A historical overview of Little Bustard *Tetrax tetrax* records in Armenia suggests a need for improved monitoring and conservation measures

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Summary: There are very few records of the nationally protected Little Bustard *Tetrax tetrax* (Vulnerable) in Armenia, either from hunting incidents or in the National Bird Monitoring Program (2003–2024). This suggests a need to increase monitoring efforts along the western and south-western borders of Armenia during autumn migration in order to identify known and still suitable areas for the species. Illegal hunting appears to be the major threat to the species. To protect visiting Little Bustards in Armenia, it is necessary to officially adopt the known and still suitable areas as Emerald Sites and exclude them from Public Hunting Lands, eliminating the presence of hunters in such areas.

INTRODUCTION

Armenia is a landlocked mountainous country with an area of 29 743 km^2 and an elevation range from 375 to 4090 m asl. Thanks to this significant elevation span, various climatic conditions create a high diversity of landscapes, including semi-desert, juniper woodland, deciduous forest, mountain steppe and meadows, and subalpine areas. The terrain includes flat plains, mountain plateaus and rugged areas, such as deep canyons, cliffs and rocky outcrops (Aghababyan *et al* 2015).

The Little Bustard *Tetrax tetrax* was first reported for Armenia in the summer of 1920 in the northern regions of the country (Leister & Sosnin 1942). Later, one specimen was taken in October 1926 near lake Sevan, and two in November 1928 and November 1929 on the Ararat plain (Leister & Sosnin 1942). After almost 70 years, the next set of records of the species came out of the international 'Birds of Armenia' project that provided an inventory of the avian fauna of Armenia through field surveys conducted from 1993 to 1997 (Adamian & Klem 1999). The Little Bustard was recorded on the Ararat plain in November 1994 (single bird), August 1997 (4–5 birds), and September 1997 (30 birds), while two birds were recorded along the Araks river near Araksavan village in August 1997, these few records leading to the species being considered a casual migrant in the country (Adamian & Klem 1999). Another two birds were seen in the vicinity of lake Arpi by a group of ornithologists in 2000 (Aghasyan & Kalashian 2010). Based on these data, the Little Bustard was assessed as Vulnerable B2ab(ii)+Ca(i)+D1 in the last edition of the National Red Data Book of Armenia (Aghasyan & Kalashian 2010), which means that hunting of the species is prohibited.

A perceived increase in Little Bustard numbers led to the creation of the Sardarapat Important Bird and Biodiversity Area (IBA) in south-western Armenia in 2002 (BirdLife International 2025) (Plates 1–2). The area includes the westernmost part of the Ararat plain and part of the Araks river valley. The species was used as a trigger along with the Great Bustard *Otis tarda*. The number of Little Bustards at this site has been estimated to be 1000–1500 individuals in 1995, based on evidence in Adamian & Klem (1999) and interviews with local hunters. However, there are no reports of such large numbers of Little Bustards from this area, either in published literature or in unpublished observations; the estimate seems unjustified and requires further investigation.

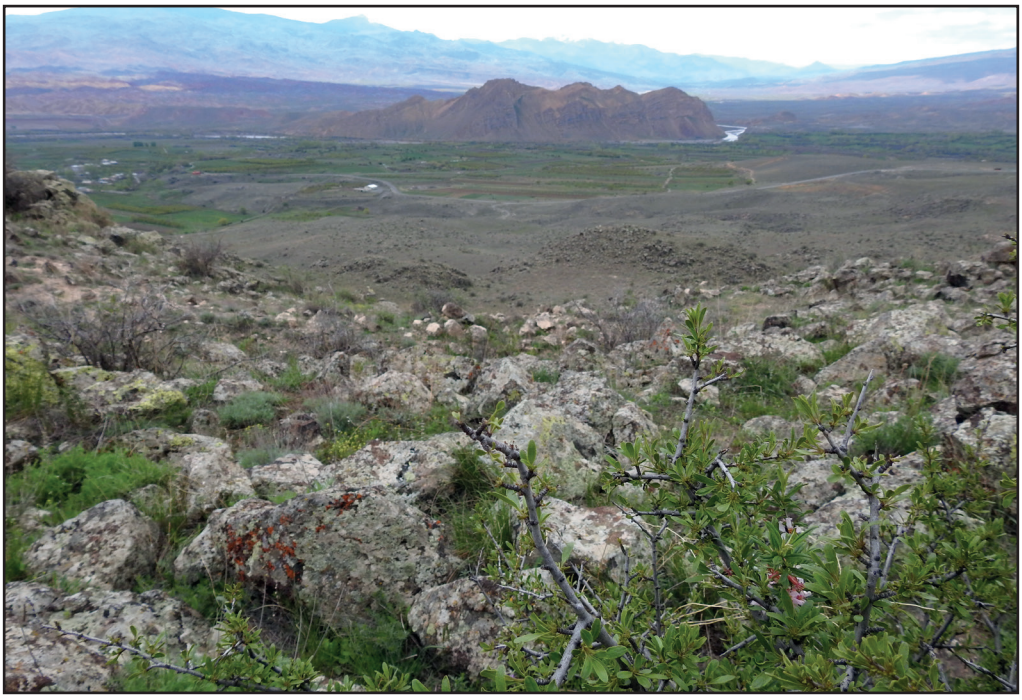

Plate 1. Semidesert in Sardarapat IBA. © *Karen Aghababyan*

Plate 2. Semi-desert in Sardarapat IBA. © *Karen Aghababyan*

METHODS

I present an assessment of the status of Little Bustards in Armenia which draws on the results of the National Bird Monitoring Program (NBM), which was launched in 2003. It started as an initiative of a private individual, and since 2015 has been implemented by the BirdLinks Armenia NGO. The NBM subdivided Armenia into 374 10-km^2 squares. As of 2024, 328 of these have been surveyed (88%); the remaining 46 squares (12%) have not been visited due to their proximity to the international border, where access is restricted. Within the covered squares, 57 (15%) have been visited every year since 2003, 91 (24%) were visited at least every three years, and the remaining 180 (48%) were visited opportunistically at least three times in total (Figure 1). Surveys for the NBM are undertaken intensively at the beginning of the breeding season, from 20 April to 15 June, when up to three teams are in the field every day. In other seasons the frequency of field visits is about 2–3 times lower.

In each square, data on birds were obtained from two different sources: incidental observations and standardised counts (Voříšek *et al*. 2008). Incidental observations were provided by birdwatchers and accepted as long as they conformed to minimum data requirements: accurate species identification, observation date, geographical coordinates, name of nearest locality (human settlement, mountain, historical site, etc.), breeding code (likelihood of breeding locally based on the bird's behaviour), observer name and contact details. Standardised counts were conducted by both ornithologists and skilled birdwatchers. These were carried out during a fixed period of 1 or 2 hours when an observer slowly walked along a transect route, counting all the birds within 100 m on either side of the transect (hence covering a strip 200 m wide). As far as possible, surveys were done at the time of the day when birds were most active (as a rule, early morning) in favourable weather conditions, such as the absence of rain, and wind below Beaufort Force 3. All data were collated at the end of each counting season, entered into a database and double-checked.

In addition to data from the NBM, I also used opportunistic records obtained from the Armenian Ornithological Society and from foreign birdwatchers who visit Armenia. These were obtained through direct communication and through the eBird Basic Dataset (2024) and Armenia.Observation.Org (2024) platforms.

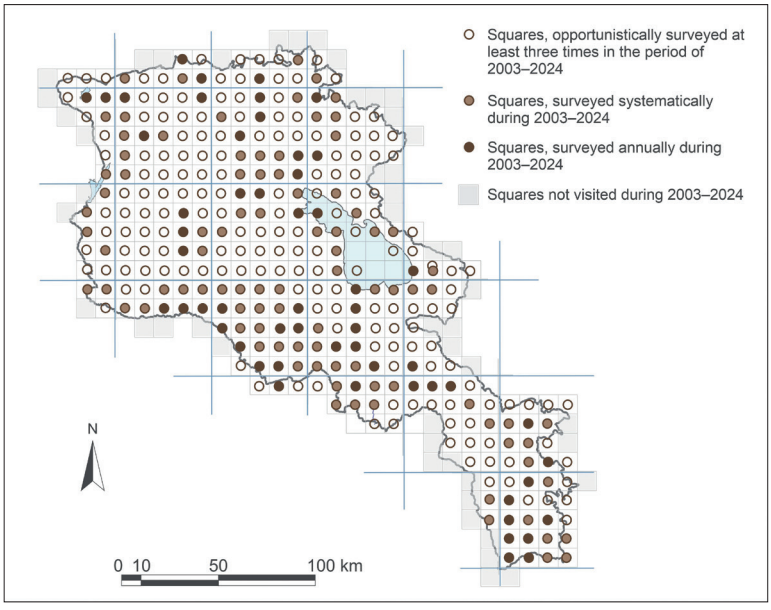

Figure 1. Survey coverage within Armenia within the framework of the National Birds Monitoring Program (BirdLinks Armenia 2019).

RESULTS

Distribution and population estimates

All records of Little Bustards in Armenia from 1926 to 2002 and from 2003 to 2024 (NBM survey period; surveys were not conducted during the COVID19 pandemic) were from 11 sites in the centre, west and south-west of the country (Figure 2).

Although spanning twenty years, the NBM surveys did not record the Little Bustard in Armenia. However, two specimens were reported by the Museum of Armenian Nature, which obtained them from local hunters. One of these was taken near Karakert village in October 2013 (point 10 in Figure 2), and the other near Argina village in November 2014 (point 11 in Figure 2). The habitats where the birds were recorded are primarily dry semi-deserts dominated by *Artemisia fragrans* and *Salsola* sp (KA pers obs).

The overall estimation of the species' population from 1950 to 2023 is presented in Table 1. As data are scarce, determining the population trend is challenging.

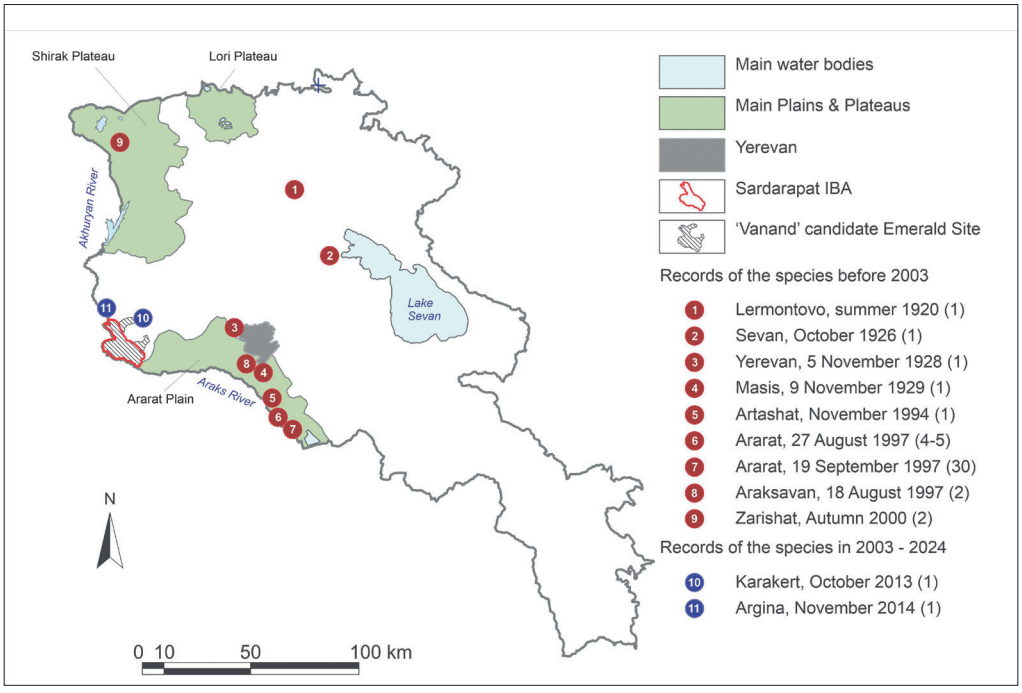

Figure 2. Records of Little Bustard *Tetrax tetrax* in Armenia. Numbers in parentheses indicate the number of individual birds observed at the site.

Threats and conservation actions

Considering the scarcity of records of the species in Armenia, it is hard to evaluate the threats. Both birds recorded in 2013 and 2014 were illegally hunted, and poaching remains a potential threat to Little Bustards entering the country. Hunting in Armenia is allowed in the Public Hunting Lands designated by the Ministry of Environment. There is an approved list of permitted game bird species which is revised annually. Nevertheless, illegal hunting of many protected bird species is relatively frequent (Aghababyan *et al* 2023). One of the reasons for illegal hunting is the poor education of hunters and the absence of mandatory tests to assess their knowledge of game birds and red-listed species,

as well as their skills in field identification (Aghababyan *et al* 2023). Illegal hunting of Little Bustards probably takes place opportunistically or accidentally while hunters legally target Chukar *Alectoris chukar* and Calandra Lark *Melanocorypha calandra* in the Public Hunting Lands. Most of the hunters from local villages know the Great Bustard (also poached illegally), Chukar, and Calandra Lark very well, and so the Little Bustard may also be seen as another large bird which would be a source of meat. Some local hunters recognise the species, but are not aware of its conservation status.

Agricultural intensification and residential development also play a role in constraining potential habitat for the Little Bustard. The Ararat plain, where the species was recorded in the 1920s and 1990s, was thoroughly transformed by agriculture during the Soviet period and further in the 2000s through ongoing urbanisation, resulting in its fragmentation into fields and semi-urban areas.

The candidate Emerald Site 'Vanand', adjacent to the Ararat plain, is identified for official protection under the Bern Convention (Fayvush *et al* 2016). Additionally, the Little Bustard was considered a trigger species for Sardarapat IBA (which overlaps with Emerald Site 'Vanand') based on expert assessment (BirdLife International 2025), although as mentioned above, this assessment may have been incorrect.

Table 1. Population estimates and trends for the Little Bustard in Armenia. 'Migration' covers pre-migratory gatherings and stopover flocks. Quality of estimate: 1 = low, 5 = high. Ins data = insufficient data.

Seasont	Number of birds	Important sites	Quality of estimate	Population estimate and trend			
				1950–1990	1990–2020	2020–2023	1950–2023
Breeding	0	0	5	0	0	0	0
Migration	10–100	3	3	10–30 Ins data	10–50 Ins data	0–10 Ins data	10–100 Ins data
Wintering	0	0	4	0	0	0	0

DISCUSSION

Little Bustard was scarcely recorded in Armenia from 2003 to 2024, despite the increase in ornithological monitoring supported by the development of citizen science in that period. The species was never reported through the NBM scheme and the only records from that time are from hunters who illegally poached the bird. The scarcity of records can be partly related to the decline of the breeding population of this species in the areas north of Armenia, as the overall population, especially in western Russia, is estimated to be experiencing a moderate decline (BirdLife International 2018). Also, it is possible that the birds observed on the Ararat plain come to Armenia from Türkiye, where the breeding population is scarce already and is estimated at 5–50 breeding males (BirdLife International 2015, Morales & Bretagnolle 2022). It is also possible that birds now prefer flying along the western and then south-western borders of Armenia, avoiding the urbanised Ararat plain. The westernmost point where the species was recorded in 2014 (point 11 in Figure 2) is located in the border zone which is administratively difficult to access, resulting in only occasional visits by ornithologists and citizen scientists. Nevertheless, hunters and fishermen continue to apply for and obtain special permits to enter this area.

In addition, there is little survey effort during autumn migration along the western and south-western borders of Armenia, as ornithologists and citizen scientists usually concentrate their efforts during this season on the wetlands of the Ararat plain, lake Arpi (north-west Armenia), Lori plateau (north), and lake Sevan (Figure 2). It is also possible that we miss the migration of Little Bustards because of a spatiotemporal gap in our

efforts, as we finalise the autumn migration counts in October and then begin wintering bird counts in late November: historical evidence shows that many birds fly through Armenia in November.

If the lack of records of Little Bustards is due in part to limited and insufficiently targeted survey efforts, the NBM must be expanded to the sites along Armenia's western and south-western borders from September to November and also involve hunters and fishermen. Such an expansion would also benefit the counts of other migratory birds, such as Great Bustards, raptors and cranes. Also, considering the recent reports of large numbers of wintering Little Bustards in Azerbaijan (Farajli 2025) it might be worth monitoring flatter areas at the north-eastern corner of Armenia (as the rest of the areas along the eastern border are characterised by rugged high mountains). In all regions the involvement of hunters in surveys might also have positive conservation effects, as it can improve their knowledge of the species and shift their interest from shooting to surveying.

Moreover, to increase the protection of migrating Little Bustards in Armenia, it is necessary to (1) improve the conditions of hunters' licensing by introducing a new exam; (2) exclude from the Public Hunting Lands all areas of international conservation importance, such as Important Bird Areas and Emerald Sites (Aghababyan *et al* 2023); (3) recognise the candidate Emerald Site 'Vanand' and develop a management plan for it, where birdwatching can become an essential component in increasing the sustainability of the local communities; and (4) increase cooperation with the scientific communities of the countries where the species is breeding in order to implement satellite telemetry programs and better understand the pattern of the species' migration through Armenia.

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