International Single-Species Action Plan for the Western Palaearctic Population of Great Bustard, *Otis tarda tarda*

Revised version adapted for
the Memorandum of Understanding on the Conservation and Management of
the Middle-European Population of the Great Bustard

The original Action Plan was prepared by:

BirdLife INTERNATIONAL

On behalf of the European Commission

This revised version for the Middle-European Great Bustard MOU was updated and adopted at the 5th Meeting of Signatories, September 2023

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The present action plan was commissioned by the European Commission and prepared by BirdLife International as subcontractor to the "N2K Group" in the framework of Service Contract N#070307/2007/488316/SER/B2 "Technical and scientific support in relation to the implementation of the 92/43 'Habitats' and 79/409 'Birds' Directives". The current version has been adapted to serve as the Action Plan for the CMS Memorandum of Understanding on the Conservation and Management of the Middle-European Population of the Great Bustard.

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Milestones in the production of the plan

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Second draft: 01 November 2009
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Geographical scope of the action plan

The current distribution of the Great Bustard in the Western Palaearctic is presented below.

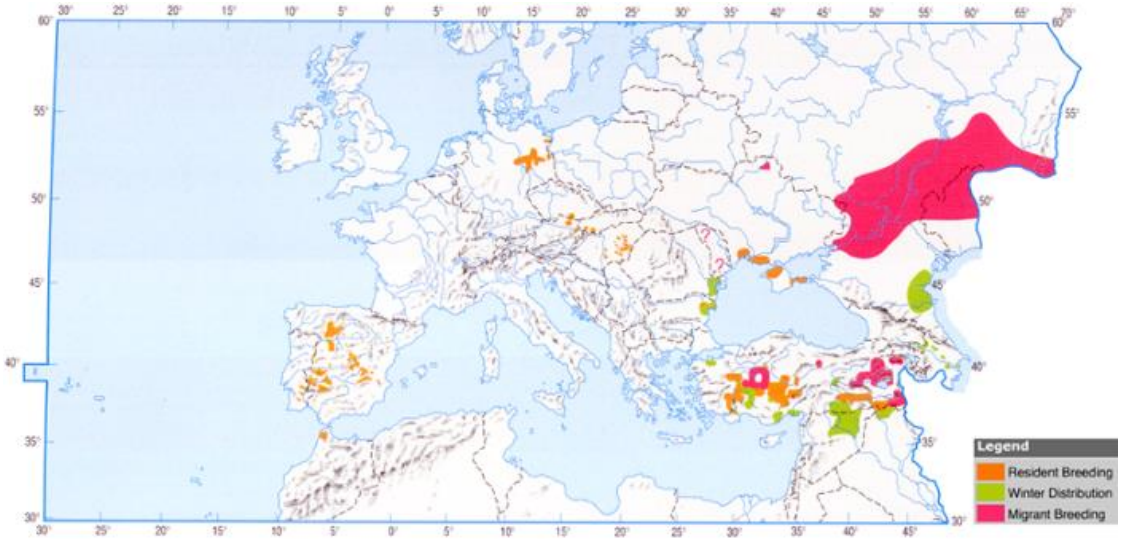

Figure 1. Distribution of the Great Bustard in the Western Palaearctic (Morales and Martin 2002).

Table 1. The distribution of breeding, migratory and wintering populations in the Western Palearctic region. The Range States of the MOU are listed in bold – where the MOU Action plan should be implemented. For countries in brackets, there are no observations in the last 10 years.

Breeding	Migration	Wintering
Austria	***(Albania)***	***Austria***
Czech Republic	*(Armenia)*	*(Azerbaijan)*
Germany	*Azerbaijan*	***(Bosnia and Herzegovina)***
Hungary	***(Bosnia and***	***(Bulgaria)***
Kazakhstan[1]	***Herzegovina)***	***Czech Republic***
Morocco	***Croatia***	***Germany***
Portugal	*(Georgia)*	***(Greece)***
(Republic of Moldova)	***Poland***	***Hungary***
Romania	***Russian Federation***	***(Italy)***
Russian Federation	***Serbia***	***(Montenegro)***
Serbia	***(Slovenia)***	*Morocco*
Slovakia	***(North Macedonia)***	*Portugal*
Spain		***Romania***
Türkiye		***Russian Federation***
Ukraine		***Serbia***
United Kingdom		***Slovakia***
		Spain
		Türkiye
		Ukraine
		United Kingdom

[1] Only the north-west part of the country between the Ural River and the Russian border.

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0 - EXECUTIVE SUMMARY

The Great Bustard is considered Vulnerable globally due to its large (>30%) decline over three generations (i.e. from the mid-1960s), and Least Concern in Europe (IUCN 2021). The global population of the species is listed on Appendix I and Appendix II of CMS. A Memorandum of Understanding on the conservation and management of the Middle European population of the Great Bustard came into force on 1 June 2001. The species is also listed on Appendix II of CITES, on Appendix II of the Bern Convention and on Annex I of the EU Birds Directive. This action plan revises and updates the earlier European Action Plan (Kollar 1996) for the species which was endorsed by the Ornis Committee and by the Standing Committee of the Bern Convention and also formed the basis of the action plan initially adopted by the CMS Great Bustard MOU. It covers the Western Palaearctic populations of the species from Morocco to north-west Kazakhstan (up to the Ural River).

The Great Bustard is strongly attached to lowlands and undulating open countryside with dry soil and low level of annual rainfall. Great Bustard populations are migratory in the east and partially migratory elsewhere. With the advent of mechanized agriculture the species' range severely contracted in the 19th and 20th centuries and the species has become extinct from many countries. Consequently, the Western Palaearctic range of the species is now highly fragmented. The latest estimate of the global population of the Great Bustard is 29,060-32,449 individuals (Kessler 2022). Approximately, 95 per cent of the global population occurs within the geographic scope of this action plan. Although the total European population of Great Bustard has not decreased over the last two decades and even increased as a result of concerted conservation efforts in Austria, Spain, Portugal, Germany and Hungary, current numbers are still far lower than three generations before (i.e. in the mid-1960s) and the contraction of the species' range continues.

The main threats to the Great Bustard are the loss and degradation of its habitat through agricultural intensification, land-use changes and infrastructure development, increased mortality caused mainly by powerlines and reduced reproductive success due to high-levels of nest destruction by mechanized farming and high chick mortality through predation and starvation.

The **aim** of the plan is to recover the species from its current Vulnerable status in Europe to at least the population levels in 1979. **Objective 1** of the plan is to achieve at least a 10 per cent increase in each biogeographic population within ten years. **Objective 2** of the plan is to improve the viability of existing isolated populations through restoring part of the species' former range within 30 years. To this end the plan requires reducing the main mortality causes such as collision with powerlines and poaching. In addition, the action plan requires taking measures to reduce the negative impacts of modern agriculture on breeding success.

1 - BIOLOGICAL ASSESSMENT

Taxonomy and biogeographic populations

Phylum: Chordata
Class: Aves
Order: Gruiformes
Family: Otididae
Genus: *Otis*

Species: *Otis tarda* (Linnaeus, 1758)
Polytypic species. The range of the nominate *tarda* Linnaeus, 1758 subspecies extends from Iberia, Morocco, Türkiye, and Central and South-East Europe east to central Siberia in the upper basin of River Irtysh.

With the advent of mechanized agriculture, the species' range severely contracted in the 19th and 20th centuries (see the section on Population size and trend below). Consequently, the Western Palaearctic range of the species is now highly fragmented and the following demographically independent biogeographic breeding populations can be distinguished (Faragó 1986):

- North African - Morocco
- Iberian - Spain, Portugal
- German-Polish Plain - Germany, Poland
- Carpathian Basin – Austria, Czech Republic, Hungary, Slovakia, Serbia, Romania and Bulgaria
- Eastern European – European Russia, Ukraine
- Middle-East – Türkiye (extending into West of Iran (Islamic Republic of))

Genetic studies indicate long-term historical separation between the populations from the Iberian Peninsula and the rest of mainland Europe (Pitra *et al.* 2000) and between Iberia and Morocco (Alonso *et al.* 2009a).

Distribution throughout the annual cycle

Great Bustard populations are migratory in the east and partially migratory elsewhere. The Russian birds regularly migrate to the southern Ukraine and to the Caspian lowlands of Dagestan and Azerbaijan to winter. Some autumn movements can be observed also through Georgia, Armenia and Eastern Türkiye also including Iran (Islamic Republic of) and Iraq. The central European Great Bustards are mainly resident. Unless there is a winter flight, they stay in the vicinity of their breeding grounds, rarely moving more than 15 to 25 km away. In harsh winters with high snow cover, they can be displaced (Faragó 1990a; Streich *et al.* 2006). In such situations, birds from Germany previously moved towards the North Sea countries such as the Netherlands, Belgium and France, while birds from the Carpathian Basin migrated towards Italy through Croatia and Slovenia, as well as to the Balkan (through Serbia, Montenegro, Albania, North Macedonia to Greece). However, such movements have not been recorded recently due to the currently small size of these populations and the improved availability of oilseed rape within their home range. On the other hand, telemetry studies proved that the Iberian populations also perform regular short distance movements (Alonso *et al.* 2009b; Alonso *et al.* 2001; Alonso *et al.* 2000; Morales et al. 2000; Palacin 2007; Palacin *et al.* 2009).

Habitat requirements

The Great Bustard is strongly attached to lowlands and undulating open countryside with dry soil and low levels (< 600 mm) of annual rainfall. The species avoids steep or rocky terrains, deserts, wetlands and closed forests. Clear views of over 1 km on at least three directions appears essential. Under natural conditions, the species was probably confined to natural grasslands such as steppes and similar warm open habitats. However, it has adapted well to

agricultural landscapes with high diversity of crops and low intensity of cultivation and disturbance (Morales and Martin 2002).

Usually, Great Bustard females select breeding habitats that provide sufficient cover, but also a good view of the surrounding area. Thus, most of the nests can be found in cereals, alfalfa, grasslands (e.g. *Molinia*, *Alopecurus*) and first year fallow land. However, replacement eggs can be also laid in maize, sunflower or potato fields. Females show high levels of fidelity to their natal sites and settle within a few kilometres to it (Alonso *et al.* 2000). Once established, nest areas are normally used every year.

Feeding habitat requirements during incubation are the same as breeding habitats because the female leaves the nest only for short periods. After hatching, the feeding area used by the families gradually increases. After harvest, families congregate on stubble fields. In autumn, flocks gradually aggregate at traditional wintering areas with oilseed rape or alfalfa (Faragó and Széll 1991) and traditional olive groves (Rocha 2006). In winter, the birds prefer winter wheat and rape, stubble of sunflower, cereals and soy (Andryushchenko, 2007)

Survival and productivity

According to radio telemetry studies in Spain (Martin *et al.* 2007), approximately half of all marked birds died before reaching the age of 120 days, 13.1 per cent at age of 120–240 days, 2.4 per cent between age of 240–365 days and less than 30 per cent survived after their first year. Mortality decreased to 9.8 per cent in the second year and stabilized around this value. This corresponds well with Faragó's (1991) results on captive reared chicks, who found that approximately half of the birds died in the first 30 days of their life and 72 per cent of all chick mortality within the first 100 days occurred in that period.

The age of first breeding is 2-4 years for females and 5-6 years for males (Morales and Martin 2002). The average clutch size was 1.93 eggs in 858 nests found in Hungary between 1974 and 1990 (Faragó 1992a), but 2.6 eggs in 19 nests in Portugal (Morgado and Moreira 2000). However, the average clutch size was smaller (2.12 eggs) in a larger sample of 86 nests in the latter country in 2002-2004 (Rocha 2006). In Central Europe[1], the species regularly lays replacement eggs if the first clutch is lost. However, the reproductive value of replacement clutches is lower due to a higher proportion of infertile eggs and weaker chicks (Faragó 1983). However, data from Germany indicate that the fertility of eggs is only lower in eggs laid after the end of May (Langgemach and Litzbarski 2005).

Mean yearly population productivity was 0.14 chicks per female in an 11-year-long study in north-west Spain. Inter-annual variability in population productivity was high (0.04–0.29) and was positively correlated with precipitation in the previous winter (which is believed to influence food supply) and negatively correlated with the number of rainy days during the hatching period. Individual breeding success is higher in females older than six years (Morales *et al.* 2002). In another study, Martinez (2008) found that the mean productivity was 0.24 chicks per female in the large population in Castilla y León. However, Watzke (Watzke 2007) and Faragó (Faragó 2001a; Faragó 2001b) reported higher productivity from the Russian Federation and Hungary (0.25–0.43 and 0.41–0.48 chick per female respectively), but these figures refer to juveniles observed earlier in the chick rearing period than in Spain and this difference in census timing can explain, at least partly, this difference.

[1] Central Europe includes the ecologically similar populations of the German-Polish Plain and of the Carpathian Basin.

Population size and trend

The latest estimate of the global population of the Great Bustard is **29,060-32,449** individuals (Kessler 2022). Approximately 95 per cent of the global population occurs within the geographic scope of this action plan. The populations within the EU Member States account for 85 per cent, of which Spain alone holds c. 75 per cent of the global population.

The Great Bustard populations in the Western Palaearctic started declining with the retreat of the fallow cultivation system across the Western Palaearctic. In the 19th century, the species became extinct from the UK (1832), Sweden (mid-19th century), France (1863) and Greece (end of 19th century). This process continued in the 20th century, with the Great Bustard's extinction from the Syrian Arab Republic (1931), Azerbaijan (1940–50), Poland (1986) and the Republic of Moldova (2000) and it can be considered as quasi extinct, with occasional breeding records, from the Czech Republic, Slovakia, Bulgaria and Romania as a breeding species. The populations in Spain, Portugal, Germany, Austria, Slovakia, Hungary, Serbia, Morocco, Ukraine, the Russian Federation and Türkiye have also suffered large declines during the 20th century. In Germany, Hungary and Austria, the declining population trend has changed to positive or stable from the 1990s as a consequence of a combination of species conservation measures and extensification of farming at least within some areas. However, the contraction and fragmentation of the range has continued in most countries (Alonso *et al.* 2004; Alonso *et al.* 2003; Faragó 1993; Pinto *et al.* 2005; Palacín & Alonso, 2009). Population declines over the last 20 years have been particularly dramatic in Portugal (minus 50 per cent) and Spain (minus 28 per cent), mainly due to changes in land use (Alonso & Palacín 2022). The comparison of total figures shown in Table 2 and Table 2a indicates a decrease in numbers by c. 30 per cent.

Table 2. Population size and trend by country of the Great Bustard (status available as per 4th meeting of Signatories, March 2018)

Country	Breeding numbers[1]	Quality	Year(s) of the estimate[2]	Breeding Population trend in the last 3 generations[3]	Quality	Maximum size of migrating or non-breeding populations in the last 10 years[4]	Quality	Year(s) of the estimate[5]
Albania	n.a.	n.a.	n.a.	n.a.	n.a.	Few inds.	Poor	2002/2003
Armenia	n.a.	n.a.	n.a.	n.a.	n.a.	Few inds.	Poor	Unknown
Austria	368–481	Good	2017	Moderate increase	Good	N/A	Good	2017
Azerbaijan	n.a.	n.a.	n.a.	n.a.	n.a.	10-100s	Poor	Unknown
Bosnia-Herzegovina	n.a.	n.a.	n.a.	n.a.	n.a.	No record in the last 10 years		
Bulgaria	0-6	Poor	2007	Large decline	Poor	Few inds.	Medium	2008
Czech Republic	1-6	Good	2014-2017	Large decline	Medium	Few inds.	Medium	2008
Croatia	n.a.	n.a.	n.a.	n.a.	n.a.	No record in the last 10 years		
Georgia	n.a.	n.a.	n.a.	n.a.	n.a.	Few inds.	Poor	Unknown
Germany	238	Good	2017	Moderate increase	Good	N/A		
Greece	n.a.	n.a.	n.a.	n.a.	n.a.	Few inds.	Poor	Unknown
Hungary	1,596	Good	2017	Moderate increase	Good	N/A		
Italy	n.a.	n.a.	n.a.	n.a.	n.a.	No record in the last 10 years		

[1] In individuals.

[2] In case of extinct populations, the approximate time of extinction is given.

[3] The action plan guidelines (BirdLife International 2008a) require, in line with the IUCN Red List guidelines (IUCN S.S.C. 2001), the use of three generations or 10 years, whichever is longer. 10 years equals one generation (BirdLife International Datazone 2017).

[4] Three generations would reflect historical numbers instead of the current importance of the country. Therefore, numbers refer to one generation.

[5] Last known record

Country	Breeding numbers[1]	Quality	Year(s) of the estimate[2]	Breeding Population trend in the last 3 generations[3]	Quality	Maximum size of migrating or non-breeding populations in the last 10 years[4]	Quality	Year(s) of the estimate[5]
Kazakhstan	0-50[6]	Good	2014	Large decline	Medium	Unknown		
Montenegro	n.a	n.a	n.a	n.a	n.a	n.a		
Morocco	45-50[6]	Good	2016	Large decline	Medium	Min. 82	Medium	2001/2002
Poland	Extinct	Good	1986	N/A	Good	No record in the last 10 years		
Portugal	1,893[6]	Good	2014	Large decline	Medium	Similar to breeding numbers		
Republic of Moldova	Extinct	Poor	2001	Large decline	Medium	No record in the last 10 years		
Romania	0–5	Poor	2017	Large decline	Medium	≈33	Medium	2013-2017
Russian Federation *(European part)*	2,500–3,000	Medium	2013-2015	Large decline	Medium	Unknown		
Serbia	10-14	Good	2017	Slow decline	Medium	Similar to breeding numbers		
Slovakia	0–3	Good	2017	Large decline	Good	98	Good	2017
Slovenia	n.a.	n.a.	n.a.	n.a.	n.a.	No record in the last 10 years		
Spain	29,400-34,300[6]	Good	2014	Stable	Good	Similar to breeding numbers		
North Macedonia	n.a.	n.a.	n.a.	n.a.	n.a.	No record in the last 10 years		
Türkiye	700-1180[6]	Good	2016	Large decline	Medium	Unknown		
Ukraine	450-500	Poor	2013	Large decline	Poor	3000-4000*	Moderate	2013
United Kingdom	45 †	Good	2017	Increase ‡	Good	N/A		
Totals	**37,271-43,392**							

Notes on Table 2:

[6] Numbers and years were taken from BirdLife Datazone (BirdLife International 2017).

* Population declined by 70-80% over the last 10 years in traditional wintering areas.

† This figure is an estimate from December 2017 based on data from the current reintroduction project in the UK. It has not been published in peer-reviewed scientific literature nor been confirmed by Government authorities.

‡ The population has been supplemented with eggs and chicks from the Russian and Spanish populations since the beginning of the reintroduction project in 2004. The demographic rates of survival probability, recruitment of juveniles and productivity measured over the period 2004-2014 have been reported as being insufficient for a long-term viability and a self-sustaining population (Ashbrook *et al.* 2016). In recent periods (since 2016), higher survival rates have been reported, while release of birds from Spain has continued (Manvell and Goriup 2017).

Table 2a. Update on the Population size of the Great Bustard by country as of September 2023

Country	Year	Min	Max
Albania	2022	0	0
Austria	2021	437	584
Bulgaria	2022	0	0
Croatia	2022	0	0
Czech Republic	2022	0	0
Germany	2023	307	307
Greece	2022	0	0
Hungary	2022	1,573	1,573
North Macedonia	2022	0	0
Moldova	2022	0	0
Montenegro	2022	0	0
Portugal	2021	939	939
Romania	2022	3	9
Russia	2021	1,870	1,870
Serbia	2023	9	9
Slovakia	2023	10	10
Spain	2022	22,000	24,000
Türkiye	2021	559	780
United Kingdom	2023	55	55
Ukraine	2015	225	300
TOTAL		**27,987**	**30,436**

2 - THREATS

General overview

The main threats to the Great Bustard are the loss and degradation of its habitat through agricultural intensification, land-use changes and infrastructure development, increased mortality caused mainly by powerlines and reduced reproductive success

due to high-levels of nest destruction by mechanized farming and high chick mortality through predation and starvation.

List of critical and important threats

Loss of undisturbed open habitats with suitable vegetation structure

The Great Bustard is closely associated with flat or gently undulating, open habitats with little disturbance. Changes in crop pattern (i.e. ploughing up grasslands, shifting from cereals to sunflower and maize) or in grazing pressure, which was encouraged by the specialization of agriculture, price changes and policies, have created unsuitable conditions in several parts of the range. Often crop changes are associated with the introduction of irrigation, which allows the replacement of drought-resistant cereals by maize. Afforestation had a negative impact on several populations (e.g. Sterbetz 2000). In the European Union and in many other countries, afforestation has been subsidized to reduce desertification and to reduce agricultural surpluses. Expansion of settlements, industrial areas, transport infrastructure (Osborne *et al.* 2001; Palacín 2007) and, most recently, the installation of wind farms (Raab *et al.* 2012) have all reduced habitat availability. Although these changes individually may affect only a smaller or larger proportion of the species' habitat and hence represent only local to medium threat, their cumulative effect can be considered as a major threat to the species.

Impact: Critical

Collision with powerlines

Great Bustard is particularly vulnerable to collision with powerlines because of its congregations at feeding areas in winter and at display grounds in spring (Janss and Ferrer 2000; Raab *et al.* 2009; Reiter 2000). Collisions were also reported for post-breeding period in Portugal where 16 birds collided with a powerline during one year (Marques et al. 2005) and also for the wintering period in Ukraine where 11 birds (Andryushchenko et al., 2002) and 6 birds (Andryushchenko et al., 2014) collided with a powerline during two years. Although reported from the entire range, the impact of collision on the population is difficult to assess. Martin et al. (Martin *et al.* 2007) reported that collision with powerlines was responsible for 55 per cent of deaths during the second year of life of subadult Great Bustards and it appears to be the main cause of mortality for adult birds as well. The importance of this threat is assessed as high for the entire population, but it can be critical for some local and isolated populations (e.g. Austria).

Impact: High

Destruction of eggs or chicks during agricultural works

In a modern farming landscape, Great Bustard nests are destroyed during various agricultural works, such as ploughing up fallow land, mowing of alfalfa or grass and, to a lesser extent, application of pesticides or mechanical cultivation of crops or harvesting of cereals. The species is particularly affected by farming operations because it prefers the crops (i.e. alfalfa and cereals) where its nest is most likely to be destroyed (i.e. these crops act as 'ecological traps'). According to questionnaire surveys in the 1990s and monitoring activities carried out in the framework of the OTISHU LIFE project, 30-35 per cent of the nests were destroyed by agricultural works in Hungary (Faragó 2001b; Kalmár and Faragó 2008). In Portugal, 15 per cent of 74 nests studied were destroyed by agricultural activities (Rocha 2006).

Impact: High

Predation of eggs, chicks or juveniles

Predation of eggs by mammalian predators and birds, such as Corvids and birds of prey (e.g. Marsh harrier) has been reported from several Range States (Faragó *et al.* 2001; Langgemach 2005; Martin *et al.* 2007, Hungarian data unpublished). In Central Europe, Red Fox populations have increased substantially following the extensification of agriculture and the start of immunization against rabies. In Hungary, the intensive growth of Wild Boar populations poses an increasing threat by destroying nests, and predating on eggs or even smaller chicks – being present at almost all Great Bustard habitats in the country. The role of Jackals and non-native species, such as racoon and racoon-dog is still unclear.

Impact: High

Disturbance

Frequent disturbance can disrupt feeding, mating and nesting activities which may decrease breeding success or might increase the probability of collision with power lines or of predation. Experience shows, that disturbance during the display of birds can cause the increase in the number of infertile eggs, which leads ultimately to the decrease in breeding success. Disturbance due to agricultural activities during the breeding season, even if nest destruction does not occur, can be particularly harmful and can lead to the abandonment of the nest. Even temporary abandonment during brooding exposes the clutch and often leads to predation. Repeated disturbance by hunting in winter on or nearby Great Bustard wintering grounds, might cause the adverse weakening of birds – through the repeated flushing of the birds. A study by Sastre et al. (2009) in central Spain showed that car traffic and walkers were the main sources of disturbance, although motorcyclists, dogs, helicopters and aeroplanes were also harmful in relation to their abundance and time of presence. Farming and shepherding produced little disturbance and did not usually cause a flight response. Hunting caused an increase in the frequency of disturbance on weekends and holidays with respect to working days. It is believed that due to ban of the Great Bustard hunting in Ukraine the facts of their illegal shooting are concealed.

Impact: Medium

Insufficient invertebrate food supply

The productivity of the Great Bustard can be influenced by chick mortality caused by starvation if invertebrate food supply is limited (Martin *et al.* 2007; Morales *et al.* 2002). Food supply is influenced by the development of vegetation, winter precipitation (Litzbarski and Litzbarski 1996) and by pesticide use (Faragó 1990b; Hellmich 1992; Litzbarski *et al.* 1989; Quaisser *et al.* 1998; Sprick 1999).

Impact: High

Climate change

Climate envelop models (Huntley *et al.* 2007; Osborne *et al.* 2008) suggest that the total climatically suitable area will decrease by some 20 per cent between 2010 and 2020. According to the models' projections, the loss of climatically suitable habitat ranges between 45 per cent (Türkiye) and 100 per cent (Kazakhstan). In this context, the future of the Hungarian and the Russian populations are of the greatest concern considering

their size. There are known cases of mortality (or catching by humans) of individuals which lost their ability to fly because of plumage icing. This is not frequent but regular cases when rainy weather sharply changed into strong frost. The feathers became iced not being able to dry because of lack of time

Impact: Low

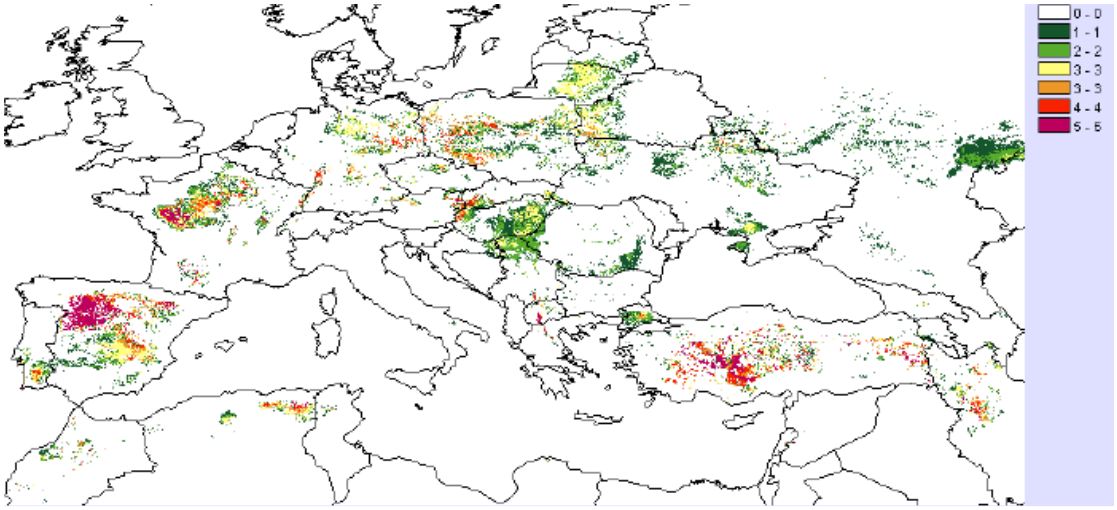


Figure 2. Number of decades over which areas are predicted to be climatically suitable for Great Bustards (Osborne *et al.* 2008)

Poaching

The Great Bustard was considered a game species in most countries within its range and many authors consider that poaching was a *critical* factor in the decline of the population at the level of taking at that time, when accounting for the sensitivity of the population to small increases in adult mortality. Therefore, hunting has now been officially banned in all Range States. In most countries, introduction of a hunting ban has been followed by temporary (e.g. Hungary) or sustained population growth (e.g. Spain) depending on the impact of other factors influencing the population (Palacin and Alonso 2008; Sterbetz 1978). Despite the legal ban, poaching still occurs to some extent mostly when migrating / wintering. In some countries, such as the Russian Federation and Ukraine, even organized forms advertised through the Internet occur. The importance of this threat is assessed as low for the entire population, but possible *medium* in the above-mentioned countries.

Impact: Low

Catastrophic mortality in harsh winters

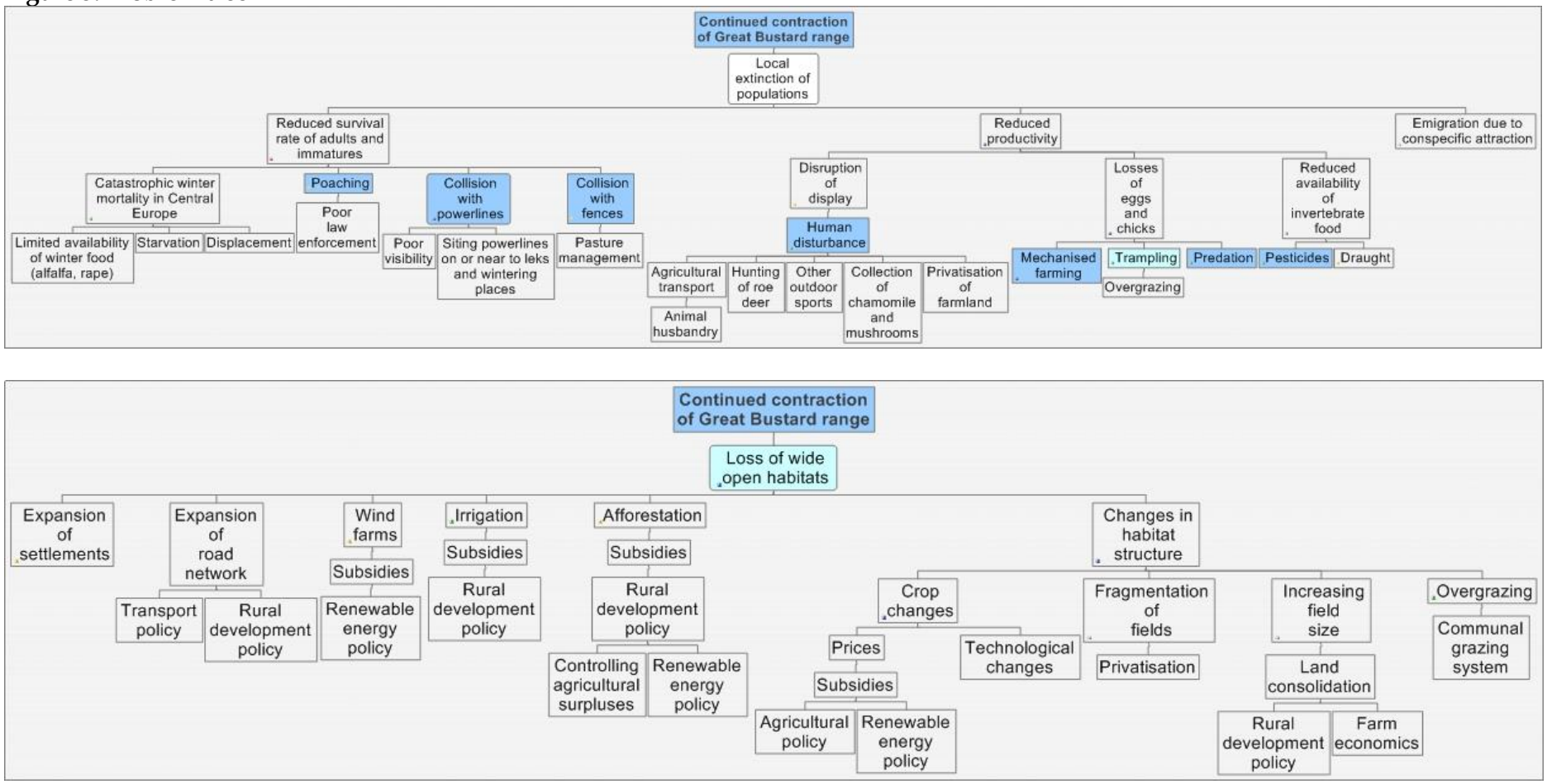
In exceptionally harsh winters when a thick blanket of snow prevents access to food, forcing the population to disperse out of its normal wintering area, catastrophic mortality exceeding 15 per cent can occur (Faragó 1990a; Streich *et al.* 2006) as a result of starvation, collision with powerlines and poaching. In such cases the birds are often observed near the haystacks, roads and settlements and vulnerable to hunters, wolves and stray dogs. Although this would normally cause only longer-term fluctuations in population numbers, it can accelerate the decline of the population when the reproductive rate is limited.

Impact: Low

Population Viability Analysis (PVA)

Over the last decades, several PVAs have been prepared for the Great Bustard covering the Iberian (Alonso *et al.* 2004; Lane and Alonso 2001; Pinto *et al.* 2005), the German (Streich *et al.* 1996; Streich 2000), the Hungarian (Faragó 1992b) and the Saratov, Russian (Streich 2007) populations of the Great Bustard. All PVAs agree that the extinction risk of a Great Bustard population is most sensitive to the survival of females and to productivity. However, relatively small changes in survival rates can be compensated only by relatively high increases in productivity. Modelling also suggests that increases in productivity through agri-environmental measures is sensitive to the proportion of the range covered by the scheme and to having it targeted to crops particularly attractive to the species but at high risk of being cultivated during the breeding season - such as alfalfa and grass (Nagy 2008). PVAs for the Hungarian population (Faragó 1992b) have highlighted the conservation implications of periodic catastrophic winter mortality which can occur in harsh winters. Conspecific attraction may also contribute to an accelerated decline of marginal populations and further increase of populations in high quality habitat (Alonso *et al.* 2004; Pinto *et al.* 2005).

Figure 3. Problem tree[1]



[1] Blue colours mark threats mentioned in the previous European action plan (Kollar 1996)

3 - POLICIES AND LEGISLATION RELEVANT FOR MANAGEMENT.

International conservation and legal status of the species

The Great Bustard is considered globally Vulnerable (A2c, A3c, A4c) based on both past and on suspected future decline of the range (BirdLife International 2018). In Europe, the species is classified as Vulnerable (A2b) by BirdLife International (BirdLife 2018) considering its large (>30%) decline.

The global population is listed on Appendix I of CMS and remains listed on Appendix II. A Memorandum of Understanding on the conservation and management of the Middle European population of Great Bustard came into force on 1 June 2001. The species is also listed on Appendix II of CITES, on Appendix II of the Bern Convention and on Annex I of the Birds Directive.

A European Action Plan was produced under the auspices of the European Commission and the Bern Convention and another edition of the same plan under the CMS Great Bustard MOU (CMS 2000; Kollar 1996).

National policies, legislation and ongoing activities

The species is legally protected across its European range, being either as a protected species (Austria, Albania, Bulgaria, Czech Republic, Hungary, Germany, Romania, Slovakia, Spain, Portugal, the Russia Federation, Ukraine and Türkiye) and/or as a game bird with a year-round closed season (Austria, Germany, Slovakia and North Macedonia). However, poaching still continues in several countries (e.g. Ukraine, the Russian Federation and Türkiye).

Most of the internationally important sites are designated as Special Protection Areas under the Birds Directive within the European Union Member States. However, the designation of several sites still remains incomplete. Outside of the European Union, designation of key sites as protected is still insufficient. In Ukraine, Türkiye and the Russian Federation, only a small proportion of the population is within protected areas.

Ongoing activities for conservation of the species

Over previous years, the species' requirements have been increasingly incorporated into the Rural Development Plans within the EU Member States. Agri-environmental schemes support habitat management measures in Austria, Germany, Hungary, Slovakia, Portugal and Spain. In Germany, farmers are also supported under extensification schemes. However, the potential negative impact of abolishing the set-aside obligation under the Common Agricultural Policy was reported from Austria and Germany.

In 2007, Hungary introduced legislation on Natura 2000 payments to compensate for restrictions on grassland management within these areas. However, it is not sufficient relating to Great Bustard conservation. Similar payments are also available in Germany. However, problems have been reported concerning scheme prescriptions,

coverage, payment levels and conflicts with other schemes (Nagy and Crockford 2004; Nagy *et al.* 2008; Onate *et al.* 1998). Outside of the European Union, targeted habitat conservation measures are carried out mostly as part of NGO initiatives, covering only a small proportion of the range and are not integrated into national agricultural policy (BirdLife International 2008b).

Habitat fragmentation has not been effectively addressed in most Range States, although the increased coverage of SPAs provides some safeguard within these areas. Some measures have been taken as part of LIFE or other projects in Germany, Hungary, Spain, Portugal and Ukraine to address the problem of collision with powerlines.

Nest safeguarding or rescue and captive management measures were applied only in Germany, Hungary and the Russian Federation. Germany and Hungary have made good progress in repatriating captive reared birds. Captive-reared birds from Saratov, Russian Federation, and from Spain have been used in the trial reintroduction scheme in the United Kingdom since 2003, which resulted in successful breeding of the species in 2009 after more than 175 years.

4 - FRAMEWORK FOR ACTION

Aim

To recover the species from its Vulnerable status in each demographically independent biogeographical region to at least the breeding population levels in 1979.

Objectives

Objective 1: Within 10 years, each biogeographic population increased by at least 10 per cent.

Objective 2: Within 30 years, part of the species' former range restored to improve the viability of existing isolated populations.

Results

Result 1.1 Average annual adult survival rate is above 90 per cent in each population

Result 1.2 Average productivity exceeds 0.25 chicks per female in each population

Result 1.3 Extent of suitable habitat maintained across the range of the species

Result 1.4 Knowledge gaps filled

Result 2.1 Effective habitat management and repatriation methods available to assist restoration of Great Bustard populations

Result 2.2 Raising public awareness

Actions

Table 3 includes all the results and actions necessary to achieve the objectives of the plan.

Table 3. Actions corresponding to the expected results and ranked according to their importance, following from the problem tree. Updated in conjunction with the Medium-Term International Work Programme (MTIWP) 2023-2028 as agreed at the 5th meeting of the Signatories, September 2023.

Expected Result	*Action*	*Priority*	*Organisations responsible*
1.1 Average annual adult survival rate is above 90% in each population	1.1.1 Reduce collision with powerlines through avoiding key areas for Great Bustard, through marking and, if necessary, even removal of existing dangerous sections of powerlines **Applicable to: all Range States**	High	Competent national authorities, electricity companies
	1.1.2 Prevent the occurrence of catastrophic winter mortality events through supporting the production of oilseed rape and alfalfa at suitable undisturbed locations far from existing powerlines within the traditional wintering areas and establish capacity to clear snow from fields in emergency situations **Applicable to: all Range States**	Medium	Competent conservation and agricultural authorities, site managers
	1.1.3 Maintain hunting ban in all Range States and step up efforts to stop poaching where it still occurs, taking into account guidelines on predator control, connect to IKB work and platforms-guidance under CMS **Applicable to: all Range States**	High	Competent conservation and game management authorities

Expected Result	*Action*	*Priority*	*Organisations responsible*
	1.1.4 Prevent collision with wind turbines in key sites and flyways for Great Bustard Include tagging data to inform precise results Connect actions to the Energy Task Force and existing guidance	Medium	Competent conservation and game management authorities
1.2 Average productivity exceeds 0.25 fledged chicks per adult female in each population as of start of October	1.2.1 Identify and apply adequate compulsory restrictions on breeding sites on agricultural practices that significantly reduce the breeding success of the species, such as mowing of alfalfa or grass according to the local breeding phenology of the species, and provide compensation to farmers Implement guidelines on agri-environmental schemes **Applicable to: all breeding Range States**	High	Competent conservation and agricultural authorities
	1.2.2 Apply complementary nest safeguarding, egg rescue and measures where necessary and appropriate **Applicable to: all breeding Range States**	Low. But varies Low-High for specific MTIWP measures.	Competent conservation authorities, NGOs

Expected Result	*Action*	*Priority*	*Organisations responsible*
	1.2.3 Restrict/Control grazing on key breeding areas where trampling significantly reduces the breeding success **Applicable to: all breeding Range States**	High	Competent conservation and agricultural authorities
	1.2.4 Support extensification of agricultural practices in areas inhabited by Great Bustards, including the promotion of set-aside schemes and organic farming. The timing of all measures should be adapted to the life cycle of the Great Bustard. **Applicable to: all breeding Range States, but Austria, Germany, Hungary, Slovakia, Czech Republic, Serbia, Romania and the Russian Federation in particular**	High	Competent conservation and agricultural authorities
	1.2.5 Monitor impact of predators on breeding success and apply predator control measures if necessary **Applicable to: all breeding Range States**	High	Competent conservation and game management authorities
	1.2.6 Create enclosures in the breeding areas of populations if the main reason of breeding failure is predation **Applicable to: all breeding Range States**	Locally High (see MTIWP measures)	Competent conservation authorities, site managers

Expected Result	*Action*	*Priority*	*Organisations responsible*
	1.2.7 Reduce human disturbance by restricting access to display and breeding grounds as necessary **Applicable to: all breeding Range States**	Medium	Competent conservation authorities, site managers
1.3 Extent of suitable habitat maintained across the present and recent range of the species	1.3.1 Designate all sites holding populations of Great Bustards listed in Annex 2 of this Action plan as Special Protection Areas in the EU Member States or under national legislation in non-EU countries **Applicable to: all Range States**	High	Competent conservation authorities
	1.3.2 Introduce, or continue where they already exist, agri-environmental schemes or similar incentive measures to promote farming techniques compatible with the species' requirements and monitor the effectiveness of such measures **Applicable to: all Range States**	High	Competent conservation and agricultural authorities
	1.3.3 Ensure that all land use change and infrastructure (e.g. power lines, afforestation, irrigation, wind turbines, wind breaks, solar power panels, roads and railways and other projects including enlargement of cities, settlements, orchards, vinyards and related agricultural changes) which can negatively affect the Great Bustard's habitat do not take place **Applicable to: all Range States**	High	Competent conservation and agricultural authorities

Expected Result	*Action*	*Priority*	*Organisations responsible*
1.4. ***Knowledge gaps filled***	1.4.1 Identify all areas for Great Bustard across its European range **Applicable to: the Russian Federation, Ukraine**	High	Competent conservation authorities, research institutes, NGOs
	1.4.2 Monitor the size, sex and age composition, threats and productivity of each population listed in Annex 2 of this Action plan, based on standardized counts in winter, spring and autumn **Applicable to: all breeding Range States with regular populations**	High	Competent conservation authorities, research institutes, NGOs
	1.4.3 Monitor and improve the effectiveness of all conservation measures, including, where relevant, captive breeding, and rearing and release programmes. **Applicable to: all Range States**	Low	Competent conservation authorities, research institutes, NGOs
	1.4.4 Carry out comparative ecological studies on the population dynamics and the genetic structure of populations, on habitat requirements and on the effects of habitat changes and infrastructure on the populations **Applicable to: all Range States with regular populations**	Medium. But varies Medium-High for specific MTIWP measures.	Competent conservation authorities, research institutes, NGOs
	1.4.5 Expand studies to improve the understanding of survival and mortality factors. Promote telemetry studies thereof if relevant. **Applicable to: all Range States**	High	Competent conservation authorities, research institutes, NGOs

Expected Result	*Action*	*Priority*	*Organisations responsible*
	1.4.6 Investigate the factors influencing breeding success and survival, and study key parameters, such as habitat availability and choice, home range and dispersal patterns; dedicate attention to the insect biomass as necessary food supply in the breeding area **Applicable to: all breeding Range States**	High. But varies Medium-High for specific MTIWP measures.	Competent conservation authorities, research institutes, NGOs
	1.4.7 Analyse regular and irregular migratory movements, and seasonal movements of birds, promote telemetry and other marking methods thereof to better understand the meta-population structure. **Applicable to: all Range States**	Medium	Competent conservation authorities, research institutes, NGOs
	1.4.8 Study the impact of climatic changes on the productivity and survival of the Great Bustard and on its habitat. If necessary, develop habitat management techniques for mitigating the impacts of climate change **Applicable to: Hungary, Poland, the Russian Federation, Ukraine**	High	Competent conservation authorities, research institutes, NGOs
	1.4.9 Investigate diseases as a risk factor for the Great Bustard. Consider infectious, metabolic and other diseases and the possibility of a spill-over from other species	Medium	Research institutes, site managers

Expected Result	*Action*	*Priority*	*Organisations responsible*
2.1 Effective habitat management and restoration methods available to assist re-establishment of Great Bustard populations	2.1.1 Improve habitat for Great Bustard in formally occupied sites, where feasible	Medium	Competent conservation authorities, research institutes, NGOs
	2.1.2 Develop feasibility studies and management plans to restore transboundary populations and expanding the habitats in these regions **Applicable to: Bulgaria, Poland, Romania, Hungary, Serbia, Slovakia**	Medium	Research institutes
	2.1.3 Promote Reintroduction and reinforcement projects on the basis of adequate research and feasibility studies and the respective IUCN Guidelines for Reintroductions and Other Conservation Translocations **Applicable to: all Range States**	Locally High (see MTIWP measures)	Competent conservation authorities, research institutes, NGOs
	2.1.4 Harmonize national restoration plans for the Great Bustard under the EU Nature Restoration Law **Applicable to: all MOU Range States in the EU, and Spain and Portugal**	High	Competent conservation authorities, research institutes, NGOs
2.2 ***Raising public awareness***	2.2.1 Promote eco-tourism and bird watching in Great Bustard areas, under the appropriate regulatory framework to improve economic viability of Great Bustard areas. **Applicable to: all Range States**	Medium	Competent conservation and rural development authorities, NGOs
	2.2.2 Promote Great Bustard conservation among stakeholders (e.g. authorities, land owners, farmers and hunters) **Applicable to: all Range States**	High	Competent conservation and rural development authorities, NGOs

Expected Result	*Action*	*Priority*	*Organisations responsible*
	2.2.3 Use the Great Bustard as flagship species through education in raising the profile of nature conservation **Applicable to: all Range States**	Medium	Competent conservation and rural development authorities, NGOs

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ANNEX 1

Threats important at population/group of countries level

Type of threat	German-Polish Plain	Carpathian Basin	Steppe zone
Loss of undisturbed open habitats with suitable vegetation structure	Critical	Medium	High
Collision with powerlines and wind turbines, railway cables	High	High	High
Destruction of eggs or chicks during agricultural works	High	High	Medium
Predation of eggs, chicks or juveniles	High	High	Medium
Insufficient invertebrate food supply	Medium	Medium	Unknown
Poaching	Low	Low	High
Catastrophic mortality in harsh winters	Medium	Medium	High
Disturbance	Low	Low	Low
Climate change	Low	Medium	Medium

Notes:
- ✓ *The description of threats should reflect the actual understanding of the situation with the species, according to the latest available knowledge and the workshop participants' best judgment. It is not necessary to follow a formal threat classification system. The logical problem analysis and cause-effect relationships among the main threats are the important aspects to focus the plan on.*
- ✓ *Threats are not hierarchical, but clustered according to type of effect.*
- ✓ *Threat score: Critical, High, Medium, Low, Local, Unknown.*

ANNEX 2

Key sites for conservation of the species (Important Bird Areas) in the EU and their protection status

Country	IBA National name	Pop. min	Pop. max	Year	Season	Quality	IBA Area (km2)	SPA Code	SPA name (EU only)	% of IBA protected/ overlap
Austria	Österreichischer Teil des Hanság	14 (6 m, 8 f)	31 (14 m, 22 f)	2017	resident	good	44.81	AT1126129	Waasen - Hanság	66.99%
	Parndorfer Platte und Heideboden	343 (105 m, 238 f)	425 (146 m, 279 f)	2017	resident	good	278.56	AT1125129	Parndorfer Platte und Heideboden (in process of designation)	26%
	Westliches Weinviertel	49 (18 m, 31 f)	52 (20 m, 32 f)	2017	resident	good	316.19	AT1209V00	Westliches Weinviertel	53.46%
	Zentrales Marchfeld	4 (0 m, 4 f)	5 (1 m, 4 f)	2017	resident	good	345.43	AT1213V00	Sandboden und Praterterrasse	46.37%
Germany	Unteres Rhinluch-Dreetzer See / Havelländisches Luch / Belziger Landschaftswiesen	198	198	2023	resident	good	158.05	DE3341401	Unteres Rhinluch-Dreetzer See / Havelländisches Luch / Belziger Landschaftswiesen	88%
	Fiener Bruch	109	109	2023	resident	good	86,35	DE3640-421 DE3639401	Fiener Bruch	86%
	Zerbster Land	3	3	2023	resident	good	62,07	DE 3938-401	Zerbster Land	93%
Hungary	Hortobágy es Tisza-to	90	110	2017	breeding	good	921.82	HUHN10002	Hortobágy	70.81%
	Felső-kiskunsági szikes puszták	500	550	2017	breeding	good	419.02	HUKN10001	Felső-kiskunsági szikes puszták és turjánvidék	79.10%
	Kolon-tó	2	9	2017	breeding	good	35.77	HUKN30003	Izsáki Kolon-tó	92.20%

Country	IBA National name	Pop. min	Pop. max	Year	Season	Quality	IBA Area (km2)	SPA Code	SPA name (EU only)	% of IBA protected/ overlap
	Dévaványai Ecsegi-puszták	500	560	2017	breeding	good	286.97	HUKM10003	Dévaványai-sík	87.09%
	Kis-Sárrét (Biharugra terseg)	40	100	2017	breeding	good	72.28	HUKM10002	Kis-Sárrét	58.65%
	Borsodi-Mezőség	0	7	2017	breeding	good	369.28	HUBN10002	Borsodi-sík	94.64%
	Bihari-síkság	90	110	2017	breeding	good	446.56	HUHN10003	Bihar	87.76%
	Mosoni-sík	30	50	2017	breeding	good	60.26	HUFH10004	Mosoni-sík	81.22%
	Hevesi-sík	0	5	2017	breeding	good	604.53	HUBN10004	Hevesi-sík	82.78%
	Vasarhelyi puszta, Csanádi hat	20	30	2017	breeding	good	98.97	HUKM10004	Vásárhelyi- és Csanádi-puszták	98.14%
	Kiskunsági szikes tavak és az őrjegi turjánvidék	50	65	2017	breeding	good	357.48	HUKN10002	Kiskunsági szikes tavak és az őrjegi turjánvidék	
Portugal	Castro Verde	1413	1413	2009	breeding	high	835.79	PTZPE0046	Castro Verde	102.11%
	Vila Fernando/Veiros	31	31	2009	breeding	high	20.15	PTZPE0052	Veiros	97,22%
	Vila Fernando/Veiros	52	52	2009	breeding	high	54.72	PTZPE0053	Vila Fernando	96.13%
	Planície de Monforte	43	43	2009	breeding	high	15.94	PTZPE0051	Monforte	118.32%
	Mourão, Moura e Barrancos	2	2	2009	breeding	high	896.47	PTZPE0045	Mourão, Moura e Barrancos	94.74%
	Alter do Chão	12	12	2009	breeding	high	13.17	---	----	0.00
	Planície de Évora	21	21	2009	breeding	high	531.34	PTZPE0055	Évora	27.68
	Serra de Penha Garcia e Campina de Toulões	0	0	2005	breeding	high	156.79	----	-----	0.00
	Campo Maior	103	103	2009	breeding	high	95.77	PTZPE0043	Campo Maior	100.03%
	Cuba	89	89	2009	breeding	high	50.49	PTZPE0057	Cuba	80.83%
	Rio Guadiana	36	36	2009	breeding	high	765.78	PTZPE0047	Vale do Guadiana	99.96%
	Torre da Bolsa	22	22	2009	breeding	high	27.20		Torre da Bolsa	31.94%
	-	42	42	2009	breeding	high	0.00	PTZPE0058	Piçarras	---
	São Pedro de Solis	27	27	2009	breeding	high	143.14	----	---	0.00%
Slovakia	Syslovské polia	10	10	2023	breeding	good	19.29	SKCHVU029	Syslovské polia	90%

Country	IBA National name	Pop. min	Pop. max	Year	Season	Quality	IBA Area (km2)	SPA Code	SPA name (EU only)	% of IBA protected/ overlap
	Lehnice	0	0	2023	poten-tially breeding	good	26.60	SKCHVU012	Lehnice	88.2%
Spain	Villafáfila	1026	2198	1996	breeding		327.34	ES0000004	Lagunas de Villafáfila	99.01%
	Embalse del Esla	44	44	1995	breeding		266.81	ES0000004	Lagunas de Villafáfila	0.03%
	Belver de los Montes-Gallegos del Pan	200	250	1996	breeding		444.78	ES0000004	Lagunas de Villafáfila	32.06%
	Tordesillas - Mota del Marqués	100	100	1996	breeding		210.78	#N/A	#N/A	Unknown
	Fuentelapeña-Jambrina	150	250	1996	breeding		250.97	ES0000208	Llanuras del Guareña	95.94%
	Páramos del Cerrato	120	150	1996	breeding		859.19	#N/A	#N/A	Unknown
	Talamanca-Camarma	484	484	1996	breeding		535.84	ES0000139	Estepas cerealistas de los rios Jarama y Henares	66.16%
	Cortados del Jarama	25	35	1996	breeding		248.44	ES0000142	Cortados y cantiles de los rios Jarama y Manzanares	88.77%
	Campo de Calatrava	100	100	1996	breeding		1,021.15	ES0000157	Area esteparia del Campo de Calatrava	6.59%
	Pétrola-Almansa-Yecla	176	176	1994	breeding		794.52	ES0000153	Area esteparia del este de Albacete	33.80%
	Campo de Montiel	23	230	1996	breeding		1,381.01	ES0000154	Zona esteparia de El Bonillo	15.86%
	San Clemente-Villarrobledo	37	120	1994	breeding		1,073.34	ES0000390	San Clemente	8.69%
	Tarancón-Ocaña-Corral de Almaguer	419	579	1994	breeding		1,299.53	ES0000170	Area esteparia de La Mancha norte	33.98%

Country	IBA National name	Pop. min	Pop. max	Year	Season	Quality	IBA Area (km2)	SPA Code	SPA name (EU only)	% of IBA protected/ overlap
	Llanos de Tembleque-La Guardia	707	1205	1995	breeding		1,288.91	ES0000170	Area esteparia de La Mancha norte	42.26%
	Complejo lagunar de Alcázar de San Juan-Quero	14	27	1994	breeding	good	585.00	#N/A	#N/A	Unknown
	Torrijos	139	201	1994	breeding		296.43	ES0000435	Áreas esteparia de la margen derecha del rio Guadarrama	42.88%
	Llanos de Oropesa	24	50	1994	breeding		456.80	ES0000089	Valle del Tietar y embalses de Rosarito y Navalcan	42.76%
	Embalse del Borbollón	40	50	1995	breeding		482.47	ES0000326	Embalse del Borbollón	1.96%
	Embalse de Alcántara-Cuatro Lugares	150	3000	1996	breeding		1,220.12	ES0000014	Monfrague y las dehesas del entorno	26.48%
	Sierra de Pela-Embalse de Orellana-Zorita	448	448	1995	breeding		1,434.65	ES0000068	Embalse de Orellana y Sierra de Pela	54.85%
	Trujillo-Torrecillas de la Tiesa	300	300	1996	breeding		1,064.43	ES0000014	Monfrague y las dehesas del entorno	17.48%
	Llanos entre Cáceres y Trujillo-Aldea del Cano	1300	1300	1996	breeding		1,062.29	ES0000071	Llanos de Cáceres y Sierra de Fuentes	71.16%
	Malpartida de Cáceres-Arroyo de la Luz	25	70	1996	breeding		458.86	ES0000070	Sierra de San Pedro	0.22%
	Brozas-Membrío	500	800	1996	breeding		984.83	ES0000368	Rio Tajo internacional y riberos	3.76%
	Sierra de San Pedro	150	150	1996	breeding		3,070.94	ES0000069	Embalse de Cornalvo y Sierra Bermeja	44.60%

Country	IBA National name	Pop. min	Pop. max	Year	Season	Quality	IBA Area (km2)	SPA Code	SPA name (EU only)	% of IBA protected/ overlap
	Lácara-Morante	0	10	1997	resident	medium	569.00	#N/A	#N/A	unknown
	Botoa-Villar del Rey	332	332	1995	breeding		483.82	PTZPE0043	Campo maior	0.30%
	Olivenza-La Albuera	1500	1500	1996	breeding		807.11	ES0000398	Llanos y complejo lagunar de la Albuera	29.77%
	Villanueva del Fresno	320	320	1995	breeding		97.72	ES4310004	Dehesas de Jerez	97.65%
	Fuente de Cantos-Montemolín	30	30	1996	resident	medium	490.00	#N/A	#N/A	0
	Bienvenida-Usagre-Ribera del Fresno	0	600	1996	breeding		547.63	ES0000325	Campiña sur - embalse de arroyo conejos	0.04%
	Azuaga-Llerena-Peraleda de Zaucejo	1500	1500	1996	breeding		1,550.53	ES0000325	Campiña sur - embalse de arroyo conejos	28.19%
	La Serena	800	800	1996	breeding		1,059.98	ES0000068	Embalse de Orellana y Sierra de Pela	92.23%
	Estepas de Monegrillo-Pina	10	20	1997	breeding		462.99	ES0000180	Estepas de Monegrillo y Pina	52.23%
	Los Monegros (Sur)	75	80	1996	breeding		483.90	ES0000180	Estepas de Monegrillo y Pina	60.05%
	Laguna de Gallocanta	52	52	1995	breeding		301.42	ES0000017	Cuenca de Gallocanta	51.67%
	Los Blázquez - La Granjuela - Fuenteovejuna	20	20	1992	breeding		346.90	#N/A	#N/A	0
	Campiña de Carmona	0	22	1996	breeding		353.29	#N/A	#N/A	0
	Condado - Campiña	10	10	1996	breeding		568.33	#N/A	#N/A	0
	Campiña alta de Córdoba	30	30	1996	breeding		1,179.16	#N/A	#N/A	0

Country	IBA National name	Pop. min	Pop. max	Year	Season	Quality	IBA Area (km2)	SPA Code	SPA name (EU only)	% of IBA protected/ overlap
	Tierra de Campos	2000	2500	1997	breeding		2,680.20	ES0000194	Oteros-campos	47.01%
	Tierra de Campiñas	2300	2500	1992	breeding		1,889.81	ES0000204	Tierra de Campiñas	75.34%
	Altos de Barahona	46	50	1996	breeding		288.47	ES0000203	Altos de Barahona	99.26%
	Carrión-Frómista	300	400	1996	breeding		570.86	ES0000201	Camino de Santiago	39.79%
	Topas	73	150	1997	breeding		292.00	#N/A	#N/A	0
	Carrizales y Sotos de Aranjuez	20	24	1994	breeding		185.08	ES0000119	Carrizales y sotos de Aranjuez	84.74%
	Alange	36	100	1996	breeding		662.02	ES0000072	Sierra Grande de Hornachos	20.89%
	Don Benito-Guareña	50	60	1996	breeding		338.28	ES0000367	La Serena y sierras perifericas	0.08%
	Alcarria de Alcalá	80	120	1997	breeding		72.15	#N/A	#N/A	0
	Llanura cerealista de Ecija-Osuna	0	50	1996	breeding		628.60	ES6180002	Complejo endorreico la Lantejuela	1.43%
	Andévalo Occidental	40	40	1996	breeding		495.33	#N/A	#N/A	0
	Villalba de los Barros	200	200	1996	breeding		141.11	ES0000398	Llanos y complejo lagunar de la Albuera	41.05%

Key sites for the conservation of the species outside of the EU

Country	IBA Code	IBA Name	Pop. min	Pop. max	Year		IBA Area (km²)	Protection status
Kazakhstan	(blank)	Aksu-Dzhabagly State Nature Reserve	0	0	2004	0	1,319	Fully Protected
	(blank)	Arystandy	123	500	2004	2004	198	Not Protected
	(blank)	Irgiz-Turgay Lakes	0	0	1986	0	3,480	Fully Protected
	(blank)	Tentek River Delta	15	30	2007	0	459	Partially Protected
	(blank)	Zhusandala	0	0	2001	2006	2,171	Fully Protected
Russia (European)	RU355	Balka Yablonya	11	21	2013	2013	187	Not Protected
	RU164	Dadynskiye lakes	0	200	1996	0	450	Not Protected
	RU278	Drofinyi area	10	15	2007	2007	792	Fully Protected
	RU481	Dudarevskaya steppe	4	40	1998	1998	300	Not Protected
			20	200				Not Protected
	RU366	Estonka site	7	0	2013	2013	17	Not Protected
	RU359	Fields near village Voskresenka	19	21	2008	2008	36	Not Protected
	RU381	Irgaklinski forest	0	200	1996	1999	24	Partially Protected
	RU479	Kholmanskiye feathergrass steppes	52	0	1999	1999	656	Partially Protected
	RU364	Kumysni pond site	9	17	2008	2008	21	Not Protected
	RU389	Kurnikov liman	20	50	1997	2005	16	Not Protected

Country	IBA Code	IBA Name	Pop. min	Pop. max	Year		IBA Area (km²)	Protection status
	RU394	Outskirts of Arbali village	150	200	2005	2006	16	Not Protected
	RU365	Outskirts of village Il'inka	5	0	2013	2013	21	Not Protected
	RU369	Outskirts of village Lepekhinka	7	12	2008	2008	22	Not Protected
	RU367	Outskirts of village Pervomaiskoye	24	29	2008	2008	260	Not Protected
	RU360	Outskirts of village Rekord	3	6	2013	2013	19	Not Protected
	RU368	Outskirts of village Timofeevo	8	0	2013	2013	21	Not Protected
	RU137	Rovno area	2	4	2013	2013	82	Not Protected
	RU370	Shcherbakovskaya bend of Volga river (it was mentioned in migrating birds)	100	150	2000	2001	356	Fully Protected
	RU128	Siniye mountains	0	0	2013	2013	126	Not Protected
	RU358	Steppes in the vicinity of Zeleni Dol village (area was united with another one)	4	8	2013	2013	479	Not Protected
	RU250	Tazhinski liman	9	10	2007	2007	96	Partially Protected
	RU127	Valley of Safarovka river	1	2	2008	2008	205	Not Protected
	RU126	Vicinity of Borisoglebovka (Saratovski [Semenovski] Reserve) (area was united with another one)	91	0	2008	0	1023	Partially Protected (PA is 43% since 2001)
	RU475	Vicinity of Poltavka village	53	80	1999	1999	96	Not Protected
	RU132	Vicinity of Voznesenk village	5		2001	0	87	Not Protected
	RU357	Vicinity of Eruslan village	4		2008	2008	244	Not Protected

Country	IBA Code	IBA Name	Pop. min	Pop. max	Year		IBA Area (km²)	Protection status
	RU118	Vorono-Khoperski area	10	17	2007	0	240	Not Protected
	RU361	Yasnaya Polyana site	11	0	2013	2013	250	Not Protected
	RU157	Yeiski salt-lakes (data about WINTERING birds)	500	500	1996	0	240	Not Protected
	RU139	Zhestyanka	2	4	2013	0	121	Not Protected
	RU323	Zolotarevskaya area	5	7	2007	2007	749	Partially Protected (PA is 30.34% since 2006)
Serbia	YU011	Jazovo-Mokrin	10	14	2017	0	80	Partially Protected
Türkiye	AKD016	Acıgöl	30	40			327	Partially Protected
	GDA005	Akçakale Steppes	45	50	*		1,072	
	ORT002	Aliken	40	60	1996		197	Not Protected
	EGE032	Altıntaş plain	40	50	1997		196	Partially Protected
	GDA013	Bismil plain	30	35	*		1,244	Not Protected
	DOG035	Bulanık and Malazgirt plains	150	250	2002		333	Not Protected
	GDA010	Ceylanpınar	15	30	*		3,845	Not Protected
			800	1000	1981			Not Protected
	ORT017	Çöl lake and Çalikdüzü	35	45	2000		422	Not Protected
	ORT030	Ereğli Plan	Present				1,294	
	DOG017	Karasu plain	35	35	*		262	Not Protected

Country	IBA Code	IBA Name	Pop. min	Pop. max	Year		IBA Area (km²)	Protection status
	DOG046	Kavuştuk peninsula	31	35	*		141	Not Protected
	DOG038	Muş Plain	36	46	2002		196	Not Protected
	DOG034	Patnos	31	31	*		194	Not Protected
	ORT006	Polatlı - TİGEM	15	30	2004		845	Not Protected
	ORT016	Samsam lake	20	30	1998		42	Partially Protected
	ORT010	Sarayönü	40	60	1998		353	Not Protected
	ORT033	Seyfe lake	30	30	*		463	Fully Protected
	ORT024	Tuz lake	83	110	2000		5,330	Partially Protected
	DOG033	Upper Murat Valley	30	40	2000		182	Not Protected
	DOG053	Van plains	26	35	*		1,029	Not Protected
	ORT034	Yenipazar	32	44	*		328	Not Protected
	DOG068	Yüksekova	30	40	*		286	Not Protected
Ukraine	UA112	Agricultural lands near Bilorets'ke (Chornozemne village)	200	500	1999	0	170	Not Protected
	UA102	Bagerove	110	120	1995	*breeding/ wintering*	205	Not Protected
			20	0	1996	0		Not Protected
	UA096	Bilogir'ya	30	80	1999	*breeding/ wintering*	320	Not Protected
	UA135	Chauda	120	130	1999	*breeding/ wintering*	560	Not Protected

Country	IBA Code	IBA Name	Pop. min	Pop. max	Year		IBA Area (km²)	Protection status
			300	3500				Not Protected
	UA113	Gajchur river valley	80	100	1999	0	240	Not Protected
	UA115	Kakhovs'ke reservoir (Energodar)	60	60	1999	0	280	Not Protected
	UA069	Syvash Bay	0	1000	2010	*breeding/ wintering*	2,450	Partially Protected
			2	3				Partially Protected
	UA101	Uzunlars'ke lake	500	0	1994	*breeding/ wintering*	96	Not Protected
			0	70	1996	0		Not Protected
	UA065	Yagorlyts'ka and Tendrivs'ka Bays	5	50	1999	0	720	Fully Protected
		Territories around the Biosphere Reserve Askania Nova	0	1000	2010	*Wintering*		Partially protected

NOTES

- ✓ ***Population Min - Max.*** *For breeding ('season' column), figures are usually given in pairs; for other seasons, figures are given in individuals*
- ✓ ***Season:*** *Breeding, Migration, Non-breeding visitor (wintering)*
- ✓ ***Accuracy: Good (Observed)*** *= based on reliable or representative quantitative data derived from complete counts or comprehensive measurements.*
  Good (Estimated) *= based on reliable or representative quantitative data derived from sampling or interpolation.*
  Medium (Estimated) *= based on incomplete quantitative data derived from sampling or interpolation.*
  Medium (Inferred) *= based on incomplete or poor quantitative data derived from indirect evidence.*
  Poor (Suspected) *= based on no quantitative data, but guesses derived from circumstantial evidence.*
- ✓ ***Protected Area name =*** *Nature Reserve, National Park, Ramsar site, etc.*
- ✓ **Type of protected area**: IUCN Category
- ✓ ***Protection status****: level of overlap between the IBA and a National protected area or International designation.*

ANNEX 3

National legal status

Country	Legal protection	For game species, give opening/closing dates
Albania	Protected	
Austria	Protected	Closed throughout the year
Armenia	Protected	
Azerbaijan	Protected	
Bosnia-Herzegovina	Protected	Closed throughout the year
Bulgaria	Protected	
Czech Republic	Protected	
Germany	Protected	Closed throughout the year
Georgia	Protected	
Greece	Protected	
Hungary	Protected	
Italy	Protected	
Montenegro		
Poland	Protected	
Portugal	Protected	
Republic of Moldova	Protected	
Romania	Protected	Law n. 407 (year 2006) Hunting and protection of hunting fund
Russian Federation	Protected	In 2013 there was an attempt to exclude the western subspecies out from new edition of the Russian Red Book
Serbia	Protected	
Slovakia	Protected	Closed throughout the year
Slovenia	Protected	
Spain	Protected	
North Macedonia	Protected	

Türkiye	Protected	
Ukraine	Protected	
United Kingdom	Protected	Closed throughout the year

Recent conservation measures

Country	Is there a national action plan for the species?	Is there a national project / working group?
Albania	Yes	No
Austria	Yes	Yes
Armenia	No	No
Azerbaijan	No	No
Bosnia-Herzegovina	No	No
Bulgaria	No	No
Croatia	Yes	No
Czech Republic	No	No
Germany	No	Yes
Georgia	No	No
Greece	No	No
Hungary	Yes	Yes
Italy	No	No
Portugal	No	No
Republic of Moldova	No	No
Romania	No	No
Russia	No	No
Serbia	No	Yes
Slovenia	No	No
Slovakia	Yes	Yes
Spain	No	Yes
North Macedonia	Yes	No
Türkiye	No	No
Ukraine	Yes	No

United Kingdom	No	Yes

Ongoing monitoring schemes for the species

Country	Is there a national survey / monitoring programme?	Is there a monitoring programme in protected areas?
Albania	*No*	*No*
Austria	*Yes*	*Yes*
Armenia	*No*	*No*
Azerbaijan	*No*	*No*
Bulgaria	*No*	*No*
Bosnia-Herzegovina	*No*	*No*
Croatia	*No*	*No*
Czech Republic	*Yes*	*No*
Germany	*Yes*	*Yes*
Georgia	*No*	*No*
Greece	*No*	*No*
Hungary	*Yes*	*Yes*
Italy	*No*	*No*
Portugal	*Yes*	*Yes*
Romania	*No*	*No*
Moldova	*No*	*No*
Russian Federation	*No*	*Yes*
Serbia	*No*	*Yes*
Slovakia	*Yes*	*Yes*
Spain	*Yes*	*Yes*
Slovenia	*No*	*No*
North Macedonia	*No*	*No*
Türkiye	*No*	*No*
Ukraine	*No*	*Yes*
United Kingdom	*Yes*	*Yes*

Overview of the coverage of the species in networks of sites with legal protection status

Country	National population size	Percentage of national population included in IBAs	Percentage of population included in Ramsar sites	Percentage of national population included in SPAs	Percentage of national population included in protected areas under national law
Austria	368–481	>90%	n/a	<50%	<10%
Germany	238	100%	n/a	100%	80%
Hungary	1,596	>90%	n/a	>90%	>50%
Portugal	1,893	~100%	n/a	>90%	
Russian Federation	2,500-3,000	>25%,<50%	n/a		>20%, <40%
Serbia	10–14	>90%	n/a	N/A	>750%
Slovakia	0–3	100%	n/a	100%	100%
Spain	27,500–33,000	>50%, <75%	n/a	>50%, <75%	
Türkiye	762–1,250	>90%	n/a		>10%, <25%
Ukraine	<500	<10%	n/a		<5%

✓ *The data in this table is presented only for countries with significant breeding populations, to which a site-based approach is feasible.*