

The historical and current status of the Great Bustard *Otis tarda tarda* in Uzbekistan, a key winter refuge

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Summary: Before the middle of the 20th century, the Great Bustard *Otis tarda tarda* was largely a passage migrant in Uzbekistan, partially overwintering and rarely breeding. Currently, most birds found in Uzbekistan are winterers. The development of virgin lands in the mid-20th century led to a decline in the species' numbers, but due to the post-Soviet agricultural crisis in the 1990s its habitats and population recovered. We give an exhaustive list of recorded encounters and analyse the species' distribution in two historical periods – from 1878 to 1967 and from 1990 to 2017 (there were no records in between). Before the mid-20th century its key habitats were three extensive areas: the level part of the Chirchik–Angren interfluvium; piedmonts and intermontane depressions in the Nuratau and nearby mountain ranges; and the Zaravshan river valley with the adjacent Agalyk and Karnabchul steppe areas. The piedmonts of the Nuratau range and the Karnabchul steppe remain key habitats for the species, but the total area of suitable habitat has decreased 15-fold. Approximately 10 000–20 000 Great Bustards visited Uzbekistan annually before the mid-20th century. The contemporary population wintering in Uzbekistan is no more than 500 individuals in severe winters. Illegal hunting is now the main threat. An action plan is being developed in Uzbekistan to protect Great Bustards overwintering in the country.

INTRODUCTION

Targeted research on the Great Bustard *Otis tarda tarda* has not been conducted in Uzbekistan. The most comprehensive review of the species' population since the end of the 19th century through the mid-20th century was made by Meklenburtsev (1990). Kreitsberg-Mukhina (2003) published a review of the contemporary status of the Great Bustard in Uzbekistan, presenting interesting observations during the period 1990–2003. Review and analysis of the Great Bustard population in Central Asia, including Uzbekistan, during the 20th century was carried out by Kessler & Smith (2013), and Kessler (2016).

Until the middle of that century the Great Bustard was mainly observed on migration in Uzbekistan, but it also partially wintered and occasionally nested in the country (Table 1). However, extensive anthropogenic transformation of nesting and wintering places in Kazakhstan and Siberia resulted in the almost-total disappearance of the species from Uzbekistan by 1970, after which no observations of the species were recorded until 1990, with no evidence that observer coverage of the relevant areas was weaker at this time (it is possible that individual birds did visit Uzbekistan during this period, but we have found no reliable data). In 1983, the species was added to the *Red Data Book of the Uzbek SSR* with the status 'extinct as a nesting species, very rare on migration and wintering' (Sadykov 1983); with this designation hunting of the species became illegal. In all subsequent editions of the *Red Data Book of Uzbekistan* (Azimov 2003, 2006, 2009, 2019), the Great Bustard was assessed on the national level as 'Critically Endangered – 1(CR) – migratory European subspecies on the verge of complete extinction.' Nevertheless, since 2000 there is some evidence of a recovery.

Here we present a comprehensive list of known observations and an analysis of the species' distribution in Uzbekistan during two periods, 1878–1967 and 1990–2017. Threats are described and conservation measures for the species suggested.

Table 1. Great Bustard records in Uzbekistan in chronological order. Season of observation is denoted: + = nesting; * = migration; W = wintering. See also Figures 1 and 2.

No.	Date	Season	Key details	Source
1878–1967				
1	03.1878	*	Near Chinaz village (Chinaz district, Tashkent province): KE Russov was observing migrating birds	Pleske 1888
2	04.1878	*	Near Djam village (Djam district, Samarkand province) KE Russov was observing migrating birds	
3	03.1896	*	Golodnaya steppe (Syrdar'ya province) pairs flying, but not nesting	Loudon 1910
4	03.1903	*	Near Kermine (Karmana district, Navoi province)	
5	08.11.1908	*	Sardaba (ie middle course of Syrdar'ya river, modern-day Sardoba village in Akaltyn district, Syrdar'ya province): ♀ taken (shot) by NA Zarudnyi	Zoological Collection of National University of Uzbekistan
6	15.01.1909	W	Golodnaya steppe (Syrdar'ya province) 3♂♂ taken by NA Zarudnyi	
7	02.02.1909	W	Outskirts of Tashkent (Tashkent province) 1♂ taken by NA Zarudnyi	
8	21.02.1909	W	Djaman-batkak (a marsh in the lower Chirchik river, Chinaz district, Tashkent province): ♂ taken by NA Zarudnyi	
9	30.12.1912	W	Suburbs of Tashkent: 1♂ taken by NA Zarudnyi	
10	Winter 1912	W	Tamdy and Sukuty oasis (Tamdy and Suketty villages, Tamdy district, Navoi province): feathers in the possession of local falconers	Zarudnyi 1915
11	12.02.1912	W	Sardaba (Akaltyn district, Syrdar'ya province) 2♂♂ and 2♀♀ taken by NA Zarudnyi	Zoological Collection of National University of Uzbekistan
12	08.11.1914	*	Sardaba (Akaltyn district, Syrdar'ya province) 1♂ and 1♀ taken by NA Zarudnyi	
13	23.03–10.04.1927	*	Outskirts of Karauzak village (Karauzak district, Karakalpakstan republic): flying individuals, pairs, sometimes small flocks	Spangenberg & Feigin 1936
14	20.03.1928	*	Near Tashkent	Sataeva 1937
15	21.10.1929	*	Near Tashkent	Sataeva 1937
16	20.10.1937	*	Near Samarkand (Samarkand province): 1 bird taken by hunters	Bogdanov 1956
17	12.08.1938	+	Kashkadar'ya river valley, between Chirakchi and Shakhrisabz (Chirakchi district, Kashkadar'ya province): 1 pair	Meklenburtsev 1958
18	09.03.1939	*	Near Samarkand (Samarkand province)	Bogdanov 1956
19	Summer 1940	+	Between Yangibazar and Parkent villages (Parkent district, Tashkent province) on dry-farmed vineyards: 1 nesting pair	Bogdanov 1992
20	10 & 11.1944	*	Southern Ustyurt plateau and Amudar'ya delta (Kungrad district, Karakalpakstan republic): a small number	Kolesnikov 1953
21	21.04.1947	*	Agalyk steppe near Samarkand (Agalyk district, Samarkand province): 1 pair	Bogdanov 1956
22	26.05.1947	+	Agalyk steppe near Samarkand (Agalyk district, Samarkand province): 1 bird	Bogdanov 1956

23	Winter 1948	W	Steppe between Nuratau and Karakchatau mountain ranges (Gallyaara district, Jizzakh province)	Bogdanov 1956
24	27.03.1948	*	Near Samarkand (Samarkand province)	Bogdanov 1956
25	20.10.1948	*	Near Samarkand (Samarkand province): 2–15 individuals	Bogdanov 1956
26	10.06.1953	+	South-western foothills of Nuratau range (Khatyrchi district, Navoi province): abandoned nest	Salikhbaev 1983
27	21.05.1953	+	South-western foothills of Nuratau range (Khatyrchi district, Navoi province): destroyed nest with 2 eggs in lucerne field	Salikhbaev 1983
28	Summer 1953	+	Middle reach of Syrdar'ya river, Dalverzin hunting farm (Bekobod district, Tashkent province): huntsman VS Lustin discovered adult bustards with not-yet-fledged young	Meklenburtsev 1990
29	10.1953	+	South-western foothills of Nuratau range (Khatyrchi district, Navoi province): a group of 2 adults and 3 juvenile birds	Salikhbaev 1983
30	10.10.1961	*	Between Boldyr railway station and Muzrabad village (Termez district, Surkhanda'y'a province): flock of 12 birds	Salikhbaev & Ostapenko 1964
31	01.1962	W	Hills on right shore of Surkhanda'y'a river (Surkhanda'y'a province): several small flocks	Salikhbaev & Ostapenko 1964
32	16–17.03.1967	W	Foothills of Nuratau range near Sintabsay (Forish district, Jizzakh province): 2 groups of 4 and 6 birds	Salikhbaev et al 1970
1990–2017				
1	10–12.1990	*	Cliff of Ustyurt plateau (Kungrad district, Karakalpakstan republic): groups of 5–7 individuals on autumn migration, and sometimes in December (reported by IM Joldasova)	Kreitsberg-Mukhina 2003
2	03.03.1991	*	Karshynskaya steppe, near 'Djeiran' ecocentre (Karaulbazar district, Bukhara province) flock of 11 birds	Mukhina 2001
3	End of 1990s	W	Gulbakhor village (Termez district, Surkhanda'y'a province) some observations of wintering birds	Kreitsberg-Mukhina 2003
4	12.1999	W	Eastern Kyzylkum desert near Aydar lake (Forish district, Jizzakh province): over several days c200 bustards appeared after cold snap in groups of 10–15. Practically all birds were killed by poachers (reported by AS Nuridjanov)	Kreitsberg-Mukhina 2003
5	12.2001	W	Surroundings of Pistaltau mountains (Forish district, Jizzakh province): individual bustards were hiding in small valleys (report from Aydar-arnasay Wildlife Inspectorate)	Kreitsberg-Mukhina 2003
6	Winter 2006	W	Middle reach of Chirchik river, Tashaul village (Urtachirchik district, Tashkent province): 1 adult	DA & AS Nuridjanov, verbal report
7	04.01.2007	W	Zaravshan nature reserve (Jambay district, Samarkand province): 2 individuals	Marmazinskaya 2011
8	01.2008	W	Zaravshan nature reserve buffer zone (Jambay district, Samarkand province): 15 birds in fields near Mugal village, moved into the nature reserve over two days	Marmazinskaya 2011
9	28.02.2008	W	Zaravshan nature reserve (Jambay district, Samarkand province): 7 individuals	Marmazinskaya 2011

10	01.2008	W	Keles river valley, near Keles village (Zangiota district, Tashkent province): individual birds were occasionally shot by hunters during pheasant hunting	AG Ten, questionnaire data
11	10.2010	W	Zaravshan river valley: regular mass wintering, exact location concealed by local hunters	AG Ten, questionnaire data
12	10-11.2009	*	Karnabchul steppe, Sakhoba village (Nurabad district, Samarkand province): flock of 6 birds in flight, single birds occasionally shot by local beekeepers when goose hunting	AG Ten, questionnaire data
13	03.2013	*	Karnabchul steppe, Sakhoba village (Nurabad district, Samarkand province): 1 pair	Martin <i>et al</i> 2014
14	07.02.2015	W	Sandy-loam desert to the south-west of Aidar lake (Forish district, Jizzakh province): a group of 9 individuals (Plate 1)	A Khan, verbal report + photo
15	21.02.2015	W	Sandy-loam desert to the south-west of Aidar lake (Forish district, Jizzakh province): local shepherd saw 35–40 birds after a snowfall; 6 of them were shot by local hunter	A Khan, verbal report
16	03.2017	W	Sandy-loam desert to the south-west of Aidar lake (Forish district, Jizzakh province): local shepherd documented a jackal attack on a Great Bustard (Plate 2)	A Khan, verbal report + photo

METHODS

Our goal was to collect all past and present records of Great Bustards in Uzbekistan, and compare their spatial and temporal distribution. We gathered data from all known reliable sources, including specimens in natural history collections (*eg* Kashkarov 2009), published observations, and oral reports from reliable observers, and compiled them into a table. We used these data to prepare maps. We also reviewed comments by different authors on the causes of the changes in range and numbers.

RESULTS

In all we assembled 48 records of Great Bustard in Uzbekistan (Table 1) and mapped their distributions (Figures 1 and 2).

Until the middle of the 20th century, more than half of all Great Bustard observations in Uzbekistan occurred on spring and autumn migration (Table 1). Observations of wintering birds were rarer, but also regular. A few geographically scattered pairs were observed nesting. Three large territories represented key habitat for the Great Bustard—the plains between the Chirchik and Angren rivers outside of Tashkent; the foothill plains and intermontane depressions of the Nuratau mountains and nearby ridges; and the Zaravshan river valley and adjacent Agalyk and Karnabchul steppes (Figure 1). The area of these open, sometimes steppe-like, partially cultivated territories occupies approximately 28 000 km².

No published estimates exist for the Great Bustard population in Uzbekistan in the 19th and 20th centuries, but certain authors provided indirect data. Zarudnyi (1915) listed it as a common game species. Photos of hunting trophies from that time confirm fairly large numbers of the species in autumn and winter. Meklenburtsev (1936) wrote that ‘according to the indications of local peoples, Great Bustards fly in large numbers near the Nuratau foothills in autumn.’ The same author (Meklenburtsev 1990) also mentioned that ‘at the beginning of the 20th century, several tens of bustards, in small groups as well as single individuals, regularly flew over the outskirts of Tashkent and above the city

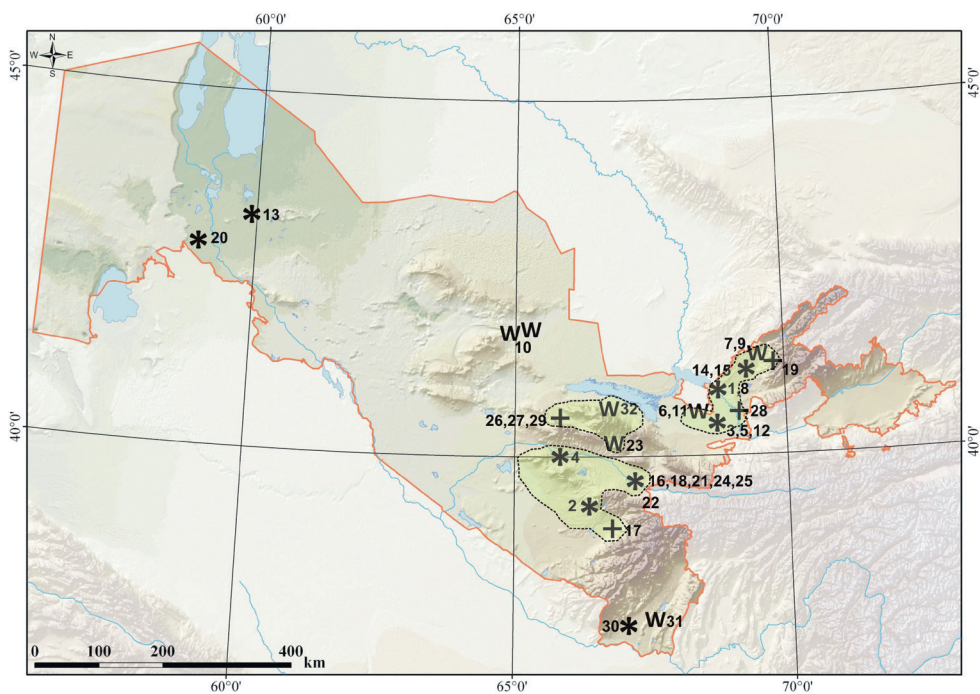


Figure 1. All records of Great Bustard in Uzbekistan from the period 1878–1967. Season of occurrence is indicated as: + = nesting; * = migration; W = wintering. Pale green areas delineated with dotted lines = approximate habitat boundaries of Great Bustard.

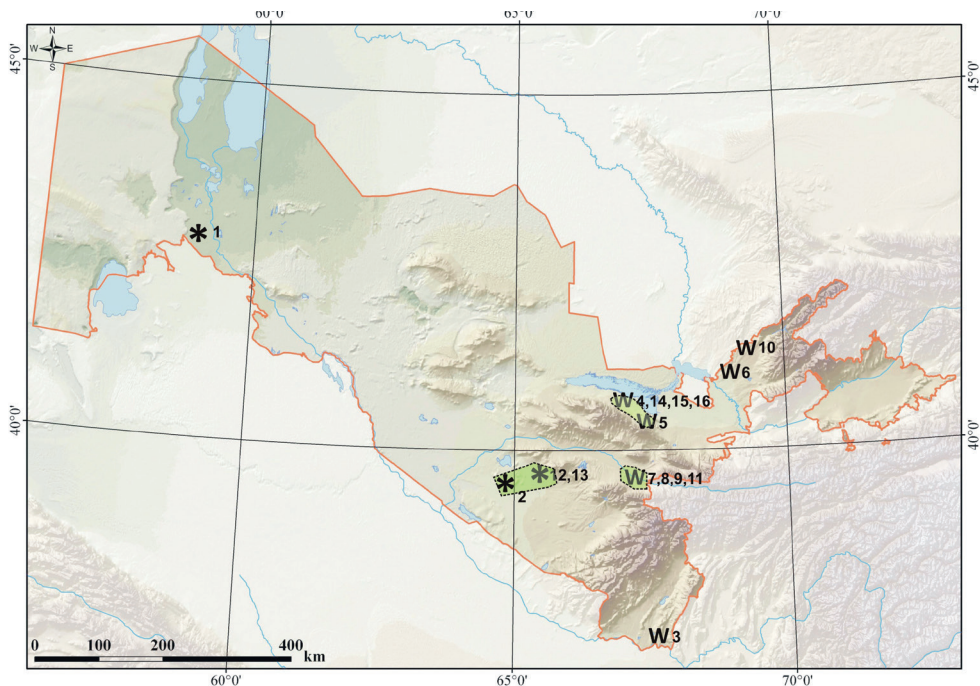


Figure 2. All records of Great Bustard in Uzbekistan from the period 1990–2017. Season of occurrence is indicated as: + = nesting; * = migration; W = wintering. Pale green areas delineated with dotted lines = approximate habitat boundaries of Great Bustard.

itself.' Taking all this into account, it is possible only to make a rough expert assessment of the number of Great Bustards: we estimate that around 10 000–20 000 individuals were visiting Uzbekistan each year until the middle of the last century.

Since 1990, the majority of observations have occurred during the winter, and only one-third during migration. The two key areas for Great Bustard wintering are the northern foothill plain of the Nuratau range and the Zaravshan nature reserve and adjacent foothill plains of the Zaravshan range (Figure 2), but during the migratory period Great Bustards are also occasionally seen on the Karnabchul steppe. The area of these three locations covers no more than 3 000 km². Thus, the Great Bustard has completely disappeared as a nesting species from Uzbekistan, but is regularly recorded during severe winters, when deep accumulations of snow on the usual wintering grounds in southern Kazakhstan drive the species southwards. The Great Bustard occurs less regularly as a passage migrant. Our assessment of the current number of wintering Great Bustards in Uzbekistan is also very approximate—in certain cases, 100 or more birds are present, with up to 500 in severe winters (Table 2).

The most critical period for the Great Bustard in Uzbekistan occurred during the 1970–1980s, which saw the peak of agricultural activity in the former Soviet Union and during which not a single bird was recorded in the country. The area of habitat suitable for the species decreased by more than 15 times (compare Figure 1 with Figure 2). All authors agree that the conversion of virgin lands to farmland from the mid-20th century resulted in catastrophic decreases in the species' population. By the end of 1990s, however, the post-Soviet crisis in agriculture had contributed to a partial recovery of these habitats, positively affecting the population of the Great Bustard. The main improvement in Great Bustard habitat came from the expansion of rainfed crops: shallow sprouts of wheat and grain residues in field plots attract these birds during the winter.

Although the main reason for the Great Bustard's disappearance was the transformation of steppe habitats to intensive agricultural activity, migration routes, stop-over sites and wintering areas have always been well known to local hunters. Meklenburtsev (1953) wrote that 'migration of the Great Bustard takes place at the height of around 40 m, this bird is incapable of hasty manoeuvres and is extremely vulnerable on migration. Active amateur and semi-commercial hunting takes place, and several tens of Great Bustards are sold at bazaars in Tashkent.' Unsportsmanlike and hence 'illegitimate' hunting was indicated as a serious threat by Salikhbaev & Ostapenko (1964): 'The number of wintering birds in lower parts of the Surkhandar'ya river has considerably decreased because of carloads of hunters chasing the birds.'

On recent evidence it is apparent that poaching remains the main threat for the species in Uzbekistan. According to AS Nuridjanov's observations in winter 1999, around 200 Great Bustards appeared near Aidar lake after a cold snap. Over the course of several days, practically all of these birds were shot by poachers (Kreitsberg-Mukhina 2003). After

Table 2. Expert evaluation of the current Great Bustard population in Uzbekistan in each season.

Season	Number of Great Bustards	Number of sites	Quality of estimate, from 1 (low-quality) to 5 (high-quality)
Breeding	0	0	5
On migration	10–30	3	1
Wintering	50–70 (mild winters) 200–500 (severe winters)	5–6	3

intensive snowfall at the same places in February 2015 30–40 bustards appeared and six of them were then taken by local hunters (A Khan pers comm). Besides intentional poaching, losses of Great Bustards also result from a lack of knowledge among local hunters, some of whom admitted that they mistook birds for geese and pheasants in the Keles river valley in 2008 and on the Karnabchul steppe in 2009.

A natural threat to Great Bustards is presented by the currently quite high number of Golden Jackals *Canis aureus*. In March 2017 on the south-western shore of Aidar lake, a local shepherd documented a jackal attack on a Great Bustard (A Khan pers comm, Plate 2).



Plate 1. Great Bustards near Aidar lake, 7 February 2015. © A Khan



Plate 2. Great Bustard after attack by a Golden Jackal near Aidar lake in March 2017. Photo by local shepherd, provided by A Khan.

PROSPECTS AND RECOMMENDATIONS

Recently, the Uzbekistan Society for the Protection of Birds, supported by the Eurasian Bustard Alliance, for the first time in many years conducted special research into the overwintering of the Great Bustard (Ten *et al* 2020). Currently, the studies continue as part of the two-year project ‘Conservation of wintering Great Bustard in Uzbekistan’ implemented with the support of BirdLife International and Lush, in cooperation with the Laboratory for Vertebrate Animals at the Institute of Zoology, Academy of Sciences of Uzbekistan. The research aims to identify key areas and occurrence schedules of the species, as well as the main threats at these sites. Involvement of local people in the monitoring and conservation of this species is a key component of the study. This is expected to lead to the development of a comprehensive action plan to conserve the species. The results are due to be published when the project is completed in early 2022.

Meanwhile, based on the current situation in Uzbekistan, we see the highest priority for Great Bustard conservation to be protection from poaching as it migrates through and winters in Uzbekistan. Activity should be focused on three key areas, (1) the northern foothill plain of the Nuratau range, (2) the Zaravshan river valley, and (3) the Karnabchul steppe.

At these sites, we recommend work within local communities, including training of local people as ‘caretakers’, who observe Great Bustards in their vicinity and promote conservation of the species; and raising awareness of the Great Bustard among local people and hunters. In key areas, monitoring of Great Bustards should be included in the workplans of the Wildlife Inspectorate branches of the Governmental Committee on Ecology and Environmental Protection of the Republic of Uzbekistan, as well as the workplans of Wildlife Inspectorate organisations of the relevant provinces (Jizzakh, Samarkand and Kashkadar’ya).

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