

THE GREAT BUSTARD (*OTIS TARDA* L.) POPULATION DYNAMICS IN ROMANIA

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Abstract. The paper based on archive material and field investigations, is a synthesis of the Great Bustard (*Otis tarda* L.) population dynamics in Romania, with focus on 1950, the year since when systematic observations on the species do exist. Besides, the chronological numerical evolution, and the complex causes responsible for the decline of this steppe bird, currently close to extinction in Romania, are also discussed. Not only is the Great Bustard listed among relict species, but also among the critically endangered ones.

1. INTRODUCTION

The Great Bustard is the most outstanding representative of the Eurasian steppe fauna.

An ornament of the steppes, formerly considered a true cynegetic “jewel” of Romania, it would later become simply an ornamental steppe element and eventually nothing more than a steppe symbol.

The most important trait of the Great Bustard population is number, a fundamental biostatistical element studied by the author in time and space. The Great Bustard effective is expressed in number of individuals (assessed in May by visual specimens recording method), but no numerical evidence for older periods of time does exist.

2. POPULATION DYNAMICS

In the Middle Ages, this species was “quite frequently seen” (Munteanu, 1986, p. 2), a reality mentioned also in *The Hieroglyphic History* written in 1705 by Ruling Prince Dimitrie Cantemir of Moldavia, who describes the Great Bustard as “a very common species” in that Principality (Filipașcu, 1969). In the first part of the 19th century, the Bărăgan Plain was crossed only by “the mail coach, by merchants and by Great Bustard hunters” (Mihăilescu, 1921, p. 264). Between 1820 and 1830, Great Bustard specimens could be seen “in almost all of Moldavia’s plains” noted in his *Memoirs* Nicolae Șuțu, Ruling Prince of Moldavia (Revista Carpații, No. 3/1947, p. 49).

In the late 19th and early 20th centuries, “numerous Great Bustard birds populated all the plains of the country” (Munteanu, 1979, p. 155). In his work, *The Vertebrate Fauna of Transylvania*, printed in 1856, E. A. Bielz contends that this bird “lives in the broad plains, often in large flocks, generally near Orăștie, Turda and other towns, but also close to the Town of Sibiu, nesting there, as well” (p. 110). In 1884, in Transylvania and Banat, a number of 57 birds were hunted in the counties of Arad – 31, Bihor – 1, Brașov – 2, Caraș – 10, Satu Mare – 2, Sălaj – 2 and Timiș – 9 (Olteanu, 1934). Also in the lowlands of eastern Bucovina, the Great Bustard did exist before 1900 (Grigorovitzza, 1908).

In the early 20th century, the Great Bustard numbered about 5,000 individuals in the present territory of Romania (Munteanu, 1986).

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In 1874, Cornescu mentioned “still very many Great Bustards” in the counties of Vlașca, Teleorman, Romanai and “particularly” in Ialomița (p. 132). In 1897, Georgescu noted the presence of “large Great Bustards flocks” (p. 268). Munteanu pointed out that, in 1907, the species was widespread in the West Plain, the effective amounting to “at least 1,300 specimens” (1979, p. 155).

However, beginning with the end of the 19th century, cynegetic and faunistic publications would draw attention to the diminution of some animal species, the Great Bustard being among them. As a matter of fact, until 1920, “the situation of this bird was not yet hopeless” (Nedici, 1940, p. 718).

Before the First World War, large numbers of Great Bustards occupied much of the Bărăgan Plain and Central Dobrogea (Cotta, Bodea, 1969). In 1924, Rosetti-Bălănescu affirmed that “numerous Great Bustards still exist” in Moldavia, Muntenia (Walachia), Dobrogea and southern Bessarabia (pp. 212–213). The following year, Cornescu spoke of lots of Great Bustards in Bessarabia, Dobrogea, the Bărăgan and Burnas Plains, as well as on the edge between Vlașca, Argeș and Teleorman counties. Also Cornescu wrote: “I have many times seen Great Bustards flying over Bucharest, from west to east (in October)” (1925, p. 66). In the first part of the inter-war period the species disappeared from Transylvania.

Subsequently, it became clear that: “the number of Great Bustards is seen to decrease ever more by the year. This sad reality is obvious particularly on the Bărăgan side of Ialomița County and in the lowlands of Dobrogea, where one may go scores of kilometres in the most beautiful steppe regions without meeting any Great Bustard” (Revista Vânătorilor, 1936, No. 5, p. 1).

“Roundabout 1930–1935, the numerical and territorial decline of the Great Bustard was already an accomplished fact” (Munteanu, 1986, p. 2). Although “the bird did not bother anyone” its disappearance was “dramatic”, said Botezat in 1944 (p. 224).

In 1939, “the richest region populated with Great Bustards was Dobrogea. Part of the Ialomița birds winter in Dobrogea”, noted Comșia (1939, p. 107), but “many of them are coming in winter from the Russian steppes, being chased by the Crivăț wind” (Vasiliu and Rodewald, 1940, p. 89). In 1946, Călinescu warned that Great Bustard specimens “kept decreasing” (p. 81); in 1947, Cotta said that the species was “seriously endangered by the intensification of crop cultures also in the central Bărăgan Plain” (p. 11).

In 1949, “large numbers” of Great Bustards existed in the Olt, Teleorman, Vlașca, Brăila counties and in Dobrogea. “Fairly often” they could be seen in the counties of Arad and Bihor, “new flocks, yet not that numerous as in the past, started coming” to Ialomița County (Rudescu, 1950, p. 9).

In the south of Dobrogea “large flocks use to come in winter from the former Socialist Republic of Moldova, especially when the Crivăț wind is blowing, flying across the Danube Delta to shelter southward from the cold winds” (Rudescu, 1950, p. 9). In March they would flow back north across the Danube Delta, or along the Black Sea coast. Also from Ialomița County birds would often fly in winter to Bulgaria and return in springtime.

In 1940–1950, half the national effective of the species lived in Dobrogea (Filipașcu, 1976). After 1950, Great Bustard populations kept decreasing (no more than ca 700 individuals being left in Romania). This situation made Pușcariu in 1952 uphold that “the species was endangered” (p. 27). In 1953, the “Vânătorul” periodical journal wrote, “just by its way of life, the future of the Great Bustard seems rather dim to us” (No. 4, p. 4).

The Great Bustard population dynamics between 1950 and 1996 (Fig. 1) is assessed based on published data (Barbu, 1958, 1962, 1976, 1978, 1980, 1982, 1984; Munteanu, 1979, 2005; Popescu *et al.*, 1961; Stănescu and Popovici–Vigo, 1991; Alaci, 1998; Negruțiu *et al.*, 2000), but more especially on original data found by the author in the archives of some central and local forestry and cynegetic institutions.

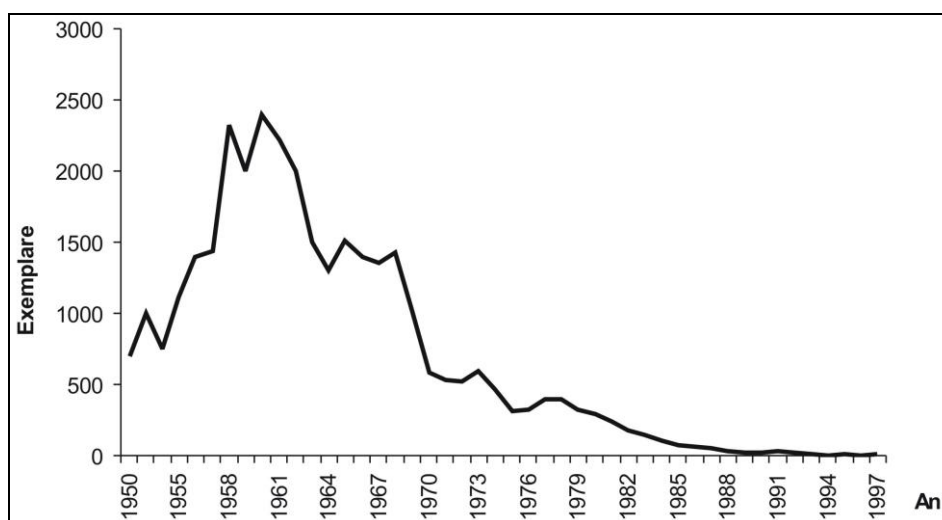


Fig. 1 – The dynamics of the Great Bustard population in Romania between 1950 and 1997 (specimens).

The collectivisation of agriculture and the resumption of big cultures brought about more calm on the ground, favouring the growth of Great Bustard effectives, that trend continuing for nearly ten years (1950–1960), except for 1954, when a heavy February snowstorm destroyed one-fourth of the flock. All in all, the above decade witnessed a 3.4 time increase of the species.

In 1955, the Great Bustard could be seen in 9 of the former administrative regions of Romania (Barbu, 1976, Table 1), most of them in the Romanian Plain (63%), Dobrogea (21%) and the West Plain (16%).

Table 1

Great Bustard effectives by administrative region in 1955 (specimens).

Region	București	Dobrogea	Oltenia	Argeș	Banat	Galați	Crișana	Ploiești	Maramureș
Sp.	310	240	161	130	114	60	50	40	5

On the 1st of April 1957, Constanța Region had over 500 individuals, Timișoara and Oradea some 400 (Barbu, 1958). That same year, Rosetti-Bălănescu recalled, the presence of a flock of 150 birds in Teleorman County.

In the spring of 1958, the effective had 2,320 individuals (Popescu *et al.*, 1961) which, in terms of physical-geographical regions, was proportionally similar to that in 1955 (Table 2). The most numerous Great Bustard population in Romania (2,400 specimens) was registered in 1960, steadily regressing afterwards.

Table 2

Great Bustard effectives by administrative region in 1958 (specimens)

Region	Argeș	București	Dobrogea	Banat	Oltenia	Crișana	Galați	Maramureș	Ploiești
Sp.	665	580	505	200	180	140	35	10	5

In 1961, an increase versus previous years was recorded in the former regions of Pitești and Banat, while Dobrogea registered a decrease (Almășan, Popescu, 1963). In Bucharest region, the number of Great Bustards in 1967 was half that of 1965, although not even 1% of the effective had been hunted (Barbu, 1968).

In 1968, there were 1,423 birds in Romania (Table 3), the effective having diminished 4.1 times within the 1960–1970 interval. That same year, Rosetti-Bălănescu recalled the presence of a flock of 150 birds in Teleorman County.

Table 3

Great Bustard effectives by county in 1968 (specimens)

County	Olt	Teleorman	Timiș	Arad	Dolj	Brăila	Dâmbovița	Argeș	Bihor	Ilfov	Ialomița
Sp.	840	240	115	110	48	20	10	10	10	10	10

Having in view the Great Bustards limited ecological plasticity and failure to get adapted to new environments “the risk for its disappearance is very great, indeed”, warned Radu in 1972 (p. 55).

In 1978, the species numbered only 401 specimens (Table 4).

Table 4

Great Bustard effectives by county in 1978 (specimens)

County	Teleorman	Olt	Timiș	Arad	Bihor	Dolj	Ilfov
Sp.	134	114	96	33	10	8	6

Over a lapse of ten years (1971–1980) the population dropped by 45%, and by 14 times, between 1980 and 1989.

In 1990, there were 109 times fewer birds than in 1960, under 20 after 1992 (1993: 9 in Timiș County and 2 in Olt County), eventually becoming simply a symbolic species. Noteworthy, mild population increases were registered in 1965, 1973 and 1977 compared to the previous years, due largely to greater local protection of the species.

Between 1974 and 1986, most specimens lived in the counties of Teleorman, Olt and Timiș, the largest Great Bustard presence (until 1996) occurring in Timiș County.

With human activities progressing in the Great Bustard’s territories, the species population dynamics registered steep numerical decreases in the 1980s, only 20–30 individuals being left in 1991 (Almășan) and no more than 15 in 1994 (Weber *et al.*); the last specimens were officially registered in 1997.

Until 1997, the Great Bustard had been a stable species in Romania.

Later on, erratic specimens would appear in all the months of the year. Solitary individuals, or small unstable flocks, were observed over longer or shorter periods of time in various places.

The past few years witnessed them near the western frontier (Bihor and Timiș counties), having arrived temporarily from Hungary and Serbia. Occasionally, there were years when the bird would fly from the Ukraine into Dobrogea and Muntenia (Walachia).

This confirmed Barbu’s finding in 1982: “If the Great Bustards decline went on at this rate, the situation would shortly be alarming, so that seeing any bird around the year 2000 would be quite an exception” (p. 10).

In the inter-war period, the stable population became extinct in Transylvania, in the 1940–1950s in Moldavia, in the 1960s in Dobrogea, in the 1980s in Muntenia, in the 1990s in Oltenia and Banat, being on the “verge of extinction” in Crișana.

3. WHAT CAUSED THE GREAT BUSTARDS NUMERICAL DECREASE?

The cause was man-made, whether directly (hunting, poaching), or indirectly (changing or destroying habitats, land managements, expansion of settlements and ways of communication).

As far back as 1874, Cornescu warned on the disappearance of the species in Romania.

Manu would even state that Great Bustards are “horified by the presence of man” (1927, p. 211). Intense human activity steadily altered and narrowed down the area in which the bird lived, numbers decreasing. What man did was to reduce its vital area.

In the last 150 years, the steppe vegetation would permanently make room for agriculture (primarily by fallowing natural meadows and turning them into arable land). “Turning the steppe into agro-systems was not detrimental to this species which did easily adapt itself to this new type of habitat” (Munteanu, 1979, p. 158).

Before 1920, great estates proved favourable habitats, because “once the soil was ploughed and sown, the birds could live almost undisturbed until harvest time, they could lay eggs, hatch them and raise the young. But things would change following the Land Reform made after the First World War; wheat and maize crops, alternating almost everywhere in the fields, meant continuous and varied agricultural works, basically the permanent presence of people, cattle and dogs in the field from snowmelt to the end of May, just the time when Great Bustards start hatching” (Manu, 1927, p. 211).

Not only was the quiet of their habitat disturbed, but in many regions the locals would find their nests, collect the eggs and eat them. Even the young, which could not yet fly, would sometimes be captured.

Neither the inter-war restrictions imposed by the Hunting Direction (e.g. shorter hunting season, exclusively bullet-hunting, banning the catching of the bird on glazed soil) had any effect.

In the first 20-century decades, overhunting and poaching diminished the population.

Initially, hunting was an all-year activity, it affecting both sexes. Intense poaching on glazed soil had “devastating” consequences for the bird (Călinescu, 1946, p. 96). Poaching was going on even at night, poachers using tractor headlights (e.g. in Ialomița County).

The collectivisation of agriculture (hence big crop cultures) helped for a time the population to recover (there was quiet and food), but once it acquired an intensive character (through mechanisation and chemicalisation), the population would again decline, this time irreversibly.

Agriculture, increasingly more mechanised and chemically fertilised after 1960, deeply altered the Great Bustard’s habitat, destroying its eggs and the young in the nest. Before 1955, over 95% of the land was cultivated by hand and driven by animals, fertilisers being exclusively of biological origin. Tractors and agricultural machines affected the nests and the young that did not yet fly.

Chemicals reduced the agro-systems’ trophic potential (destroying the spontaneous flora and the invertebrates, primarily the insects), so that Great Bustards could hardly get the necessary food, weakening their organisms and depleting their fertility.

At the same time, hoenig cultures (especially maize after 1880) were extended, but the Great Bustard could not get accustomed to the maize crop, so the effective diminished.

Intense grazing in the lowlands contributed both indirectly (by destroying hatching nests and the young deserted by the adults), and directly (by the presence of shepherd dogs).

The increasing human population, the creation of new villages in the lowlands and the expansion of existing ones were other factors that depleted the number of birds.

In the 19th century, the Great Bustard’s area was fragmented by the extension of the railway network; in the 20th century, it was modernised and intensified road-and-rail circulation that did it. Constructions and/or installations that covered the bird’s habitat (farms, silos, enterprises) made it eventually leave its territories. Even the noise produced by air flights, when spreading chemicals on cultivated grounds, had a negative impact. The planting of forest belts (in the 1950s), the expansion of drilling-and-draining works and irrigation works in the 1950–1980s) in areas where Great Bustards still lived affected their habitat (irrigations producing a humid microclimate improper for the young).

In addition, the species was little prolific (1–2, very seldom 3 eggs/year), fragility of the chicks were fragile in the first days following eclosion and more sensitive to cold in the humid and cold

spring time. The low proportion of males (caused by overhunting), hence depleted birth-rates had a negative impact on the Great Bustard populations.

A lesser influence had the foxes, badgers, stray dogs, or the shepherd dogs which used to catch the eggs and the young when the female had left the nest (in search for food, or whenever disturbed), accidents caused by the electricity network (e.g. in Teleorman, Olt and Giurgiu counties), noise pollution (due to the mechanisation of agriculture and greater road-and-rail circulation) (hence, more and louder noise) and not least, the exploitation of some natural resources (hydrocarbons).

The man-made changes in the lowland ecosystem prevented the Great Bustard "from adjusting its ancestral way of life fast enough, the bird being endangered as early as the egg stage", considered Alaci (2009, p. 21), moreover "it cannot get adapted to the progress of civilisation and human population increase" (Cotta, 1973, p. 104).

As a species, the Great Bustard was in a difficult situation, despite the female decennial status of monument of nature.

The data presented in this paper illustrate a case of reduced biodiversity in Romania.

4. CONCLUSIONS

An anthropophobic bird, very cautious and vigilant, the Great Bustard has been one of the species most seriously affected by human activity. Whereas in early 20th century it could be seen in the lowlands and in some low tablelands of all the Romanian provinces, later on its area kept shrinking, and getting increasingly more fragmented.

The species' effective would decrease numerically in the four decades of the 20th century.

The 2.8 time increase (from 700 to 2,400 individuals) between 1950 and 1960 was followed by steady decreases down to 1,500 specimens in 1963, 1,400 (1966), 1,030 (1969), 590 (1973), 401 (1978), 239 (1981), 104 (1984), 30 (1988), 11 (1993) to no more than 6 individuals in 1997. While a numerous presence in the lowlands of Romania in the early 20th century, seven decades later it was found in 11 counties (1968), then in seven (1978), becoming a stable zoo-element in two counties (1993), and eventually in one county alone (1997).

In our opinion, the Great Bustard was a stabile species in Romania's fauna until 1997, subsequently solitary, or small unstable flocks of birds would occasionally appear near the west frontier (flowing in from Hungary, less so from Serbia), and in the south of Romania (coming from the Ukraine).

Today, the Great Bustard is extremely rare (on the verge of extinction) in this country, the last small area where the species is occasionally seen is west Salonta (Bihor County), individuals originating from populations in Hungary.

The Great Bustard falls into the category of relict species (Drugescu, 1994), critically endangered (Munteanu, 2005).

What has primarily led to its disappearance is the excessive human presence in its original habitat and poaching. Other causes: very low reproduction rate, sexual maturity at late age, and the hunting of the most vigorous cocks, thus producing the genetic degradation of the species.

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