Bern Convention, Appendix I of the Bonn Convention and Appendix I of CITES.

A working group has been dealing with Great Bustard matters within BirdLife International (formerly the International Council for Bird Preservation) for c.20 years (this group has now been incorporated into the Steppe and Grasslands Bird Group). During a meeting held in Vienna in 1988, recommendations were passed stressing that all efforts to preserve the species should be focused on its habitat rather than on the species itself, thus giving priority to habitat management over attempts to support populations by captive breeding or by rearing chicks in captivity.

In May 1994 a workshop took place in Hungary to discuss the European status of the Great Bustard and the conservation priorities for the future; this was organised by BirdLife International and the Hungarian Ornithological and Nature Conservation Society (MME, the BirdLife Partner in Hungary), and was attended by representatives from Bulgaria, Germany, Hungary, Portugal, Russia, Slovakia, Spain, Turkey and U.K. This action plan is largely based on the results of that workshop.

In central Europe the Great Bustard is on the threshold of a minimum viable population. The current time lag for recruitment shows that any further delays would allow the species to decline below this threshold. Active habitat management is required if this situation is to be reversed.

PART 1. BACKGROUND INFORMATION

Distribution and population

The Great Bustard occurs in highly fragmented populations across Europe, Morocco and Asia. The greatest part of the world's breeding population (c.50%) is now found in the Iberian peninsula, followed by Russia, Turkey and the Hungarian basin; several small populations, partly isolated, live in different central European countries (Table 1). The species became extinct in France, western Germany, Poland, Yugoslavia and U.K.

Table 1. Estimated population of the Great Bustard in Europe, 1994. Based on data gathered during the workshop at Tiszafüred.

	No. of birds
Austria	50–60
Bulgaria	10–15
Czech Republic	10–20
Germany	130
Hungary	1,100–1,300
Moldova	2–3
Portugal	1,000
Romania	10–15
Russia	8,000–10,000
Slovakia	25–30
Spain	13,500–14,000
Turkey	800-3,000
Ukraine	300–400
Yugoslavia	8–10
Total	24,945–29,983

Life history

* **Breeding**

The nest is on the ground, generally on patches of bare soil in cereal fields or grassland. The location is chosen by the female, and is usually in the vicinity of the display grounds which are on open areas with low vegetation in agricultural land (often winter-sown). A low level of disturbance is essential for successful breeding.

The Great Bustard usually lays two eggs (more rarely one or three, exceptionally more), which are incubated for 25–27 days. The female is very likely to leave the clutch following disturbance, especially at the beginning of the breeding period. Chicks are led by the female parent during the first months of their life and may stay with females until the next courtship period.

* **Feeding**

The chicks rely on insects for the first months of their life, and the adults eat insects and plants. During winter birds feed mainly on Brassicaceae and alfalfa *Medicago sativa*, especially seeds which are found on the ground after harvesting. In spring and summer they eat mainly plant material (chiefly leaves and inflorescences, but also buds, shoots and seeds) as well as insects and even small vertebrates.

* **Migration and movements**

Most populations are resident. Some migrate regularly, e.g. part of the Russian population spends the winter in Crimea (Ukraine), and some flyways are used during winter, e.g. southwards from Austria and Slovakia to Hungary, and westwards from Hungary to northern Italy. Some populations in Spain make seasonal movements (Hidalgo and Carranza 1990).

During severe winters, long-range displacements from eastern Europe westwards as far as the Netherlands and France occur. Since mortality is probably very high during such migrations, and survival conditions in the wintering areas are not optimal, the species needs protection in the countries involved as well as those in which it breeds.

* **Habitat requirements**

Great Bustards need wide-open and rather flat countryside. They seem to have moved from primeval landscapes like the Russian steppes to open agricultural land, especially traditional extensive farmland in dry regions. Birds in Iberia inhabit mixed forms of pasture, arable and fallow land, while those in Hungary live in pannonic grasslands, both pastures and secondary grassland (*puszta*), intermixed with agricultural land. Throughout the range the majority of clutches are found in agricultural habitats, often cereal crops. A certain amount of fallow land, e.g. fallow plots, set-aside plots, margins, etc., is necessary to provide food resources, especially insects, and for cover. Early-mown alfalfa, especially where intermixed with cereals, reduces breeding density.

The wintering habitat is mostly large fallow plains of alfalfa and rape *Brassica napus*.

Threats and limiting factors

* **Habitat loss**

Ploughing of grasslands, afforestation, irrigation schemes, roads, highways, powerlines, fences, ditches, etc., affect Great Bustards in parts of Austria, Bulgaria, Germany, Hungary, Portugal, Russia and Spain. Changes of crops, e.g. the reduction in alfalfa in Iberia and central Europe, can reduce breeding success and density. In east European countries, land privatisation can lead to further fragmentation of estates and to the intensification of agriculture.

Overgrazing and inappropriate grazing management may damage breeding grounds, e.g. in Turkey (Baris 1991) and in some areas of Spain. Habitats in the winter quarters can be adversely affected locally by a reduction in rape cultivation.
Importance: critical

* **Losses of eggs and chicks**
This is one of the key factors in all agricultural habitats due to direct damage by harvesting machinery (e.g. mowing of alfalfa), irrigation works, use of pesticides and fertilizers, lack of food, and increased stress due to disturbance (Litzbarski *et al.* 1987). It is especially relevant in Austria, Germany, Hungary and Slovakia and parts of Portugal, Russia and Spain. Changes in farming practices related to the cultivation of new crops generally produce threats to the young, e.g. the early mowing of cereals in Extremadura (Spain).
Importance: high/critical

* **Predation**
Eggs and chicks are predated by foxes, corvids and dogs. Adults may be predated by foxes and dogs. Some cases have been reported from Austria, Germany, Hungary, Russia, Slovakia and Spain, though the impact on the species is different for each population.
Importance: medium/high

* **Powerlines**
Great Bustards are remarkably terrestrial, and are reluctant to fly in poor weather. Their poor manoeuvrability in flight renders them unable to evade poorly marked powerlines. Collision with overhead cables is a significant cause of death in some countries (Hungary, Portugal, Russia, Slovakia and Spain). Small populations can be totally destroyed by a single powerline. In some areas of Spain this is the prime cause of mortality in adult birds (Alonso *et al*. 1994).
Importance: medium/high in some areas

* **Human disturbance**
Disturbance causes stress, desertion of clutches, escape flights during unfavourable weather and the associated risk of injuries (e.g. collision with powerlines), and, in the case of young birds, a reduction in time spent feeding. Disturbance at the display sites disrupts social behaviour and usually alters or aborts copulation. The problem is particularly relevant in areas of high human population, such as parts of Austria, Germany, Hungary, Slovakia and Spain.
Importance: medium

* **Pesticides**
Application of pesticides adversely affects Great Bustard populations by lowering the reproduction rate. Massive applications can have a direct impact locally, e.g. ill-timed locust control in parts of Spain (Hellmich 1992). In 1996 the government of Extremadura announced that aerial spraying with Malathion, for many years a serious problem in the Llanos de Cáceres and La Serena, will be replaced with more selective ground-based control through the implementation of a Zonal Programme under Regulation 2078/92/EEC approved by the European Commission in 1995 .
Importance: low (locally medium).

* **Wire fences**
In some parts of Spain wire fences on pasture land cause death of individuals as well as habitat fragmentation.

Importance: low

* **Illegal hunting**
A few cases of poaching are reported every year across the range. This is still a problem in Russia, Spain, Turkey and Ukraine.
Importance: low

Conservation status and recent conservation measures

* **Austria**
The species is strictly protected and included in the Austrian Red Data Book as Endangered. Hunting has been forbidden since 1969. A small-scale attempt during the 1960/1970s to breed and rear the species in captivity failed. In intensively used agricultural land some plots have been managed since 1979 specially as feeding and breeding areas. A reserve exists within the boundaries of Lake Neusiedl National Park, consisting of meadows and fallow land. The reproductive rate in all populations is still low (Kollar 1991).

* **Bulgaria**
The species has been protected under the Bulgarian Law for the Conservation of Nature since 1962 and by the 1986 special Act 342 of the Ministry of the Environment which imposes a fine of US$ 460 for any bird killed together with an additional penalty. It is included in the Red Data Book of 1985 as Endangered. The last confirmed breeding records date from 1983, but there are some summer observations in later years, including some in 1994. One area of primeval steppe in Dobrudja plateau (called "The Valley of the Bustards", 3,600 ha) which was protected in 1961 was deliberately ploughed up in 1962. There is no current monitoring of the population and no habitat management. A thorough survey of the species over the whole territory of Dobrudja (north-east Bulgaria) is urgently needed. Under a biodiversity conservation programme funded by the Swiss government set-aside schemes and programmes for leasing and acquiring land for agricultural extensification have begun in Dobrudja. Farmers are encouraged to adapt the timing of agricultural activities to the life-cycle of the Great Bustard.

* **Czech Republic**
The species is protected under the Law for the Protection of Nature and Landscape. There is one small population on the border with Austria for which there are no current protection schemes.

* **Germany**
The species is legally protected and listed as Endangered in the German Red Data Book. In former East Germany much effort was put into breeding, rearing and releasing Great Bustards into the wild, first at Steckby, then at Buckow, and today a third of Germany's Great Bustard population consists of birds which came from the rearing programme. In addition, from the 1970s on, measures for restricting agriculture in Great Bustard areas were taken; these included delayed mowing and restricted use of pesticides and fertilizers; also, some eggs were collected from the wild for artificial incubation. Nowadays habitat management is carried out on a comparatively large scale, especially in Brandenburg where c.6,600 ha of agricultural land has been leased or purchased and is now managed as meadows and set-aside plots (Block *et al*. 1993, Litzbarski 1993). A total of 9,500 ha is subject to a LIFE-funded scheme to rediversify

agriculture following the break-up of collective farming, aimed at improving Great Bustard habitat.

*** Hungary**

The Great Bustard is strictly protected under the Hungarian law for the Conservation of Nature and is included in the Hungarian Red Data Book. Although the majority of *puszta* has been under protection for decades, either as National Parks or as Landscape Protection Areas, most breeding occurs outside these protected areas, and populations have thus further decreased due to loss of clutches as well as through the effects of severe winters. A rearing station was established at Dévaványa more than 10 years ago, but it has not been totally successful so far (Faragó 1990). Winter feeding and the control of corvids in some areas have had a beneficial effect, but the most important task ahead is to concentrate all efforts towards habitat management in agricultural areas. Recent habitat protection programmes have been implemented in Dévaványa Landscape Protection Area, Hortobágy National Park, Kiskunság National Park and in the Moson Project near Mosonszolnok, covering c.11,000 ha altogether. These programmes include habitat management and predator control.

*** Poland**

The species is now extinct, the last breeding record being from 1986. Up to 1989 there were a few individuals kept in captivity. The reasons for extinction were intensification and mechanisation of agriculture, human disturbance and persecution (Bereszynski in prep.).

*** Portugal**

It is legally protected and included in the Red Data Book as Endangered. Hunting has been forbidden since 1967. Habitats in traditionally extensive agricultural land are being encroached upon and threatened by changes in land use, especially afforestation, because the subsidies for environmental agriculture are lower than those for afforestation. While there is a strong interest in the conservation of the species and its habitat, including application of agri-environment measures under the EU Regulation 2078/92, the continuing decline demonstrates that these efforts are insufficient. So far there are no protected areas, SPAs or ESAs specific to the Great Bustard. LIFE funding has been used to intiate pilot programmes to encourage ESA take-up in Castro Verde, the most important Great Bustard area in Portugal.

*** Romania**

Female Great Bustards are protected as National Monuments. The species has declined considerably in the last half-century to considerably less than 100 birds, found mostly outside protected areas.

*** Russia**

The species is included in the Red Data Book of 1985 as Vulnerable (Category II, rapid decline in numbers and habitat). After intensive ploughing programmes in the 1960s the range of the Great Bustard became highly fragmented. In Saratov region there are four reserves covering more than 1,000 km^2 in total where display and breeding sites are protected. In dry areas with poor soil, e.g. in Volgograd District, where agriculture is very extensive and a great part of the land is fallow, numbers seem to be stable or even increasing slightly. In regions with good soil, such as Krasnodar District, numbers are declining because agriculture tends to be more intensive. There is a breeding and rearing station at Saratov, which has not been successful in increasing

the population. A thorough survey of the species and an inventory of steppes are urgently needed.

*** Slovakia**

The species is protected by the National Law for Nature Protection and listed as Endangered in the Red Data Book. Hunting has been forbidden since 1980. The core area of the former range has been designated as a protected area. A rearing and breeding station exists, so far without an impact on the population. Habitat management measures for arable land are in the planning stage.

*** Spain**

The species has been protected since 1980. It is classified in the Red Data Book as Vulnerable and is officially listed as a species Of Special Interest under Royal Decree 439/90. Some of the most important Great Bustard sites have been included in Zonal Programme proposals under EU Regulation 2078/92, e.g. Villafáfila, Madrigal-Peñaranda and Tierra de Campos. However, some of the main areas are still threatened by (e.g.) irrigation, land abandonment, afforestation, pesticides and overgrazing. In Extremadura, which alone holds c.15% of the world population (Hidalgo 1990), habitat protection measures are restricted to *Vicia* cultivations, and there are plans for irrigation and afforestation schemes. Recently there have been attempts to re-establish hunting in some regions. Research on behaviour, breeding biology, habitat use and dispersal has been going on for several years in Extremadura and Castilla-León.

*** Turkey**

The Great Bustard is classified as Rare in the Draft Red List of Threatened Animals. Hunting has been forbidden since 1977. A protected area of 20,000 ha was established in 1993 by the National Parks and Game–Wildlife General Directorate. A thorough survey is planned for 1996 or 1997.

*** Ukraine**

The species is legally protected and included in the Ukrainian Red Data Book. There are some reserves where breeding birds (Polessky Reserve) or wintering birds (Askania–Nova, Black Sea Reserve) are protected. In addition there is a project to create a reserve in Crimea for the protection of the largest breeding Ukrainian population and for the wintering birds from Russia (Fedorenko 1992). In Askania–Nova there was a breeding and rearing station, but its work has now ceased.

PART 2. AIMS AND OBJECTIVES

AIMS

1. In the short term, to maintain the existing populations of the Great Bustard throughout its range.
2. In the medium to long term, to promote land use forms and habitat conservation schemes that allow for population growth and range expansion.

OBJECTIVES

1. POLICY AND LEGISLATIVE

1.1. To promote national and international policies and legislation which favour the conservation of the Great Bustard and its habitat

The threats of habitat loss and food depletion are similar for a number of threatened species. Conservation measures for the Great Bustard are likely to have a positive effect also for the globally-threatened Lesser Kestrel *Falco naumanni* as well as other declining species such as the White Stork *Ciconia ciconia*, Kestrel *Falco tinnunculus*, Little Bustard *Tetrax tetrax*, Gull-billed Tern *Gelochelidon nilotica*, Pin-tailed Sandgrouse *Pterocles alchata*, Roller *Coracias garrulus*, shrikes *Lanius* and other species hunting in the open landscape for large invertebrate prey. Thus steppe and dry grasslands are included in the Agricultural Conservation Strategy currently being prepared by BirdLife International (Tucker *et al.* in press).

1.1.1. Agricultural policies

In areas where traditional land uses still exist or are restorable, e.g. Portugal, Spain and parts of Hungary, policies should be developed or promoted at European level to enable these countries to maintain their "pseudosteppes" and *pusztas*. Within the EU, the concept of ESAs and Zonal Programmes should be further promoted. In countries outside the EU the policy mechanisms and funds may be lacking for such an approach. Funding from EU and other "western" sources should be encouraged to support farming practices compatible with bustard conservation in Central and Eastern Europe.

In intensively used farmland areas, agricultural policies and legislation should provide for the establishment of set-aside schemes, land leasing or acquisition programmes, extensification and special protection measures for Great Bustard breeding areas.

Priority: essential
Time-scale: short

1.1.2. Forestry policies

These should be subject to environmental impact assessment taking account not only of the economic benefits of reducing crop surpluses and carbon dioxide emissions but also the damage to globally threatened species such as the Great Bustard through the fragmentation of extensive farming habitats. Afforestation should be prevented in Great Bustard areas and replaced by appropriate incentive or compensation schemes.

Priority: high
Time-scale: short

1.1.3. Protected areas and legislation

The Great Bustard inhabits large areas of unbroken habitat in which farming is often the main landuse. Thus a network of protected areas is not the best means of conserving the species. Even in wildlife reserves the movements of juveniles and adults during dispersal exceed the boundaries of the protected areas. However, protected area status should be encouraged for those seminatural habitats where the Great Bustard occurs (e.g. steppes, pseudosteppes, grasslands).

It is essential that the species gets full legal protection throughout its range to ensure that hunting will not be allowed and that key habitats will be maintained.

Priority: high/essential
Time-scale: short

1.1.4. Strategic Environmental Assessment

Strategic environmental impact assessment of strategies, policies and programmes should be promoted to evaluate their global impact on steppe and grassland habitats and species and to prevent damage due to the cumulative effects of individual projects. The Council of Europe and the European Commission are encouraged to support this approach and to facilitate information exchange between experts and competent authorities in this respect.
Priority: medium
Time-scale: medium

1.1.5. International cooperation

International treaties and conventions provide a framework for cooperation at governmental level. The signing and ratification of, among others, the Bern, Bonn and Biodiversity Conventions and CITES, by Great Bustard range-states should provide a basis for practical cooperation and exchanges of experience. A Regional Agreement on the Conservation of Palaearctic Dry Grassland Birds under the Bonn Convention would be particularly desirable for Central Europe. Bilateral agreements among Great Bustard range-states should be promoted.
Priority: medium
Time-scale: medium

1.1.6. Hunting

It is recommended that hunting of the Great Bustard must remain prohibited, irrespective of the numbers and trends of the species in each range-state. The species should be removed from hunting legislation where this implies the Great Bustard is a game species (even if hunting is not allowed). In all countries the species should be included in protected species legislation.
Priority: high
Time-scale: medium

2. SPECIES AND HABITAT PROTECTION

2.1. To encourage adequate protection and management of the breeding areas and remove key factors adversely affecting breeding success

2.1.1. Preserve traditional land use

Where land uses which are favourable to the Great Bustard, such as rotation of grazing plots and alternation between cultivation (cereals and legumes) and fallows, still exist (e.g. pseudosteppes in Iberia and *puszta* in Hungary), these should be maintained and promoted through a system of incentives to farmers.
Priority: essential
Time-scale: short

2.1.2. Promote set-aside schemes and extensification programmes, and enable leasing and acquisition of land for Great Bustard conservation

The effective promotion and adoption of set-aside schemes (land taken out of production) in agricultural areas to protect Great Bustards and other wildlife is possible and promising, as shown by examples in Austria, Germany and Hungary. It should be encouraged and supported

by official and private funds. Such schemes should stretch over a period of more than two years and should be thoroughly supervised and evaluated. Other types of set-aside such as extensively grazed rotational fallows (1–5 years) should be preserved and promoted.
Priority: essential
Time-scale: short

2.1.3. Adapt the timing of agricultural practices to the life cycle of the Great Bustard

Farmers should be made aware of the presence of Great Bustards in their fields and of the risk of destroying clutches. They must be encouraged to adapt their calendar of farming activities as much as possible to the breeding cycle of the Great Bustard. Mowing and irrigation should be postponed and carried out with special care, or dropped.
Priority: high
Time-scale: short/ongoing

2.1.4. Prevent disturbance at breeding and display sites

Since breeding females are especially vulnerable to disturbance, interference caused by farming activities, vehicles driving across the fields, hunting, birdwatching, photography, etc., should be minimised, especially in areas of low population density. Disturbance should generally be kept low in Great Bustard areas. Appropriate actions such as educating farmers, restricting access and wardening should be encouraged.
Priority: medium/high
Time-scale: short/ongoing

2.1.5. Undertake special measures for the protection of threatened breeding sites

The competent authorities and NGOs should be encouraged to take immediate action to manage those breeding sites where females regularly fail to raise young because of agricultural activities or other disturbance. In areas of high Great Bustard density, temporary protection schemes should be put in place to ensure appropriate breeding conditions. Adequate wardening is essential for the success of such schemes.
Priority: high
Time-scale: short/ongoing

2.1.6. Undertake captive management in emergency situations

If it is not possible to guarantee the successful breeding of Great Bustards at one particular site, the possibility of taking the eggs into captivity for artificial incubation should be carefully evaluated. Dummy eggs can be left in the nest instead and replaced by the real ones shortly before hatching. Rearing some young in captivity for release at a later stage is another possibility, although the risk of imprinting on humans is very high. Imprinted chicks will have difficulty in surviving under natural conditions. This kind of management should only be undertaken with the backup of well-equipped facilities and should be carried out only by well-trained professionals following IUCN criteria for reintroductions (Kleiman *et al.* 1994).
Priority: low
Time-scale: long

2.1.7. Prevent predation

When predation is a continuous cause of breeding failure, appropriate measures should be undertaken to control the key predators. Foxes and feral dogs should be controlled and shepherds should be informed of the problem and encouraged to train their dogs not to chase or kill Great Bustards.

Priority: medium
Time-scale: short

2.2. To improve habitat quality for the Great Bustard and prevent isolation and fragmentation of populations

2.2.1. Ensure the availability and quality of the habitat in the winter quarters

Habitat preferences in winter are well known, as are the location of most wintering sites. In these areas, cultivation of rape and alfalfa should be maintained and promoted.

Priority: high
Time-scale: short

2.2.2. Prevent alterations that fragment or isolate Great Bustard habitat

The construction of new roads or highways, powerlines and railways, the planting of shelterbelts, and irrigation and afforestation schemes should be prevented in Great Bustard areas. All these and other infrastructures should be subject to environmental impact assessments which consider viable alternatives, and take into account the special sensitivity of the Great Bustard to disturbance and habitat encroachment. Fences should either be avoided or constructed in a way that permits the free movement of chicks.

Priority: medium/high
Time-scale: short

2.2.3. Adopt corrective measures for powerlines

Collisions with overhead cables can be avoided or at least greatly reduced by appropriate marking. Existing lines which cross Great Bustard areas should be buried or marked prominently. New lines should not be built across Great Bustard areas.

Priority: high
Time-scale: short

3. MONITORING AND RESEARCH

3.1. To monitor population parameters and the effects of management

3.1.1. Standardise census methods

Methods used for counting Great Bustards in different regions of Europe cannot be applied to all parts of the range because of the different landscapes and the different densities of Great Bustard populations involved. For example, in Germany and other parts of central Europe (unlike in Spain), vegetation height from April onwards may not permit standing Great Bustards to be seen from a moving car or from fixed vantage points. In Russia, low Great Bustard densities would require a different census methodology. Despite these differences, standard*ise*d census methods should be used, at least within regions, to produce comparable results.

Priority: high
Time-scale: short

3.1.2. Monitor population size and population trends

Efforts to monitor the basic parameters of Great Bustard populations, such as size and trends, should be made at all sites.

Priority: high
Time-scale: short/ongoing

3.1.3. Monitor the effects of habitat management

Studies should be carried out on the effects of habitat protection measures, implementation of agri-environment regulations, etc. These studies should preferably be done at sites where the population has been well monitored for a number of years.

Priority: high
Time-scale: short/ongoing

3.1.4. Monitor the success of release programmes

The survival of chicks bred in captivity and of chicks hatched from artificially bred clutches should be closely monitored, as well as the survival and breeding performance of adults released in the wild. Release programmes should be permanently reassessed and discontinued if birds are failing to survive under natural conditions.

Priority: high
Time-scale: ongoing

3.1.5. Carry out coordinated and comparable national surveys as a basis for cross-border protection measures

Those Great Bustard populations which are shared by two or more countries, e.g. Austria/Hungary/Slovakia/ or Portugal/Spain should be the subject of bilateral or trilateral agreements to ensure that there is appropriate coordination for research, monitoring and conservation activities.

Priority: medium
Time-scale: short

3.2. To promote research which is of direct application to the conservation of the Great Bustard

3.2.1. Undertake comparative studies

Great Bustard populations in western Europe (Iberia) and eastern Europe (Hungary, Russia) live under different ecological conditions. A comparative analysis of the existing data on population dynamics, habitat requirements, effects of habitat changes and causes of decline between the populations would be most useful in redefining conservation strategies in the future.

Priority: medium
Time-scale: medium

3.2.2. Promote studies on mortality factors in areas with different land uses

All individuals found dead should be examined for the causes of mortality. This, together with field studies and monitoring of marked individuals, should help to identify the direct or indirect impact of land use on Great Bustard mortality.

Priority: high
Time-scale: short/ongoing

3.2.3. Investigate factors limiting breeding success

The ecology of core Great Bustard populations in extensive agro-pastoral systems should be studied, giving priority to the analysis of those factors which may have an influence on breeding success. These should include the use of habitat and space, home range and dispersal patterns.

Priority: high
Time-scale: short/medium

3.2.4. Carry out international studies on migration

The migration patterns of the Great Bustard are still poorly understood. Studies involving satellite telemetry should be planned to locate wintering areas and to clarify migration routes.

Priority: medium/high
Time-scale: medium

3.3. To improve international cooperation in monitoring breeding and wintering populations

3.3.1. Promote information exchange

The Great Bustard working group should act as a forum for information exchange and discussion about international initiatives. The group should meet once a year, preferably in combination with bigger conferences. A bibliography on the Great Bustard should be compiled and distributed to all those involved in research or management.

Priority: medium
Time-scale: medium

3.3.2. Promote international teams and joint projects

Where the range of Great Bustard populations stretches across neighbouring countries, joint research projects for combining and improving conservation efforts should be promoted.

Priority: high
Time-scale: short

3.3.3. Provide support to high-priority projects

Funds for projects of highest conservation priority should be sought from international funding agencies, governments, NGOs and individuals.

Priority: high
Time-scale: short

4. PUBLIC AWARENESS AND TRAINING

4.1. To increase public awareness of the need to protect Great Bustards and their habitat

Being a conspicuous and impressive species, the Great Bustard should be used as a flagship for the protection of steppes, dry grasslands and agricultural landscapes across Europe. The whole biological community which depends on such habitats will benefit from this protection.

Priority: medium/high
Time-scale: short

4.2. To enhance farmers' and landowners' understanding of the Great Bustard

Farmers should be the target audience of specific campaigns designed to raise awareness of the international importance of the Great Bustard. They should also be provided with information on the biological characteristics of the species and the timing of breeding in order to prevent damage by farming activity.

Priority: high
Time-scale: short

4.3. To inform the public about the problems of the Great Bustard and the need for its protection

The media should be used regularly to raise the profile of the Great Bustard as an outstanding feature of the European plains and as an invaluable asset of the European natural heritage.

Priority: high
Time-scale: ongoing

4.4. To provide training to staff working in conservation bodies

Personnel working regularly in Great Bustard areas (agronomists, biologists, wardens, etc.) should receive specific training on Great Bustard matters, especially census techniques and management practices which enhance the survival of the species.

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

5. BUSTARDS IN CAPTIVITY

5.1. To set up a working group and initiate a studbook of Great Bustards in captivity
Priority: medium
Time-scale: medium

5.2. To create criteria for evaluating the success of breeding stations
Priority: medium
Time-scale: medium

5.3. To undertake feasibility studies, following the IUCN criteria (Kleiman *et al.* 1994) for reintroduction in France, Poland and U.K.
Priority: low
Time-scale: long

5.4. To provide support to successful captive management stations
Priority: medium
Time-scale: medium

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ANNEX 1. RECOMMENDED CONSERVATION ACTIONS BY COUNTRY

* Austria

2.1.2. Encourage the extension of the ongoing set-aside and habitat management schemes to other areas and increase the total area of set-aside plots.

2.2.1. Promote the growing of rape and alfalfa at wintering sites.

2.2.2. Prevent habitat alterations which may have adverse effects within the Great Bustard's range.

3.1.5. Carry out coordinated surveys with Hungary and Slovakia.

3.3.2. Improve and strengthen cross-border cooperation for Great Bustard protection, research and monitoring with the Czech Republic, Hungary and Slovakia.

* Bulgaria

1.1.2. Urge the forestry authorities to cancel afforestation projects to set up shelterbelts in the key sites for the species in Dobrudja.

1.1.3. Encourage maximum legal protection and maximum penalties to those who kill Great Bustards and enforce the conservation legislation at the “Valley of the Bustards”.

1.1.4. Promote the preparation of an environmental impact assessment prior to all large-scale projects (highways, powerlines, railways, irrigation or afforestation schemes).

2.1.2. Continue the development of set-aside schemes and programmes for the leasing and acquisition of land for extensification through the Bulgarian - Swiss programme for the conservation of biodiversity, and encourage farmers to adapt the timing of their agricultural activities to the life-cycle of the Great Bustard.

2.1.2. Carry out special protection measures in intensively used farmlands in Dobrudja and in Zlatiata.

2.1.4. Take special measures for minimising disturbance during breeding.

2.1.5. Promote use of existing legal instruments in Bulgaria in order to designate the species' breeding sites as temporarily protected areas.

2.2.1. Increase the quality of wintering habitats by promoting the cultivation of rape and alfalfa.

3.1.2. Monitor population size and population trends.

3.1.3. Monitor the effects of habitat management.

3.1.5. Carry out cross-border coordinated surveys in Dobrudja between Bulgaria and Romania.

4.1. Use the Great Bustard as a flagship species for the conservation of steppes and agricultural habitats.

4.2. Undertake an educational campaign stressing the cultural and scientific value of the Great Bustard.

* **Czech Republic**

2.1.2. Promote set-aside schemes and extensification programmes in the Great Bustard area near Brno.

2.2.1. Promote the cultivation of rape and alfalfa to improve habitat quality at wintering sites.

3.1.5. Carry out coordinated surveys as a basis for cross-border conservation programmes.

* **Germany**

2.1.7. Undertake measures to minim*ise* predation.

2.2.2. Mitigate the adverse effects of the railway line that is planned across the Great Bustard area in Buckow.

* **Hungary**

1.1.1. Consider changes in agricultural policy so that it is compatible with the Great Bustard's habitat needs, stressing incentives and land-use regulations.

1.1.3. Encourage the provision of a legal background for ESAs and apply ESA schemes to the most important Great Bustard areas.

1.1.5. Promote a Regional Agreement on the Conservation of the Great Bustard under the Bonn Convention.

2.1.2. Encourage the lease or purchase of grasslands and arable land in breeding and wintering areas and undertake habitat management.

2.1.3. Promote agricultural practices that do not cause disturbance or damage to Great Bustards during the period of display and breeding.

2.1.6. Undertake emergency protection measures for individual breeding females and chicks; improve the technology for artificial incubation; release and monitor captive-reared birds.

2.1.7. Undertake predator control where predation (especially by foxes and corvids) is a limiting factor.

2.2.1. Encourage farmers to cultivate rape in wintering areas and provide supplementary food during periods of thick snow cover.

2.3.1. Promote the submission of all possibly damaging alterations to Great Bustard habitats to environmental impact assessment.

3.1.2. Organ*ise* two synchron*ise*d counts in winter and in spring to monitor population size and trends.

3.1.3. Monitor effects of habitat management and of measures for nest protection.

3.1.4. Monitor and evaluate the success of Great Bustard releases.

3.1.5. Carry out coordinated surveys with Austria and Slovakia.

3.2.1. Improve international cooperation (especially with Spain) for monitoring Great Bustard breeding populations.

3.2.2. Evaluate the effects of predators.

3.2.3. Investigate space and habitat use in core populations.

3.2.4. Carry out studies on migration including mortality factors.

3.3.2. Carry out a synchron*ise*d census in Kisalföld region in combination with Austria and Slovakia.

4.1. Use the Great Bustard as a flagship species for the protection of dry grasslands and extensive agricultural areas.

4.2. Prepare and distribute leaflets to raise awareness among farmers about appropriate practices to protect Great Bustards.

4.3. Provide adequate information to the public and to decision-makers about the needs and problems of Great Bustard conservation.

4.4. Provide training to the staff of conservation bodies about the principles and techniques of Great Bustard protection.

5.1. Undertake experiments on captive breeding.

* **Portugal**

1.1.1. Encourage application of potentially conflicting EU agricultural policies in such a way as to prevent the spread of crops which adversely affect the Great Bustard (e.g. sunflower monocultures).

1.1.2. Prevent afforestation in Great Bustard habitats (e.g. *Eucalyptus* plantations).

1.1.3. Promote the protection of the Great Bustard and its habitat within and outside protected areas and in areas which are subject to management schemes.

1.1.4. Encourage the submission of all new infrastructures in bustard habitat to environmental impact assessment.

2.1.1. Promote the preservation of traditional land uses by establishing a system of EU-supported incentives to farmers.

2.1.2. Promote set-aside schemes and the leasing and buying of land on a scale that is effective for the maintenance of Great Bustard populations.

2.1.5. Increase wardening in breeding areas.

2.2.2. Prevent the siting of fences, afforestation, irrigation schemes, and the planting of orchards in Great Bustard areas.

2.2.4. Promote the installation of markers on overhead powerlines crossing key Great Bustard areas.

3.1.5. Carry out annual surveys and undertake coordinated surveys and monitoring in border areas with Spain.

3.2.3. Undertake studies on population dynamics, habitat requirements, the effects of habitat changes and causes of decline.

3.3.2. Establish collaborative research programmes and joint teams with Spain to combine and strengthen conservation efforts.

4.1. Use the Great Bustard as a flagship species to raise awareness of the importance of grasslands and arable land as a habitat for wildlife.

4.2. Increase farmers' and landowners' understanding of the value and importance of the Great Bustard as an indicator of habitat quality.

* **Romania**

1.1.3. Clarify and reinforce the protection status of male Great Bustards. Encourage maximum legal protection for the species as a whole.

2.1.2. Carry out special protection measures in farmland in Dobrudja.

2.2.1. Increase the quality of wintering habitats by promoting the cultivation of rape and alfalfa.

3.1.2. Monitor population size and population trends.

3.1.3. Monitor the effects of habitat changes and management.

3.1.5. Carry out cross-border coordinated surveys in Dobrudja between Bulgaria and Romania.

4.1. Use the Great Bustard as a flagship species for the conservation of steppes and agricultural habitats.

4.2. Undertake an educational campaign stressing the cultural and scientific value of the Great Bustard.

* **Russia**

1.1.2. Encourage the Forestry Department of the region of Saratov to drop afforestation projects in important Great Bustard areas.

1.1.5. Undertake bilateral agreements for Great Bustard protection between Russia and those countries which host wintering populations (e.g. Ukraine).

2.1.2. Encourage the establishment of protected areas of different rank across the Great Bustard's range and promote enforcement of protection status at designated sites.

2.1.3. Propose to the agricultural authorities changes in the timing of farming practices (e.g. dates of cultivation and hay harvesting) to be applied where agricultural pressure is high.

2.1.6. Improve the conditions of the Saratov station for breeding and rearing Great Bustards and encourage farmers to rescue abandoned clutches.

2.1.7. Control the number of predators in areas where they have a significant effect on Great Bustards.

3.1.1. Carry out surveys in cooperation with trained and informed farmers, schools and professional hunters.

3.1.2. Establish a network of experts involving Scientific Institutes from Saratov, Volgograd, Rostov and Orenburg, Ecological Committees at district and county level, and Hunting Boards at district and county level.

3.1.5. Design and carry out a national survey through a network of experts and create a Great Bustard database.

3.2.3. Study sex and age structure of local populations and undertake marking of individual birds.

3.2.4. Carry out international studies to locate wintering grounds and investigate the possibility of satellite tracking.

3.3.1. Promote information exchange between Russian and foreign scientists.

4.1. Raise public awareness through the mass media; support Russian NGOs in carrying out environmental educational programmes; strengthen environmental educational programmes for local communities.

4.2. Work with the local authorities and stress the problem of disturbance and destruction of Great Bustard nests; inform farmers, provide them with educational materials and involve their children in conservation activities.

* **Slovakia**

2.1.2. Promote set-aside schemes and agricultural extensification programmes.

2.1.5. Encourage increased wardening to prevent disturbance at key sites and undertake emergency measures for the protection of individual nesting birds and clutches.

2.2.2. Promote the submission of all new developments and infrastructures affecting Great Bustard areas to environmental impact assessment.

2.2.3. Promote installation of ball markers on the powerline near Kolarovo.

3.1.2. Monitor population size and trends at all sites.

3.1.5. Carry out coordinated surveys with Hungary and Austria.

3.3.2. Promote information exchange and cooperation in joint research and conservation projects (especially wardening) with Czech Republic, Hungary and Austria.

3.3.3. Provide financial support to habitat management schemes.

4.1. Increase awareness of the general public and of decision-makers.

5.1.1. Improve the effectiveness of captive breeding attempts and set up a studbook of Great Bustards in captivity.

* **Spain**

1.1.1. Promote development and implementation of Zonal Programmes already approved by the EU and discourage crops which are detrimental to the Great Bustard (e.g. sunflower monocultures).

1.1.2. Promote the submission of regional forestry plans to environmental impact assessment (especially in Extremadura) and encourage zonation of forestry, including that carried out under EU regulation 2080/92, avoiding Great Bustard areas.

1.1.3. Encourage the competent authorities to declare as protected areas key grassland areas and pseudosteppes (e.g. Monegros, Bardenas, La Serena).

1.1.5. Promote the development of an Agreement for the Conservation of Grassland Birds under the Bonn Convention. A bilateral agreement for Great Bustard protection between Portugal and Spain should be pursued.

1.1.6. Resist pressure to legalise the hunting of Great Bustards and to change national and international legislation. Illegal hunting should be prevented and summer hunting seasons for other species limited in certain areas.

2.1.1. Maintain and promote wide-scale traditional land uses through a system of incentives to farmers; new agricultural policies should be carefully examined to assess their impact on the Great Bustard.

2.1.2. Encourage an increase in the total area of set-aside in Great Bustard areas.

2.1.3/2.1.5 Replace late, aerial spraying of locusts in key grasslands with earlier, more localised, ground based applications of pesticides

2.1.4. Promote the setting up of temporary protection schemes to ensure appropriate breeding conditions at key sites, restrict access and increase wardening.

2.2.1. Promote the dry-farming cultivation of sweet-peas and alfalfa at wintering sites.

2.2.2. Barbed-wire fences, overhead cables, the planting of orchards, and irrigation and afforestation schemes should be prevented in Great Bustard areas.

2.2.3. Promote adequate marking of overhead cables and wires that cross Great Bustard areas.

3.1.1. Provide training on survey and management techniques to personnel in charge.

3.1.2. Undertake a series of monthly counts at core areas every five years.

3.1.5. Undertake cross-border census work and joint habitat conservation measures with Portugal.

3.2.1. Carry out a comparative analysis of the existing data on population dynamics, habitat requirements, effects of habitat changes and causes of decline for the east European and Iberian populations.

3.2.2. Carry out examination of corpses, including the study of stomach contents; use the network of wardens to collect carcasses and arrange for analysis by the appropriate institutions.

3.3.2. Provide support for a joint Spanish–Portuguese conservation project.

* **Turkey**

1.1.1. Encourage improved grassland protection legislation and promote agricultural policies which favour extensification; irrigation projects in central and south-east Anatolia should be assessed for possible impact on the Great Bustard and other species.

1.1.3. Promote establishment of special reserves for the Great Bustard and ensure adequate protection; encourage technical and financial support to the Turkish National Parks and Wildlife authority for the maintenance of the Great Bustard protection area in Kütahya.

3.1.1. Encourage birdwatchers visiting Turkey to fill in the site recording and casual records forms available from DHKD.

3.1.5. Carry out a national Great Bustard survey in the very near future and identify the key areas; establish a network of contacts as a basis for survey and conservation work.

4.1. Use the Great Bustard as a flagship species to increase public awareness of the international importance of steppes and dry grasslands in Turkey.

* **Ukraine**

2.1.2. Encourage the extension of the ongoing set-aside and habitat management schemes to other regions; promote the establishment of an ornithological reserve on Kerch peninsula (Crimea).

2.1.6. Consider the feasibility of creating a Great Bustard breeding and rearing centre.

2.2.1. Collaborate with local hunting organisations to prevent illegal hunting at wintering sites and provide supplementary feeding.