UN environment programme

CMS

CONVENTION ON MIGRATORY SPECIES

UNEP/CMS/COP15/Doc.26.4.2/Annex 1
4 November 2025
Original: English

15th MEETING OF THE CONFERENCE OF THE PARTIES
Campo Grande, Brazil, 23 to 29 March 2026
Agenda Item 26.4.2

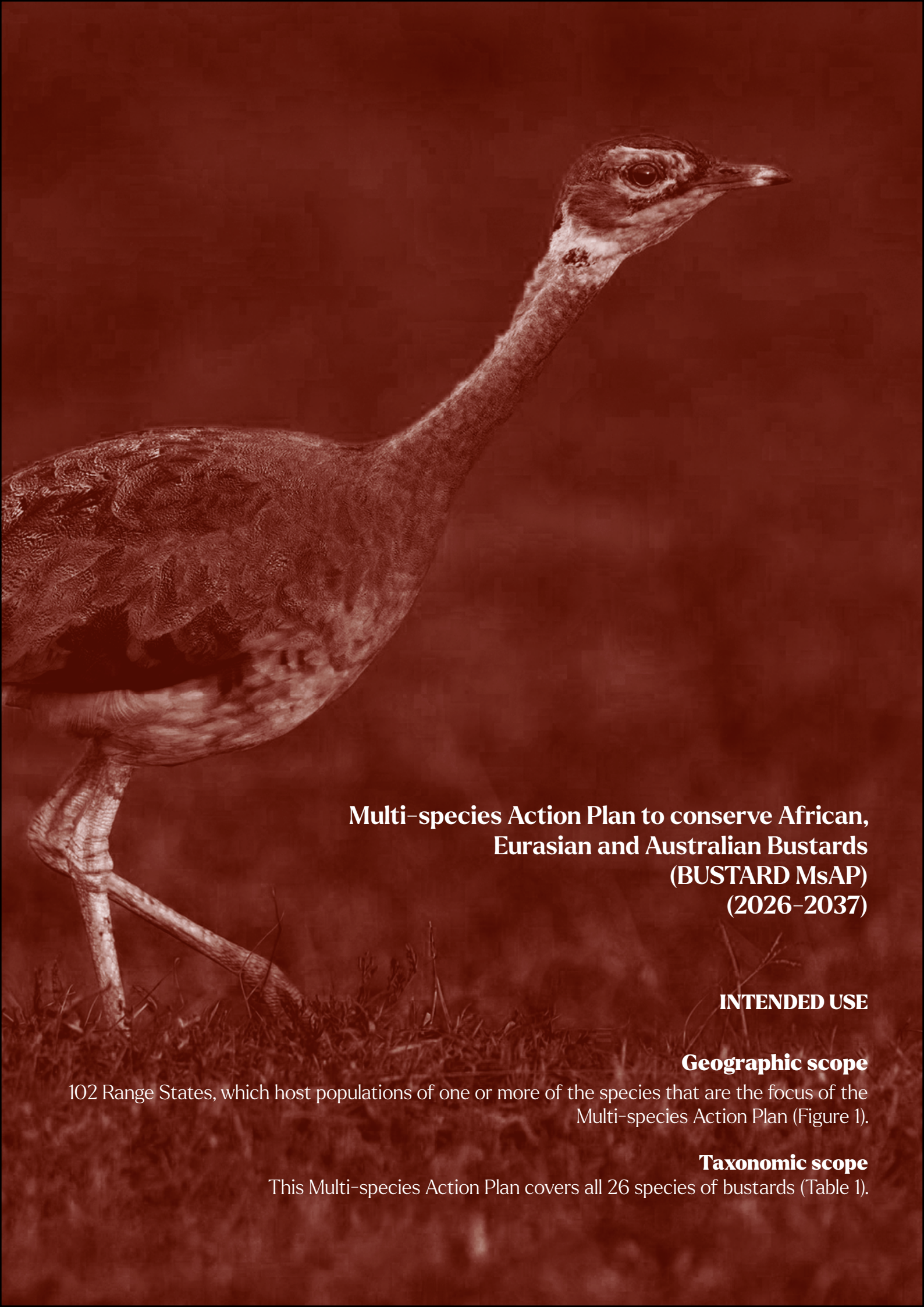
MULTI-SPECIES ACTION PLAN TO CONSERVE AFRICAN, EURASIAN AND AUSTRALIAN BUSTARDS (BUSTARD MSAP) (2026-2037)

Multi-species Action Plan to conserve African, Eurasian and Australian Bustards

BUSTARD

Multi-species Action Plan

BWB Bustards Without Borders · CMS · African Eurasian Migratory Landbirds · WWF · Agrárminisztérium · Természetvédelem · TB Raab Technisches Büro für Biologie · IUCN · SSC Species Survival Commission · IUCN SSC Bustard Specialist Group · BirdLife International



Multi-species Action Plan to conserve African, Eurasian and Australian Bustards (BUSTARD MsAP) (2026-2037)

INTENDED USE

Geographic scope

102 Range States, which host populations of one or more of the species that are the focus of the Multi-species Action Plan (Figure 1).

Taxonomic scope

This Multi-species Action Plan covers all 26 species of bustards (Table 1).

Recommended Citation:
Bustards Without Borders. Co-editors: Eva Fejes & Mimi Kessler. 2025. Multi-species Action Plan to Conserve African, Eurasian and Australian Bustards (Bustards MsAP). CMS Technical Series Publication, Bonn, Germany. https://www.cms.int/en/publications/technical-series.

CONTRIBUTIONS

Compilers

Coordination Unit

*Éva Fejes – Ministry of Agriculture, Hungary
*Dr. Mimi Kessler – IUCN SSC Bustard Specialist Group, Prince Mohammed bin Salman Houbara Conservation Foundation & Prince Mohammed bin Salman Royal Reserve
Muhammad Jamshed Iqbal Chaudhry – WWF-Pakistan
Dr. Rainer Raab – TB Raab GmbH

* Chief Editors, contributed equally

Drafting of text

Mia Bausch

Regional Coordinators

Southern Africa: Mattheuns Pretorius
Eastern Africa: Dr. Titus Imboma
Western Africa: Michael Colley and Dr. Samuel Ivande
Northern Africa: Dr. Sidi Imad Cherkaoui
Southwest Asia: Dr. Mimi Kessler
Central Asia: Dr. Maxim Koshkin
South Asia: Muhammad Jamshed Iqbal Chaudhry
Southeast Asia and Australia: Saurav Lamichhane
Europe: Dr. Rainer Raab
AEMLAP Representatives: Dr. Reto Spaar, Dr. Alain Jacot

Contributors

Shared regional information; reviewed text

Region 1, Southern Africa

Ann Scott (NA)
Mike Scott (NA)

Region 2, Eastern Africa

Alain Laurent (DJ)
Claudien Nsabagasani (RW)
Daha Hussein (SO)
Drew Bantlin (RW)
Elie Sinayitutse (RW)
Elies Fadzai (RW)
Gael R. Vande Weghe (RW)
Joseph Bizimungu (BI)
Michael Kibule (UG)
Neil Baker (TZ)
Osman Gedow Amir (SO)
Paul Evangelista (SO)
Yosief Awalom (ER)

Region 3, Western Africa

Abdulhamid Ibrahim (NG)
Adama Nana (BF)
Aissatou Yvette Diallo Dabo (SN)
Dembo Jatta (GM)
Ekoun Michael Konan (CI)
Haruna Mohammed Abubakar (NG)
Joost Brower (NE)
Samson Da'an (NG)
Stella Egbe (NG)
Mohamed Avoulwatt (MR)
Talatu Tende (NG)
Tim Wacher (NE)
Ulf Ottosson (NG)

Region 4, Northern Africa

Abdelwahab Chedad (DZ)
Brahim Chergui Hemiani (MA)
Hichem Azefzef (TN)
Kaled Etayeb (LY)
Mbarek Boumaaza (MA)
Mohamed Chaibani (MR)
Mohamed Habib (EG)
Mohamed Jabran (MA)
Othman Zagdane (MA)
Riadh Moulaï (DZ)
Saleh Buirzayqah (LY)
Zakaria Alaozar (MA)

Region 5, SW Asia

Abdulla AlKaabi (BH)
AbdulRahman Al-Sirhan (KW)
Ahmad Aidek (SY)
Asaf Mayrose (IL)

Eli Haviv (IL)
Fadhle AlBalum (YE)
Fares Khoury (JO)
Fouad Itani (LB)
İbrahim Kaan Özgencil (TR)
Korsh Ararat (IQ)
Maia Sarrouf Willson (OM)
Mehmet Mahir Karataş (TR)
Mohammed Shobrak (SA)
Omar AlSaghier (YE)
Oscar Campbell (AE)
Yoav Perlman (IL)
Yohay Wasserlauf (IL)

Region 6, Central & East Asia
Aleksandr Nefedov (RU, KZ)
Alexej Timoshenko (KZ)
Anton Abushin (RU)
Batmunkh Davaasuren (MN)
Dashnyam Batsuur (MN)
Evgenii Malkov (RU)
Eldar Rustamov (TU)
John Burnside (UZ)
Linda Wong (CN)
Louis Philippe Campeau (KG)
Masoud Yousefi (IR)
Mikhail Oparin (RU)
Muyang Wang (CN)
Myagmarjav Lkhagvasuren (MN)
Nial Moores (KR)
Nika Budagashvili (GE)
Oleg Goroshko (RU)
Olga Oparina (RU)
Rustam Muratov (TJ)
Tatyana Archimaeva (RU)
Tseesuren Oyun-Erdene (MN)
Uuganbayar Purevsuren (MN)
Yanjun Xu (CN)
Zulfu Farajli (AZ)

Region 7, South Asia
Asad Rahmani (IN)
Biswajit Chakdar (IN)
Devesh Gadhavi (IN)
Hillary Strasser (KH)
Ishana Thapa (NP)
Kedar Gore (IN)
Phearun Sum (KH)
Sujit Shivaji Narwade (IN)

Region 8, Australia
Jill Shephard (AU)
Mark Ziembicki (AU)

Region 9, Europe
Alexandre Vintchevski (BY)
Alfonso Godino (ES)
Ana Teresa Marques (PT)
András Schmidt (HU)
Andrea Santangeli (IT)
Anita Sučić (RS)
Attila Nagy (RO)
Borja Heredia Armada (ES)
Carlos Palacín (ES)
Cyrille Poirel (FR)
David Grabovac (RS)
David Waters (GB)
Gerard Bota Cabau (ES)
Jelena Kralj (HR)
João Gameiro (PT)
João Paulo Silva (PT)
Jozef Ridzon (SK)
Levente Kőrösi (HU)
Lorenzo Serra (IT)
Marcello Grussu (IT)
Marco Gustin (IT)
Marcus Borchert (DE)
Miklós Lóránt (HU)
Milica Mišković (RS)
Nikos Tsiopelas (GR)
Rubén Moreno-Opo Díaz-Meco (ES)
Samuel Pačenovský (SK)
Sebastian Bugariu (RO)
SEO/BirdLife (ES)
Siobhan Lewis (GB)
Stratis Bourdakis (GR)
Tim Edwards (GB)
Torsten Langgemach (DE)
Victoria Nistreanu (MD)
Vlasta Škorpíková (CZ)
Yuriy Andryushchenko (UA)

Other
Alan Lee (ZA) – shared information used for regional red listings
David Ehlers Smith (ZA) – shared information used for regional red listings
Gang Liu (CH) – shared literature
Graham Thompson (AU) – shared distribution

information
Jacky Judas (SA) – shared literature
John Burnside (SA) – shared literature
John Pallett (NA) – collected species names in regional languages
Najam Ul Huda Khan (PK) – shared information during workshop in Pakistan
Nigel Collar (UK) – reviewed content, shared literature
Samar Hussain Khan (PK) – shared information during workshop in Pakistan
Sanjo Rose (ZA) – shared information used for regional red listings
Vicky Jones (UK) – provided policy review

Supported by
Prince Mohammed bin Salman Houbara Conservation Foundation, Saudi Arabia

VOGELWARTE.CH

Eurasian Bustard Alliance
Евро-Азийн Тоодог Судлалын Холбоо
Альянс по изучению и сохранению дрофиных птиц Евразии

EUFLYNET
COST Action

LIFE EUROBUSTARD
Cross-border protection of the Great & Little Bustard

Life

NATURA 2000

This project is co-financed by the LIFE Programme of the European Union.

Workshop facilitators: WWF-Pakistan
Rab Nawaz
Jamshed Chaudhry
Zeeshan Khalid
Khurram Saeed
Maria Akhtar Abbasi
Hira Fatima
Amina Atif
Farhan Khan

References checked and compiled by Mia Bausch (TB Raab)

Design and Layout
by Slávka Urbanová (TB Raab)

Acknowledgements

The BWB Coordination Unit recognizes with appreciation the Vulture MsAP, which served an important source and inspiration for the Bustard MsAP, as well as the guidance of SAVE Vultures and the IUCN SSC Vulture Specialist Group, particularly Andre Botha and Jose Tavares, in the process of the formation of BWB.
Funders and hosts: Swiss Ornithological Institute

Content partner for Species Information Pages: Cornell Laboratory, Birds of the World, & Macaulay Library. Laura M Kammermeier, Brooke Kelley Keeney, Vanessa Claire Powell, Brian Sullivan and team, as well as photographers credited on pages xx-xx [To be edited].

Content Partner for Range Maps and Key Biodiversity Area data: BirdLife International. Mark Balman, Olivia Crowe, Tom Lambert, Tom Scott.

Maps

Maps were created using base layers from ESRI and Google Maps. Political boundaries indicated in maps herein are those of the United Nations (https://www.un.org/geospatial/about/faqs). Their use does not imply endorsement by the Convention on Migratory Species or any contributor to the Action Plan.

Maps prepared by Jochen Steindl (TB Raab)

Photograph credits (page numbers)

Lázaro Garzón: Little Bustard male (xx), César Diez González: Little Bustard female (xx,xx), Kevin Hughes: Great Bustard male (xx), Franz Josef Kovacs: Great Bustard female (xx), Stefan Hirsch: Buff-crested Bustard male (xx), Nathan Mixon: Buff-crested Bustard female (xx), Kathy

Wilk: Australian Bustard male (xx), Trevor Ross: Australian Bustard female (xx), Frédéric Bacuez: Savile's Bustard male (xx), Josep del Hoyo: Savile's Bustard female (xx), Tushar Bhagwat: Great Indian Bustard male (xx), Sunil Kini: Great Indian Bustard female (xx), Kher Issakha Kher: Nubian Bustard male (xx), Niall D Perrins: Heuglin's Bustard male (xx), Markus Lilje: Heuglin's Bustard female (xx), Joe Ndekia: Denham's Bustard male (xx), Fanis Theofanopoulos: Denham's Bustard female (xx), Egor F: Ruppell's Bustard male (xx), Eric VanderWerf: Ruppell's Bustard female (xx), Dylan Vasapolli: Karoo Bustard male (xx), Niall D Perrins: Karoo Bustard female (xx), Frédéric Bacuez: Kori Bustard male (xx), Simon Walkley: Kori Bustard female (xx), Alain Jacot: Hartlaub's Bustard male (xx), Holger Teichmann: Hartlaub's Bustard female (xx), Clayton Burne: Blue Bustard male (xx), Paula Crockett: Blue Bustard female (xx), Koren Mitchell: Ludwig's Bustard male (xx), Matt Pretorius: Ludwig's Bustard female (xx), Roger Clark: Arabian Bustard male (xx), Jacky Judas: Arabian Bustard female (xx), Dorian Anderson: White-bellied Bustard male (xx), White-bellied Bustard female (xx), Markus Craig: Northern Black Bustard male (xx), Mhairi McFarlane: Northern Black Bustard female (xx), Regard Van Dyk: Southern Black Bustard male (xx), Tomáš Grim: Southern Black Bustard female (xx), Jan Andersson: Red-crested Bustard male (xx), Jacob Henry: Red-crested Bustard female (xx), Jus Pérez Martín: African Houbara male (xx), Luis Albero: African Houbara female (xx), Andrey Kovalenko: Asian Houbara male (xx), Subramanya C K: Asian Houbara female (xx), Nik Borrow: Little Brown Bustard male (xx), Michel Watelet: Little Brown Bustard female (xx), Per Alström: Black-bellied Bustard male (xx), Black-bellied Bustard female (xx), Manish Panchal: Bengal Florican male (xx), Savithri Singh: Bengal Florican female (xx), Gobind Sagar Bhardwaj: Lesser Florican male (xx), Nirav Bhatt: Lesser Florican female (xx). Maxim Koshkin: Asian houbara (xx, xx), Ruan Prinsloo: Red-crested Bustard (Annex 1, Region 1), Robert Thibault: Arabian Bustard (Annex 1, Region 2), Michael Ortner: White-bellied Bustard (Annex 1, Region 3), Louis Albero: African Houbara (Annex 1, Region 4), John Burnside: Asian Houbara (Annex 1, Region 5), Jargalsaikhan Lamjav: Eastern Great Bustard (Annex 1, Region 6), John Sterling: Great Indian Bustard (Annex 1, Region 7), Chris Hill: Australian Bustard (Annex 1, Region 8), Franz Josef Kovacs: Great Bustard (Annex 1, Region 9).

ACRONYMS AND ABBREVIATIONS

AEMLAP – African-Eurasian Migratory Landbirds Action Plan

BFD – Bird Flight Diverter

BWB – Bustards Without Borders

CA – Conservation Area

CBD – Convention on Biological Diversity

CMS – Convention on the Conservation of Migratory Species of Wild Animals

COP – Conference of the Parties

CU – Coordination Unit of BWB

EIA – Environmental Impact Assessment

ESIA – Environmental and Social Impact Assessment

EU – European Union

EU CAP – Common Agricultural Policy of the European Union

GBF – Kunming-Montreal Global Biodiversity Framework

GR – Game Reserve

HV – High voltage

IBA – Important Bird Area

IBWG – International Bustard Working

Group

ITTEA – CMS Asia Pacific Illegal Taking of Migratory Birds Intergovernmental Task Force

IUCN – International Union for Conservation of Nature

LV – Low voltage

MA – Management Area

MEA – Multilateral Environmental Agreement

MIKT – CMS Intergovernmental Task Force on Illegal Killing, Taking and Trade of Migratory Birds in the Mediterranean

MsAP – Multi-species Action Plan

MoU – Memorandum of Understanding

MV – Medium voltage

NiBAP – Nigeria Bird Atlas Project

NGO – Non-governmental Organization

NR – Nature Reserve

OECM – Other Effective Area-based Conservation Measures

PA – Protected Area

POW – Programme of Work

SC – Steering Committee of BWB

SPMS – Strategic Plan for Migratory Species

SWAITBT – CMS South-West Asia Illegal Taking of Birds Task Force

UNEP – United Nations Environment Programme

WABDaB – West African Bird DataBase

WS – Wildlife Sanctuary

Table of contents

Foreword

[to be added]

Executive Summary

Bustards are among the most threatened groups of terrestrial birds worldwide. Of the 26 recognized species, 15 are globally threatened and 18 are undergoing population declines, including species that were once considered widespread, with several facing imminent regional or global extinction. This crisis is driven by a convergence of pressures: habitat loss and degradation, agricultural intensification, collisions with powerlines and other infrastructure, illegal and unsustainable take, and the negative effects of climate change. These threats are amplified by bustards' naturally low reproductive rates and their dependence on extensive, intact grasslands and steppes.

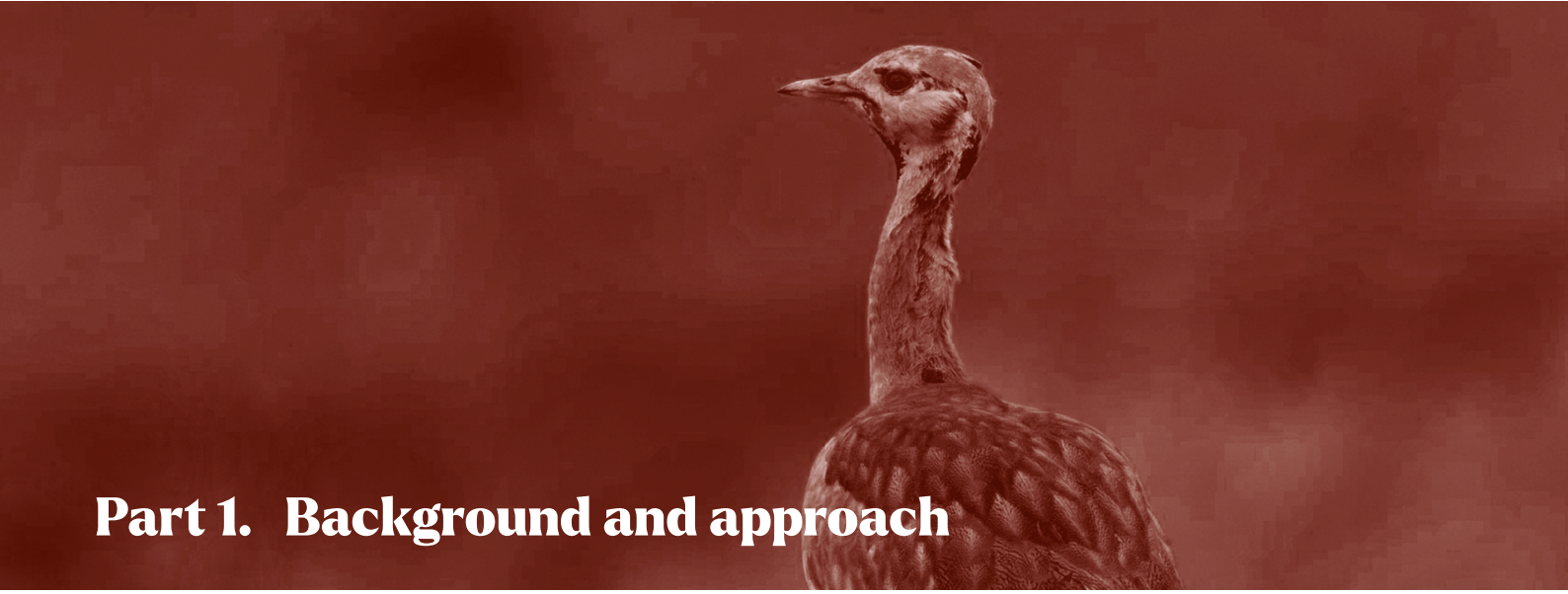
The Multi-species Action Plan for African, Eurasian and Australian Bustards (Bustard MsAP, 2026–2037) responds to this urgent challenge. Developed under the umbrella of the Convention on Migratory Species (CMS) and coordinated by Bustards Without Borders (BWB), the plan unites over 100 Range States and diverse partners and stakeholders in a single global framework. It is closely aligned with the Kunming–Montreal Global Biodiversity Framework, contributing directly to Target 4 on halting species extinction, as well as targets on habitat protection, sustainable land use, and strengthened monitoring and knowledge exchange.

The Bustard MsAP defines ten strategic objectives to halt and reverse declines:

- Promote sustainable, bustard-friendly agricultural systems.
- Prevent collisions with powerlines, wind farms, and other infrastructure.
- Secure and restore habitats and ensure connectivity across annual cycles.
- Halt illegal and unsustainable hunting and trade.
- Reduce impacts of anthropogenically subsidized predators.
- Minimize human disturbance in key habitats.
- Prevent genetic risks from captive breeding and releases.
- Enhance resilience to climate change.
- Close knowledge gaps through coordinated research and monitoring.
- Strengthen awareness, education, and stakeholder engagement.

Implementation will be supported through a coordinated governance framework, regional action, and clear milestones – with a mid-term review in 2031 and a final evaluation in 2037. Special urgency is placed on Critically Endangered species, such as the Great Indian Bustard, Bengal and Lesser Floricans, alongside rapidly declining populations of Great and Little Bustards, Ludwig's and Karoo Bustards, among others.

This plan represents the most ambitious and comprehensive effort yet to secure the future of bustards across four continents. Its success depends on decisive political commitment, adequate resources, and cross-border cooperation. By safeguarding bustards, we also conserve the grassland and steppe ecosystems on which they, and human communities, depend.



Part 1. Background and approach

1.1 Rationale

Bustards are among the most threatened terrestrial birds, with approximately 60% of species listed as threatened or near threatened, primarily due to a suite of anthropogenic threats, including habitat loss and disturbance, agricultural intensification, infrastructure development and illegal or unsustainable hunting. Their decline signals broader environmental degradation, as bustards are key indicators of sustainable land use. Protecting these species goes beyond their intrinsic value – it safeguards entire ecosystems, ensuring biodiversity and the long-term productivity of landscapes that support both wildlife and human communities.

Addressing these threats requires a coordinated and urgent response on a global scale. Bustards Without Borders (BWB) was created to meet this challenge, uniting individuals, organizations, government institutions, and stakeholders committed to sustainable bustard conservation. By fostering collaboration and sharing best practices, this consortium works to develop and implement a multi-species action plan that not only reverses bustard population declines but also promotes sustainable land management, benefiting broader biodiversity. Bustard conservation across four continents demands an approach that prioritizes habitat and key site protection, reduces unsustainable pressures, and strengthens policy frameworks to secure a future for these iconic birds and the ecosystems they help sustain.

1.2 Mission

BWB is dedicated to catalyzing actions for the sustainable conservation of bustards and their habitats, to include on-the-ground conservation activities, training, awareness-raising, population and distribution monitoring and research as outlined in this Multi-species Action Plan. The BWB team takes a collaborative approach to engage relevant and committed individuals from diverse geographic, institutional, and professional backgrounds. The Bustard MsAP will mobilize governments and stakeholders worldwide, foster synergies, and promote coordinated efforts towards this common goal.

This Multi-species Action Plan to conserve African, Eurasian and Australian Bustards (Bustard MsAP) aims to serve as a critical link to the implementation of the Kunming-Montreal Global Biodiversity Framework (GBF). By aligning its objectives with the GBF, the Bustard MsAP seeks to enhance the effectiveness of global biodiversity conservation efforts. The Bustard MsAP will contribute to several targets of the GBF, most of all to Target 4: Halt Species Extinction, Protect Genetic Diversity and Manage Human-Wildlife Conflicts, by halting and reversing the decline of bustard species worldwide. Additionally, the Bustard MsAP aims at the protection and restoration of their habitats (Targets 1 and 2), reducing poaching, unsustainable harvest and illegal trade (Target 5), promoting sustainable and biodiversity-friendly practices in agriculture (Target 10), strengthening scientific research and monitoring capacities, and knowledge transfer

through transboundary collaborations (Targets 20 and 21).

1.3 Mandate

BWB aligns with the aim of the African-Eurasian Migratory Landbirds Action Plan (AEMLAP) adopted as Annex to CMS Resolution 11.17 (Rev.COP14), to improve the conservation status of migratory landbird species along the African-Eurasian region through coordinating actions at the international scale and through catalyzing actions at national level.

Through Resolution 11.17 (Rev.COP14), the CMS Conference of the Parties at its 14th meeting (COP14, Samarkand, Uzbekistan, 2024), specifically addresses the necessity of mitigating threats to migratory bustards. The COP *'Further calls on Parties to urgently take practical measures to address threats to migratory bustards, a highly threatened and declining group of migratory landbird species under particular pressure from illegal killing, unsustainable taking, collision with energy infrastructure and habitat loss and degradation including as outlined in relevant Species Action Plans'.*

Migratory birds, vital components of global biodiversity, inhabit and connect various ecosystems and face diverse threats, both natural and anthropogenic, throughout their annual journeys. According to the first-ever State of the World Migratory Species report (CMS Resolution 14.4) launched at CMS COP14 in 2024, nearly half of the migratory species listed under CMS are declining, and more than one fifth of them face extinction, despite their ecological importance and provision of ecosystem services. There are specific threats of particular significance to bustards and other migratory birds along flyways that continue to have an impact on these species and their habitats, including: (i) degradation and loss of habitats such as savannahs and grasslands; agricultural intensification and habitat modification through desertification and overgrazing; (ii) inappropriate development of wind turbines and solar farms (CMS Resolution 11.27 (Rev.COP13) Renewable Energy and Migratory Species; CMS Decisions 14.207-14.210); (iii) collisions with power lines and electrocutions (CMS Resolution 10.11 (Rev.COP13) Power Lines and Migratory Birds); (iv) illegal and/or unsustainable killing, taking and trade (CMS Resolution 11.16 (Rev.COP14) on The Prevention of Illegal Killing, Taking and Trade of Migratory Birds); (v) lead shot and other poisoning (CMS Resolution 11.15 (Rev.COP14) Preventing Poisoning of Migratory Birds) – all aspects treated under the African-Eurasian Migratory Landbirds Action Plan (CMS Resolution 11.17 (Rev.COP14)) as well as under the umbrella of the Samarkand Strategic Plan for Migratory Species 2024-2032 (CMS Resolution 14.1).

1.4 Methodology

The development of the Bustards MsAP began shortly after the establishment of BWB in April 2024. Initial steps were taken during regular online meetings, held monthly or as needed, to discuss various components of the plan – including its chapters, scope, regional coverage, data collection methods, organizational matters, layout, and provisional timeline. This process continued through to the final stage: submission of the final draft to the CMS Secretariat for adoption at CMS COP15.

To gather up-to-date information on population status, trends, threats and conservation efforts for bustards in Range States, questionnaires were developed for each continent – Africa, Asia, Australia and Europe – in English, French, and Russian. These were tailored to relevant species and distributed by Regional Coordinators to experts and stakeholders across the respective regions. All responses, including those gathered during workshops, were reviewed and incorporated into the final dataset.

Species information pages – covering distribution, habitat, diet and foraging, breeding, conservation and management, IUCN conservation status, and migratory patterns – were compiled using data from *Birds of the World* (Cornell University), in accordance with the media license agreement between Cornell University and BWB.

Where necessary, original content was updated with newly collected information. The species distribution maps are the property of BirdLife International and represent the information available at the time of the global assessment of each species, within the 2021-2025 quadrennium. Details concerning populations in Range States, such as population size and trends, presence within countries, key sites and threats, and priority conservation actions, were drawn from the questionnaires, national reports (particularly from the CMS Great Bustard MoU Signatories), other databases (e.g., eBird, BirdLife DataZone and IBA database, West African Bird DataBase WABDaB), direct expert consultations, and published scientific studies. Both species-specific and country-specific assessment pages were compiled to offer Range States a comprehensive overview and to help prioritize conservation actions at key sites.

Part 5 of the Bustard MsAP features a detailed table outlining the objectives, expected results, and required actions, along with another table summarizing the relevance and urgency of these results for all Range States. Table 3, forming the core of the Bustard MsAP, was developed during the first in-person Action Planning Workshop for the global Bustard MsAP on bustard conservation, held in Islamabad, Pakistan, from 14-20 April 2025. The workshop was organized and hosted by WWF-Pakistan with financial support from the Swiss Ornithological Institute. It brought together high-level representatives from the Ministry of Climate Change and Environmental Coordination (MoCC & EC), CMS Party Focal Points from Hungary and Pakistan, and representatives of IUCN, AEMLAP, and the CMS Secretariat, as well as the BWB Steering Committee and several Regional Coordinators. The workshop culminated in the first draft of the MsAP, which was subsequently refined and circulated for feedback in July 2025.

1.5 Milestones in production of this MsAP

Feb-Apr 2024	-	Consultations to develop concept & Project Charter
Mar-Jul 2024	-	Establish BWB and identify Lead and Regional Coordinators
Apr-Dec 2024	-	Hosting of regular Coordination Unit and Steering Committee telecons
Apr-Jul 2024	-	Online workshops including the Coordination Unit and Regional Coordinators for development and finalization of questionnaire format
Aug-Dec 2024	-	Collection of data and information from Range States by Regional Coordinators
Jan-Oct 2025	-	Hosting of regular Coordination Unit and Steering Committee telecons
Jan-Mar 2025	-	Evaluation of questionnaire responses
Jan-Mar 2025	-	Development of draft components for Bustard MsAP
Apr 2025	-	Zero draft Bustard MsAP produced
Apr 2025	-	First Action Planning Workshop held in Islamabad, Pakistan
Jun 2025	-	First draft Bustard MsAP produced and circulated
Jun-Oct 2025	-	Establishment of International Bustard Working Group (IBWG)
Jul 2025	-	Formal consultation with Range States & stakeholders
Jul-Sep 2025	-	Second draft Bustard MsAP produced and circulated
Sep-Oct 2025	-	Formal consultation with Range States & stakeholders
Oct 2025	-	Second Action Planning Workshop
Oct 2025	-	Third draft Bustard MsAP developed
Oct 2025	-	Bustard MsAP submitted to CMS Secretariat
Dec 2025	-	Bustard MsAP reviewed by the Eighth Meeting of the Sessional Committee of the CMS Scientific Council (ScC-SC8)
Mar 2026	-	Consideration of Bustard MsAP by the 15th Meeting of the Conference of Parties to CMS (CMS COP15)

Part 2. Scope

2.1 Geographic scope

The Bustard MsAP covers all 26 species of bustards worldwide (Table 1). An initial assessment suggests that 102 Range States host populations of one or more of these bustard species and therefore are included within the geographical coverage of the Bustard MsAP (Figure 1).

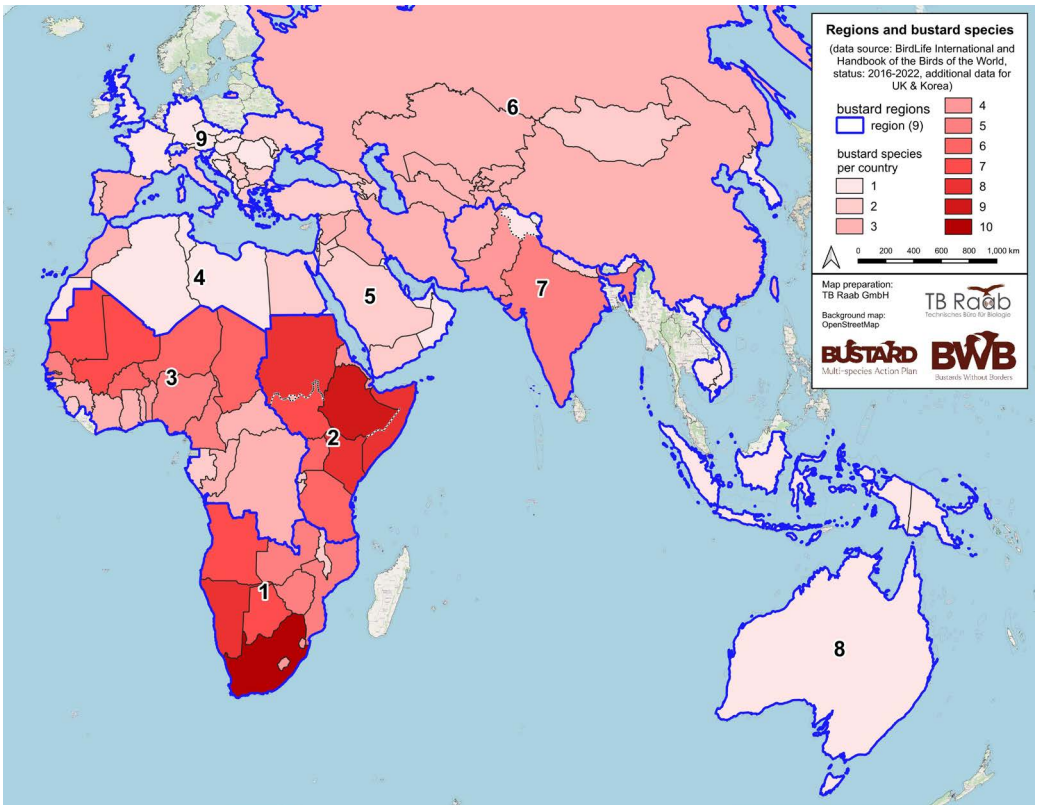


Figure 1. Overview of geographic scope of the Bustard MsAP and geographic units of BWB. Map of all 102 Range States containing bustard species, with number of species per country and delineating 9 geographic units of BWB.

BWB regions

1 – Southern Africa: Angola, Botswana, Eswatini, Lesotho, Malawi, Mozambique, Namibia, South Africa, Zambia, Zimbabwe

2 – Eastern Africa: Burundi, Djibouti, Eritrea, Ethiopia, Kenya, Rwanda, Somalia, South Sudan, Sudan, Tanzania, Uganda

3 – Western Africa: Benin, Burkina Faso, Cameroon, Central African Republic, Chad, Congo, Côte

d'Ivoire, Democratic Republic of the Congo, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone, Togo

4 – Northern Africa: Algeria, Egypt, Libya, Morocco, Tunisia

5 – Southwest Asia: Bahrain, Iraq, Israel, Jordan, Kuwait, Lebanon, Oman, Palestine, Qatar, Saudi Arabia, Syrian Arab Republic, Türkiye, United Arab Emirates, Yemen

6 – Central and East Asia: Armenia, Azerbaijan, People's Republic of China, Democratic People's Republic of Korea, Georgia, Iran (Islamic Republic of), Kazakhstan, Kyrgyzstan, Mongolia, Republic of Korea, Russian Federation, Tajikistan, Turkmenistan, Uzbekistan

7 – South Asia: Afghanistan, Cambodia, India, Nepal, Pakistan, Viet Nam

8 – Southeast Asia and Australia: Australia, Indonesia, Papua New Guinea

9 – Europe: Albania*, Austria*, Bulgaria*, Croatia*, Czechia*, France, Germany*, Greece*, Hungary*, Italy, Republic of Moldova*, North Macedonia*, Portugal, Romania*, Serbia*, Slovakia*, Spain, Ukraine, United Kingdom

*Signatories to the CMS Great Bustard MoU

2.2 Taxonomic scope

Table 1. Species[1] covered by the Bustard MsAP; Global Red List status: CR: Critically Endangered, EN: Endangered, VU: Vulnerable, NT: Near-threatened, LC: Least Concern. *(https://www.iucnredlist.org/resources/categories-and-criteria).*

#	Species	Range/BWB regions	Global IUCN Red List Category 2025	CMS Appendix	CITES Appendix	Global population trend
1	Great Bustard (*Otis tarda*)	Europe, Central and East Asia, Northern Africa	EN	Appendix I & II	Appendix II	Decreasing
2	Arabian Bustard (*Ardeotis arabs*)	Southwest Asia, Eastern and Western Africa	NT		Appendix II	Decreasing
3	Kori Bustard (*Ardeotis kori*)	Eastern, and Southern Africa	NT		Appendix II	Decreasing
4	Great Indian Bustard (*Ardeotis nigriceps*)	South Asia	CR	Appendix I	Appendix I	Decreasing
5	Australian Bustard (*Ardeotis australis*)	Southeast Asia and Australia	LC		Appendix II	Decreasing
6	African Houbara (*Chlamydotis undulata*)	Northern Africa, Europe (Spain - Canary Islands)	VU	Appendix I	Appendix I	Decreasing
7	Asian Houbara (*Chlamydotis macqueenii*)	Asia (all 3 regions)	VU	Appendix II	Appendix I	Decreasing
8	Ludwig's Bustard (*Neotis ludwigii*)	Southern Africa	EN		Appendix II	Decreasing
9	Denham's Bustard (*Neotis denhami*)	Africa (excl. Northern Africa)	NT		Appendix II	Decreasing

[1] Taxonomic reference: Del Hoyo, J. & Collar, N.J. (2014). Handbook of the Birds of the World and BirdLife International Illustrated Checklist of the Birds of the World. Volume 1: Non-passerines. Lynx Edicions, Barcelona

10	Heuglin's Bustard (*Neotis heuglinii*)	Eastern Africa	LC		Appendix II	Stable
11	Nubian Bustard (*Neotis nuba*)	Eastern and Western Africa	NT		Appendix II	Decreasing
12	White-bellied Bustard (*Eupodotis senegalensis*)	Africa (excl. Northern Africa)	LC		Appendix II	Decreasing
13	Blue Bustard (*Eupodotis caerulescens*)	Southern Africa	NT		Appendix II	Decreasing
14	Karoo Bustard (*Heterotetrax vigorsii*)	Southern Africa	LC		Appendix II	Increasing
15	Rüppell's Bustard (*Heterotetrax rueppelii*)	Southern Africa	LC		Appendix II	Stable
16	Little Brown Bustard (*Heterotetrax humilis*)	Eastern Africa	NT		Appendix II	Decreasing
17	Savile's Bustard (*Lophotis savilei*)	Western Africa	LC		Appendix II	Stable
18	Buff-crested Bustard (*Lophotis gindiana*)	Eastern Africa	LC		Appendix II	Stable
19	Red-crested Bustard (*Lophotis ruficrista*)	Southern Africa	LC		Appendix II	Stable
20	Southern Black Bustard (*Afrotis afra*)	Southern Africa	VU		Appendix II	Decreasing
21	Northern Black Bustard (*Afrotis afraoides*)	Southern Africa	LC		Appendix II	Stable
22	Black-bellied Bustard (*Lissotis melanogaster*)	Africa (excl. Northern Africa)	LC		Appendix II	Decreasing
23	Hartlaub's Bustard (*Lissotis hartlaubii*)	Eastern Africa	LC		Appendix II	Stable
24	Bengal Florican (*Houbaropsis bengalensis*)	South Asia	CR	Appendix I	Appendix I	Decreasing
25	Lesser Florican (*Sypheotides indicus*)	South Asia	CR		Appendix II	Decreasing
26	Little Bustard (*Tetrax tetrax*)	Europe, Central and East Asia, Northern Africa	NT	Appendix I & II	Appendix II	Decreasing

Table 2. Summary of bustard species in Range States

Country	# of species	*Otis tarda*	*Ardeotis arabs*	*Ardeotis kori*	*Ardeotis nigriceps*	*Ardeotis australis*	*Chlamydotis undulata*	*Chlamydotis macqueenii*	*Neotis ludwigii*	*Neotis denhami*	*Neotis heuglinii*	*Neotis nuba*	*Eupodotis senegalensis*	*Eupodotis caerulescens*	*Heterotetrax vigorsii*	*Heterotetrax rueppelii*	*Heterotetrax humilis*	*Lophotis savilei*	*Lophotis gindiana*	*Lophotis ruficrista*	*Afrotis afra*	*Afrotis afraoides*	*Lissotis melanogaster*	*Lissotis hartlaubii*	*Houbaropsis bengalensis*	*Sypheotides indicus*	*Tetrax tetrax*
Africa																											
Region 1 – Southern Africa																											
Angola	7			x					x	x			x			x				x			x				
Botswana	7			x					x	x			x							x		x	x				
Eswatini	4									x			x							x			x				
Lesotho	4								x	x				x								x					
Malawi	2									x													x				
Mozambique	5			x						x			x							x			x				
Namibia	8			x					x	x					x	x				x		x	x				
South Africa	10			x					x	x			x	x	x					x	x	x	x				
Zambia	5			x						x			x							x			x				
Zimbabwe	5			x						x										x		x	x				
Region 2 – Eastern Africa																											
Burundi	2									x													x				
Djibouti	2		x								x																
Eritrea	3		x										x										x				
Ethiopia	9		x	x						x	x		x				x		x				x	x			
Kenya	9		x	x						x	x		x					x	x				x	x			
Rwanda	2									x													x				
Somalia	8		x	x							x		x				x		x				x	x			
South Sudan	7		x	x						x			x						x				x	x			
Sudan	7		x							x		x	x					x					x	x			
Tanzania	6			x						x			x						x				x	x			

Country	# of species	*Otis tarda*	*Ardeotis arabs*	*Ardeotis kori*	*Ardeotis nigriceps*	*Ardeotis australis*	*Chlamydotis undulata*	*Chlamydotis macqueenii*	*Neotis ludwigii*	*Neotis denhami*	*Neotis heuglinii*	*Neotis nuba*	*Eupodotis senegalensis*	*Eupodotis caerulescens*	*Heterotetrax vigorsii*	*Heterotetrax rueppelii*	*Heterotetrax humilis*	*Lophotis savilei*	*Lophotis gindiana*	*Lophotis ruficrista*	*Afrotis afra*	*Afrotis afraoides*	*Lissotis melanogaster*	*Lissotis hartlaubii*	*Houbaropsis bengalensis*	*Sypheotides indicus*	*Tetrax tetrax*
Uganda	6			x						x			x						x				x	x			
Region 3 – Western Africa																											
Benin	4									x			x					x					x				
Burkina Faso	6		x							x		x	x					x					x				
Cameroon	5		x							x			x					x					x				
Central African Republic	3		x							x													x				
Chad	6		x							x		x	x					x					x				
Congo	3									x			x										x				
Côte d'Ivoire	3									x			x										x				
Democratic Republic of the Congo	3									x			x										x				
Gabon	2												x										x				
Gambia	4									x			x					x					x				
Ghana	3									x			x										x				
Guinea	3									x			x										x				
Guinea-Bissau	2									x													x				
Mali	6		x							x		x	x					x					x				
Mauritania	7		x				x			x		x	x					x					x				
Niger	6		x							x		x	x					x					x				
Nigeria	5		x							x			x					x					x				
Senegal	5		x							x			x					x					x				
Sierra Leone	2									x													x				
Togo	3									x			x										x				
Region 4 – Northern Africa																											
Algeria	3	x					x																				x
Egypt	2						x	x																			

Country	# of species	*Otis tarda*	*Ardeotis arabs*	*Ardeotis kori*	*Ardeotis nigriceps*	*Ardeotis australis*	*Chlamydotis undulata*	*Chlamydotis macqueenii*	*Neotis ludwigii*	*Neotis denhami*	*Neotis heuglinii*	*Neotis nuba*	*Eupodotis senegalensis*	*Eupodotis caerulescens*	*Heterotetrax vigorsii*	*Heterotetrax rueppelii*	*Heterotetrax humilis*	*Lophotis savilei*	*Lophotis gindiana*	*Lophotis ruficrista*	*Afrotis afra*	*Afrotis afraoides*	*Lissotis melanogaster*	*Lissotis hartlaubii*	*Houbaropsis bengalensis*	*Sypheotides indicus*	*Tetrax tetrax*
Libya	1						x																				
Morocco	3	x					x																				x
Tunisia	1						x																				
Asia																											
Region 5 – Southwest Asia																											
Bahrain	1							x																			
Iraq	3	x						x																			x
Israel	1							x																			
Jordan	2							x																			x
Kuwait	1							x																			
Lebanon	1																										x
Oman	1							x																			
Palestine	1							x																			
Qatar	1							x																			
Saudi Arabia	3		x					x																			x
Syrian Arab Republic	3	x						x																			x
Türkiye	2	x																									x
United Arab Emirates	1							x																			
Yemen	2		x					x																			
Region 6 – Central and East Asia																											
Armenia	2	x																									x
Azerbaijan	3	x						x																			x
China, People's Republic of	3	x						x																			x
Democratic People's Republic of Korea	1	x																									

Country	# of species	*Otis tarda*	*Ardeotis arabs*	*Ardeotis kori*	*Ardeotis nigriceps*	*Ardeotis australis*	*Chlamydotis undulata*	*Chlamydotis macqueenii*	*Neotis ludwigii*	*Neotis denhami*	*Neotis heuglinii*	*Neotis nuba*	*Eupodotis senegalensis*	*Eupodotis caerulescens*	*Heterotetrax vigorsii*	*Heterotetrax rueppelii*	*Heterotetrax humilis*	*Lophotis savilei*	*Lophotis gindiana*	*Lophotis ruficrista*	*Afrotis afra*	*Afrotis afraoides*	*Lissotis melanogaster*	*Lissotis hartlaubii*	*Houbaropsis bengalensis*	*Sypheotides indicus*	*Tetrax tetrax*
Georgia	1																										x
Iran (Islamic Republic of)	3	x						x																			x
Kazakhstan	3	x						x																			x
Kyrgyzstan	3	x						x																			x
Mongolia	2	x						x																			
Republic of Korea	1	x																									
Russian Federation	3	x						x																			x
Tajikistan	3	x						x																			x
Turkmenistan	3	x						x																			x
Uzbekistan	3	x						x																			x
Region 7 – South Asia																											
Afghanistan	2							x																			x
Cambodia	1																								x		
India	4				x			x																	x	x	
Nepal	2																								x	x	
Pakistan	4				x			x																		x	x
Viet Nam	1																								x		
Southeast Asia and Australia																											
Region 8 – Southeast Asia and Australia																											
Australia	1					x																					
Indonesia	1					x																					
Papua New Guinea	1					x																					

Country	# of species	*Otis tarda*	*Ardeotis arabs*	*Ardeotis kori*	*Ardeotis nigriceps*	*Ardeotis australis*	*Chlamydotis undulata*	*Chlamydotis macqueenii*	*Neotis ludwigii*	*Neotis denhami*	*Neotis heuglinii*	*Neotis nuba*	*Eupodotis senegalensis*	*Eupodotis caerulescens*	*Heterotetrax vigorsii*	*Heterotetrax rueppelii*	*Heterotetrax humilis*	*Lophotis savilei*	*Lophotis gindiana*	*Lophotis ruficrista*	*Afrotis afra*	*Afrotis afraoides*	*Lissotis melanogaster*	*Lissotis hartlaubii*	*Houbaropsis bengalensis*	*Sypheotides indicus*	*Tetrax tetrax*
Europe																											
Region 9 – Europe																											
Albania*		(x)																									
Austria*	1	x																									
Bulgaria*		(x)																									
Croatia*		(x)																									
Czechia*		(x)																									
France	1																										x
Germany*	1	x																									
Greece*	1	(x)																									x
Hungary*	1	x																									
Italy	1																										x
North Macedonia*		(x)																									
Portugal	2	x																									x
Republic of Moldova*		(x)																									
Romania*	2	x																									x
Serbia*	1	x																									
Slovakia*	1	x																									
Spain	3	x					x																				x
Ukraine*	2	x																									x
United Kingdom	1	x																									
Number of Range States per species	x	28	18	13	2	3	7	26	5	37	4	6	31	2	2	2	2	12	6	8	1	5	39	7	4	3	28

* Signatories to the CMS Great Bustard MoU. "(x)" indicates the historical presence and/or only vagrant individuals of the Great Bustard in these countries.

Part 3. Species assessment

3.1 Bustard ecology

Bustards are an evolutionarily diverse group of birds: the 26 currently recognized species pertain to 13 genera (Table 1). Though bustard species differ in their habitats, their movement patterns, and particularly their breeding displays, they share some common traits which must be taken into consideration for their conservation. These include a requirement for large and typically open habitats managed at low intensity; sensitivity to disturbance and human activities; a lekking breeding system (for the majority, but not all species); and naturally low reproductive rates. These common ecological characteristics are outlined here, to be considered alongside species-specific information in section 3.2.

3.1.1 Use of large, open habitats

Bustards are adapted to life in arid and open habitats such as grasslands and shrublands. Many of their habitats are areas of low vegetation productivity and severe climate, requiring them to move over large spatial areas to access resources. These movements may be nomadic in nature, as the birds search for irregularly located resources (e.g., Rahmani & Manakadan, 1986; Shobrak & Rahmani, 1991), facultative or irruptive in response to severe weather events (e.g., Streich et al., 2006; Packman 2011; Campeau & Kessler, 2025), regularly seasonal involving distances up to almost 4000 km (Combreau et al., 2011), or a combination of these types (e.g., Kessler et al., 2013; Shaw et al., 2016). Because these birds require large spatial areas, conservation efforts must be undertaken at a landscape scale. They require large tracts of land free of human activity or managed at low intensity, or a network of interconnected sites with these characteristics, without barriers to movement.

3.1.2 Sensitivity to disturbance

Though bustards are able to fly long distances, they have adopted a primarily cursorial lifestyle for their daily needs. Their feet lack a hallux (hind toe), such that they are unable to grasp branches, and they nest and roost on the ground. This lifestyle renders these large-bodied birds vulnerable to both aerial and terrestrial predators. As a result, bustards have evolved cryptic coloration and an innate wariness. Using their long necks, they regularly scan their open landscapes for distant threats. Anthropogenic activities, even if not presenting direct threats to bustards, elicit their alarm and escape behaviors. If severe, human disturbance can result in the abandonment of a location (see section 4.6, Anthropogenic disturbance). As a consequence, some bustards today inhabit sites which may not be ecologically ideal, but which have restricted human access. These include militarized areas like border zones and firing ranges (e.g., Yousefi et al., 2017; Narwade et al., 2023), as well as sites with barriers to human approach, such as islands in hypersaline lakes and gated agricultural lands (Özgencil et al., 2022; Farajli 2025) or areas with challenging terrain (Sheldon & Launay, 1998; Collar et al., 2024).

3.1.3 Lek breeding ecology

Most bustards (21 of 26 species) are considered to breed using a lek system. In comparison, 92% of bird species globally are socially monogamous, and a lek strategy is utilized by only 6% of species (Marcondes & Douvas, 2024). Lekking is characterized by the use of discrete, traditional, communal display grounds ("leks"), where males gather each year and perform elaborate courtship displays to attract females. Females select a mate, then incubate the eggs and raise the chicks. Males contribute no resources to reproduction beyond genes and remain on the lek throughout the breeding season in pursuit of additional copulations.

A number of conservation requirements stem from this distinctive breeding strategy. First, breeding habitats must be heterogeneous and offer diverse resources to accommodate the different needs of males and females (Morales et al., 2001; Gray et al., 2009; Traba et al., 2022). Males prefer broad viewsheds with low vegetation, across which their displays are more easily observed. Females require vegetation structure to conceal themselves and their young from predators and a lack of disturbance (Morales et al., 2008). Food resources for the developing young should be plentiful, as only one parent's time is invested in their feeding (Alonso et al., 2012a; Alonso et al., 2022; Ucero et al., 2023).

Second, the survival of females has high importance for the recovery of a population. Because males may mate with more than one female, the number of females will determine the number of possible reproductive events (Morales et al.,2005). Successful reproduction for a ground-nesting species requires selection of an appropriate nest site, watchfulness, and strategies to elude or distract predators (Magaña et al., 2010). Experienced females tend to be more successful at raising young to fledging, and their survival is particularly key to population growth (Azar et al., 2018; Morales et al., 2002; Alonso et al., 2024b).

Third, bustards are typically highly philopatric to their lek sites (Alonso et al., 2000; Riou & Combreau 2014). It is essential to safeguard these sites, to which bustards faithfully return year after year, and ensure beneficial conditions for their reproduction.

3.1.4 Low reproductive rates

Bustards are naturally long-lived birds with low reproductive rates. Most species produce only 1-2 eggs per year (Collar, 1996; Brown et al., 2015). Bustard eggs require almost a month of incubation before the precocial chicks emerge. Chicks may remain alongside their mother for up to a year. Like other ground nesting birds, bustards are highly vulnerable to the predation and destruction of their nests and broods. Impacts from human activities further depress their breeding success rates (detailed in Section 4, particularly 4.1 - Agricultural intensification, and 4.5 - Anthropogenically increased predator species). Measures which support successful reproduction are key to bustard conservation. With a "low and slow" reproductive strategy, bustard populations cannot sustain high rates of adult mortality.

3.2 Species assessments

This section collates information about each bustard species. Every species account begins with a fact sheet summarizing the species' biology and ecology, along with a map of its global distribution and photographs of both sexes of the species. This is followed by a table containing information on population size, trend, national Red List status, occurrence and key sites within every Range State. Key threats are evaluated as to their severity using a scale adapted from the IUCN Threats Classification Scheme (Version 3.3) and described below. These data provide a foundation for identifying and prioritizing conservation actions.

Threat rankings indicate the current or near-future relevance of each threat to the species at the country level:

C = Critical: a factor causing or likely to cause very rapid declines (>30% over 10 years);

H = High: a factor causing or likely to cause rapid declines (20–30% over 10 years);

M = Medium: a factor causing or likely to cause relatively slow, but significant, declines (10–20% over 10 years);

Low = Low: a factor causing or likely to cause fluctuations;

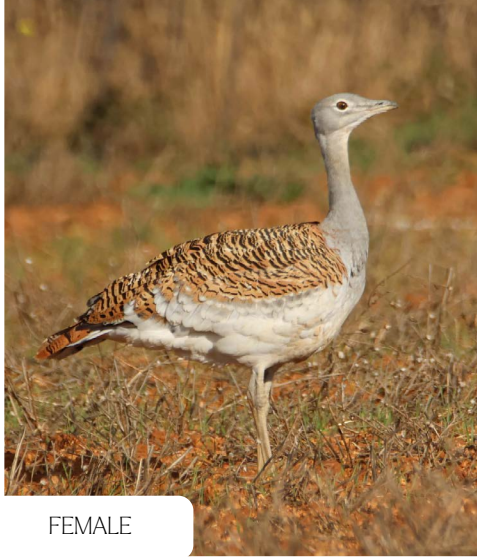
Loc = Local: a factor causing or likely to cause negligible declines;

U = Unknown: a factor that is likely to affect the species but it is unknown to what extent.

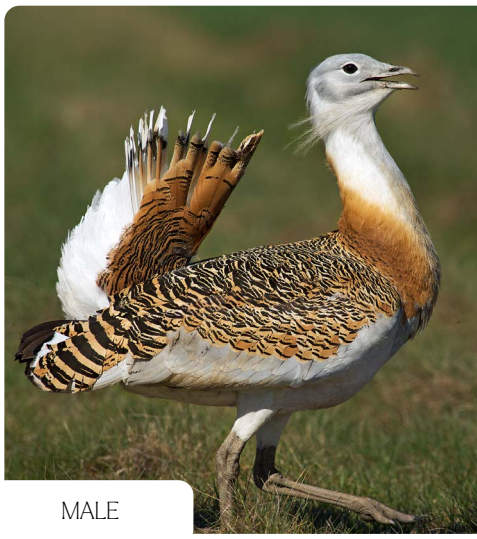
GREAT BUSTARD *(Otis tarda)*

Political boundaries indicated in this map are those of the United Nations.

Year-round **Breeding** **Non-Breeding**



FEMALE



MALE

Conservation status	Endangered
Global RedList Population Estimate	29,600–33,000. Decreasing.

Regional names	الحبارى الكبيرة (Arabic), 大鸨 (Chinese), Großtrappe (German), Túzok (Hungarian), Дуадақ (Kazakh), Хонин тоодог (Mongolian), میش مرغ (Persian), Abetarda (Portuguese), Dropie (Romanian), Дрофа, дудак (Russian), Drop veľký (Slovak), Avutarda (Spain), Toy (Turkish), Дрохва (Ukrainian), To'xta tuvaloq (Uzbek)
Size	♀ 75–85 cm, 3,300–5,300 g; ♂ 90–105 cm, 5,800–18,000 g
Subspecies	*O. t. tarda:* W of Altai mountains *O. t. dybowskii:* E of Altai mountains
Habitat	Flat or rolling open short-grass plains & agricultural land. Low-intensity land use & lack of disturbance are important year-round. Insect- & flower-rich grassland & pasture provide important breeding habitat. Alfalfa, oilseed rape, soy & stubbles used in winter.
Movement	In W Europe & Islamic Republic of Iran sedentary or make small seasonal movements. In E Europe & Asia mostly migratory. Facultative longer-distance movements observed during severe winter weather.
Breeding	Apr–May, also Jun in colder NE range. Nest on ground with or without scrape. Clutch size: 2-3 (1-4) eggs, incubation 25 days. First breeding at 5–6 years in ♂, 2–3 years in ♀.

Content partners: BirdLife INTERNATIONAL CornellLab

Country	Population Size (individuals)	Population trend (21st century)	National Red List status	Regional Red List status	National Protection Status	Presence in Country	Months of presence	Key sites	Key Threats
Albania*	Unknown	Unknown	EN	LC	Unknown	Rare wintering, Migrant	Dec-Feb	Bedati; Kopliku	H: Poaching; Disturbance M: Habitat loss and degradation (Conversion of suitable habitats); Lack of management L: Habitat fragmentation (Energy infrastructure, Transportation networks)
Armenia	Unknown	Unknown	N/A	LC	Unknown	Unknown	Unknown	Sardarapat	Unknown
Austria*	398 – 524 breeding ind. (2024), 728 wintering ind. (entire West Pannonian population, 2025)	Increasing	VU	LC	Protected	Breeding, Wintering	Year-round	Parndorfer Platte-Heideboden; Sandboden und Praterterrasse; Westliches Weinviertel; Waasen-Hanság (West Pannonian population)	H: Climate change; Predation M: Agricultural intensification (Change in cultivation practices, Irrigation, Fertilization), Collision (Overhead cabling)
Azerbaijan	6 - 10 migrating ind., 3 - 5 wintering ind.	Declining	CR	LC	Protected	Wintering, Migrant	Oct-Mar	Shirvan NP; Ajinohur; Jeyranchol; Nakhchivan	C: Poaching H: Legal obstacles Expected in coming years: Increased collision (Overhead cabling); Habitat loss (Renewable energy)
Bulgaria*	Probably extinct	N/A	CR	LC	N/A	N/A	N/A	Zlatiata; Dobrudja	H: Habitat fragmentation; Agricultural intensification U: Agricultural intensification (Chemical application); Poaching

Country	Population Size (individuals)	Population trend (21st century)	National Red List status	Regional Red List status	National Protection Status	Presence in Country	Months of presence	Key sites	Key Threats
China, Western (Western subspecies, *O. t. tarda*)	25 breeding ind., 300 – 400 migrating ind.	Declining	EN	N/A	Protected (National first-class protected status)	Breeding, Migrant	Jun–Sep	163, 166, 167 Regiments; Oiaxia Town; Yumin County, Burqin River and Kanas Lake; Altay Forest and Steppe; Ulungur Hu and Jili Hu (Fu Hai); Burgen River Valley; Tacheng (Qoqek) Area; Karamay desert and lakes; Baytik Shan; Sayram Nur; Desert and Wetland from N Urumqi to Dabancheng; Mori Grassland; Qapqal Grassland and Wetland; Barkol Lake and Grassland; Ili River basin; Gongliu spruce forest; Oasis and Desert in Hami; Ayding Kol; Mount Tuomuer NR; Ulugqat Grassland and Wetland; Markit-Yarkant Oasis	C: Habitat loss (Conversion to cereal steppes) M: Habitat fragmentation (Energy infrastructure); Lack of awareness; Collision (Overhead cabling)
China, Eastern (Eastern subspecies, *O. t. dybowskii*)	278 – 330 breeding ind.	Declining	EN	N/A	Protected (National first-class protected status)	Breeding, Wintering	Year-round	GB Community Conservation Areas (CCA) in Changyuan and Fengqiu; Henan Province; CCAs in Tumuji and Hulunbuir; Inner Mongolia; CCAs in Jinzhou; Liaoning Province; CCA in Bihnai New Area; Tianjin; CCA in Cangzhou; Hebei Province	C: Lack of awareness; Collision (Overhead cabling, Fences) H: Habitat loss and degradation (Conversion of grasslands, Overgrazing) M: Poaching; Poisoning (Intentional and unintentional)
Croatia*	0 – 1 ind. (1 ind. in 2018-2022 period)	N/A	RE	LC	Strictly protected	No breeding since the 20th century. Once a rare winter visitor, now absent (due to suitable habitat management in Hungary)	N/A	N/A	C: Habitat loss (Conversion of steppe habitats in the early 20th century due to agriculture)
Czech Republic*	1 – 3 ind.	N/A	RE	LC	Strictly protected	Straggler	Occasional occurrence, Jan–Nov (2020-2024)	South Moravia	C: Agricultural intensification (Irrigation, Chemical application, Fertilization); Habitat loss (Conversion of cereal steppes and alfalfa to maize, rape and sunflower); Anthropogenic disturbance (Army helicopters) M: Anthropogenic disturbance (Local people) L: Collision (Overhead cabling); Predation (Wild boar, Red Fox, Eagles)

Country	Population Size (individuals)	Population trend (21st century)	National Red List status	Regional Red List status	National Protection Status	Presence in Country	Months of presence	Key sites	Key Threats
Democratic People's Republic of Korea	0 - 50 ind.	Declining	VU	N/A	Protected	Wintering	Dec-Apr	Mundok; Pakchon; Onchon County; near Nampo City; Unha Ri Natural Monument; Haeju	M: Habitat management
Germany*	302 ind. (2024)	Increasing	CR (Federal): Brandenburg (2019) Cat. 1 (2019); Sachsen-Anhalt Cat. 2 (2020)	LC	Strictly protected	Breeding, Wintering	Year-round	Havelländisches Luch; Belziger Landschaftswiesen; Fiener Bruch; Zerbster Land	C: Habitat loss (Conversion of suitable habitats, Wind turbines, Infrastructure, Recreational use); Agricultural intensification (Chemical application, Monocultures), Anthropogenically increased predation (Corvids, Red foxes, Racoons, Racoon dogs; Avian predators) H: Collision (Overhead cabling); Insect decline
Hungary*	1,600 - 1,700 breeding ind., ~1,900 wintering ind. (2025)	Increasing	VU	LC	Strictly protected	Breeding, Wintering	Year-round	Mosoni-sík, Hanság (West Pannonian population); Duna-völgyi síkság, Tiszántúl (Dévaványai-sík, Csanádi puszták, Kis-Sárrét, Bihar, Hortobágy), Borsodi Mezőség, Dél-Heves (East Pannonian population)	C: Habitat loss, degradation and fragmentation (Conversion of grasslands); Agricultural intensification (Irrigation, Mechanization, Loss of small-scale agriculture) H: Collision (Overhead cabling); Anthropogenically subsidized predation (Canids, Corvids) M: Anthropogenic disturbance; Legal obstacles (Ineffective enforcement of policies) L: Climate change
Iran (Islamic Republic of)	32 - 36 ind.	Declining	CR	N/A	Unknown	Unknown	Unknown	Boukan; Sootav; Se Kanian; Qazlian;Yengija-Albolaq plains	C: Habitat loss and degradation H: Anthropogenically subsidized predation (Eggs and chicks) M: Collisions (Overhead cabling)
Iraq	Unknown	Declining (Wintering), Breeding population extinct	N/A	N/A	Protected	Rare wintering, Extinct as breeder	Jan	Bred in NW Iraq; Mosul Steppe; Erbil Steppe	C: Poaching M: Habitat loss and degradation, Agricultural intensification

Country	Population Size (individuals)	Population trend (21st century)	National Red List status	Regional Red List status	National Protection Status	Presence in Country	Months of presence	Key sites	Key Threats
Kazakhstan, Kostanai Province	60 - 110 ind.	Stable	CR	N/A	Protected	Breeding	Apr-Oct	Naurzum; Kamysty; Arkalyk; Torgai Amangeldy and Karasu districts	H: Genetic fragmentation; Poaching (Wintering grounds)
Kazakhstan, North Kazakhstan and Pavlodar Provinces	8 - 10 breeding ind., 18 - 70 migrating ind.	Unknown	CR	N/A	Protected	Breeding, Migrant	Apr-Oct	Irgiz-Turgay Lakes; Zhusandala; Arystandy; Tentek River Delta	H: Genetic fragmentation U: Habitat loss; Agricultural intensification (Chemical application); Anthropogenically subsidized predation (Dogs, Corvids)
Kazakhstan, Southern	50 - 70 breeding ind., 180 - 200 migrating ind., 400 - 500 wintering ind.	Stable	CR	N/A	Protected	Breeding, Migrant, Wintering	Year-round	Agricultural areas along the SE foothills of Karatau mountains (Border between Zhambyl and Turkestan provinces)	C: Poaching M: Agricultural intensification (Mechanization, Chemical application)
Kazakhstan, Eastern	60 breeding ind., 80 - 90 migrating ind., 180 - 500 wintering ind.	Unstable	CR	N/A	Protected	Breeding, Migrant, Wintering	Year-round	Alakol Basin; Zaisan depression; Areas W of Kapchagai Reservoir	C: Poaching M: Agricultural intensification Expected in coming years: Increased collision (Overhead cabling); Habitat loss (Renewable energy infrastructure)
Kazakhstan, Western	5 - 26 breeding ind., 20 - 40 migrating ind.	Declining	CR	N/A	Protected	Breeding, Migrant, Wintering	May-Oct	Utva river valley in Borili District; Chingirlauskii (Shyngyrlau) district in W Kazakhstan province	H: Genetic fragmentation; Poaching; Agricultural intensification Expected in coming years: Increased collision (Overhead cabling); Habitat loss (Renewable energy infrastructure)
Kazakhstan, Central	5 - 10 breeding ind., 80 - 100 migrating ind.	Declining	CR	N/A	Protected	Breeding, Migrant	May-Oct	Ulytau Province (Migration)	H: Genetic fragmentation; Poaching (Wintering sites)
Korea, Republic of	0 - 1 ind.	Declining	CR	N/A	Protected	Rare wintering	Nov-Feb	Saemangeum	H: Anthropogenic disturbance (Photography) M: Habitat loss and fragmentation (Transportation networks) U: Agricultural intensification (Chemical application) Expected in coming years: Increased collision (Overhead cabling)

Country	Population Size (individuals)	Population trend (21st century)	National Red List status	Regional Red List status	National Protection Status	Presence in Country	Months of presence	Key sites	Key Threats
Kyrgyzstan	4 - 10 Migrating ind., 2 - 5 wintering ind., Breeding population possibly extinct	Historical decline	CR	N/A	Unknown	Unknown	Oct-April	Chui Valley; N border regions; Ysyk-Kol Province	H: Poaching M: Habitat loss and degradation (Overgrazing, Land-use change); Agricultural intensification
Mongolia	618 - 1,121 breeding ind., 50 - 200 wintering ind.	Declining	VU	N/A	Protected	Breeding, Wintering	Mar-Oct	Bulgan Tal; Selenge – Teel & Tarialan; Valleys of Khurkh-Khuiten Rivers; Onon-Balj; Mongol Daguur; Ugtam NR Uvs Lake Basin; Buir Lake; Nomrog; Khar Yamaat NR; Baruunturuun Wheatfield; Khalkhgol; Nomrog River Basin; Dornod Mongol SPA; Tsagaannuur Steppes of Selenge Province; Rashaant Wheatfields of Khovsgol; Bayan-Agt of Bulgan	H: Agricultural intensification (Mechanization); Poaching; Habitat loss (Unsustainable fire regime); Disturbance (Local people) M: Anthropogenically subsidized predation (Corvids); Genetic fragmentation; Habitat degradation (Overgrazing) L: Collisions (Overhead cabling); Anthropogenically subsidized predators (Dogs) Loc: Habitat fragmentation (Energy infrastructure, Transportation networks)
Morocco	74 ind. (2024), 40 - 44 ind. (2015)	Stable	N/A	N/A	Protected	Breeding, Wintering	Year-round	Tleta de Rissana; Araoua; Kanaouat; Tendafel; Chekbouchan; Mrhihtane; Had Kourt; Oued Tahadart	C: Agricultural intensification H: Poaching M: Habitat loss and fragmentation (Infrastructure development) L: Agricultural intensification (Chemical application) Loc: Anthropogenically subsidized predation (Dogs)
North Macedonia*	Extinct	N/A	N/A	LC	N/A	Rare wintering	Dec-Feb	Unknown	Unknown

Country	Population Size (individuals)	Population trend (21st century)	National Red List status	Regional Red List status	National Protection Status	Presence in Country	Months of presence	Key sites	Key Threats
Portugal	939 ind. (2021)	Steep decline (50% in 10 years)	EN	LC	Protected	Breeding, Wintering	Year-round	Alentejo, particularly within Special PAs	C: Agricultural intensification (Irrigation); Habitat loss, degradation and fragmentation (Conversion of cereal steppes to permanent pastures for beef production, with increase in early-cut fodder crops); Conversion of annual crops to perennial crops, principally in post-breeding habitat; Collision (Overhead cabling) M: Habitat loss (Infrastructure developments) U: Climate change; Predation
Republic of Moldova*	1 ind. (2024) First observation since 2015	N/A	CR	LC	Protected	Straggler	Aug	Dumbravita	C: Poaching; Habitat loss (Conversion of cereal steppes)
Romania*	6 - 7 breeding ind., 73 - 118 wintering ind. (2024)	Increasing (Wintering), breeding unknown	CR	LC	Protected	Breeding, Wintering	Year-round	Microregion of Salonta; Oradea Metropolitan Area (East Pannonian population)	H: Habitat loss (Conversion of grasslands); Habitat degradation (Overgrazing); Agricultural intensification (Chemical application, Mechanization) M: Agricultural intensification (Monocultures); Anthropogenically subsidized predation (Dogs); Disturbance; Climate change U: Collision (Overhead cabling, Fences); Habitat fragmentation (Transportation networks, Energy infrastructure); Anthropogenically subsidized predation (Corvids, Others); Public awareness; Legal obstacles Loc: Poaching (Accidental, due to misidentification)

Country	Population Size (individuals)	Population trend (21st century)	National Red List status	Regional Red List status	National Protection Status	Presence in Country	Months of presence	Key sites	Key Threats
Russian Federation, European part (Western subspecies, *O. t. tarda*)	2,500 - 3,000 ind. (2024)	Steep decline	EN (Federal; Western subspecies listing)	LC	Protected	Breeding, Wintering	Year-round	Trans-Volga Region (Saratov and Volgograd); E Black Sea Region	C: Agricultural intensification (Mechanization, Chemical application); Habitat loss (Conversion of cereal steppes) U: Collision (Overhead cabling)
Russian Federation, Northern Caucasus (Western subspecies, *O. t. tarda*)	20 - 30 breeding ind., 100 migrating ind., 50 wintering ind.	Declining	EN (Federal; Western subspecies listing)	N/A	Protected	Breeding, Migrant, Wintering	Unknown	Taman' peninsula; E coast of Sea of Azov; Zamanych'e; Svyatoi Nos area	C: Poaching; Lack of awareness H: Agricultural intensification (Chemical application, Mechanization); Habitat loss (Human encroachment); Anthropogenic disturbance (Local people) M: Collision (Overhead cabling)
Russian Federation, Kalmykia (Western subspecies, *O. t. tarda*)	1 - 5 breeding pairs, 3 - 50 migrating ind., 3 - 100 wintering ind.	Stable (Breeding), Unknown (Migrating)	EN (Federal; Western subspecies listing)	N/A	Protected	Breeding, Migrant, Wintering	Year-round	Gornovikovsly; Belozersk Lakes	Loc: Poaching; Agricultural intensification (Mechanization)
Russian Federation, southwestern Siberia: Kurgan, Tumen, Omsk, Tomsk, Novosibirsk, Kemerovsk, Altai provinces (Western subspecies, *O. t. tarda*)	25 - 105 breeding ind., 25 - 35 post-breeding ind.	Stable	EN (Federal; Western subspecies listing)	N/A	Protected	Breeding, Post-breeding	Apr-Oct	Kurgan Oblast': Zverinogolvsly district Tyumen Oblast': Ishim and Kazan districts Omsk Oblast': Russko-Polyanski; Cherlakski; Okoneshnikovski; Novovarshavski; Odesskii; Pavlogradski; Isilkulski districts; Novosibirsk Oblast': Chistoozerksi district;Altai Krai: Uglovsky district	C: Anthropogenically subsidized predation (Canids, Others); Legal obstacles H: Genetic fragmentation; Poaching; Public awareness; Habitat degradation (Overgrazing, Unsustainable fire regimes) M: Habitat fragmentation (Transportation networks) L: Agricultural intensification (Chemical application)
Russian Federation, Tyva Republic (Eastern subspecies, *O. t. dybowskii*)	50 - 60 ind.	Stable	CR (Federal; Eastern subspecies listing) CR (Tyva Republic)	N/A	Protected	Breeding	Apr-Nov	N part of Uvs-Nur River basin; Agar-Dag; Tere-Khol' Lake	H: Poaching L: Habitat degradation (Unsustainable fire regimes) Loc: Habitat degradation (Overgrazing); Anthropogenically subsidized predation (Canids)

Country	Population Size (individuals)	Population trend (21st century)	National Red List status	Regional Red List status	National Protection Status	Presence in Country	Months of presence	Key sites	Key Threats
Russian Federation, Zabaikal'skii Krai (Eastern subspecies, *O. t. dybowskii*)	250-380 ind.	Declining	CR (Federal; Eastern subspecies listing) CR (Zabaikal'skii Krai)	N/A	Protected	Breeding	Mar-Nov, some birds year-round	Torey Lakes depression and adjacent Daurian steppes, including Aginsk territory and Argun' River basin; Middle Onon River basin	H: Poaching; Unsustainable fire regimes; Habitat loss, degradation and fragmentation (Human encroachment); Anthropogenic disturbance (Local people, Agricultural activities, Grazing); Agricultural intensification (Mechanization causing destruction of clutches) M: Anthropogenically subsidized predators (Canids); Agricultural intensification (Monocultures, Chemical application); Anthropogenic disturbance; Climate change; Collision (Overhead cabling); Lack of public awareness
Serbia*	10 ind. (9 females, 1 young male) (2025)	Declining	CR	LC	Strictly protected	Breeding, Wintering	Year-round	N Banat (East Pannonian population); Pašnjaci Velike Droplje	H: Habitat degradation (Lack of management); Anthropogenically subsidized predation (Eggs and chicks) M: Agricultural intensification (Loss of small-scale agriculture especially on the wintering site) L: Habitat loss (Conversion of grasslands, Agricultural expansion)
Slovakia*	10 - 12 breeding ind., 300 - 620 wintering ind.	Declining (fluctuating)	EN	LC	Protected	Breeding, Wintering	Year-round	SPA Sysľovské polia (99 % of observations); W part of Žitný ostrov (Tomášov, Lehnice) (West Pannonian population)	U: Agricultural intensification (Lack of management); Anthropogenic disturbance; Habitat loss (Land-use change, Urbanization); Collision (Overhead cabling)

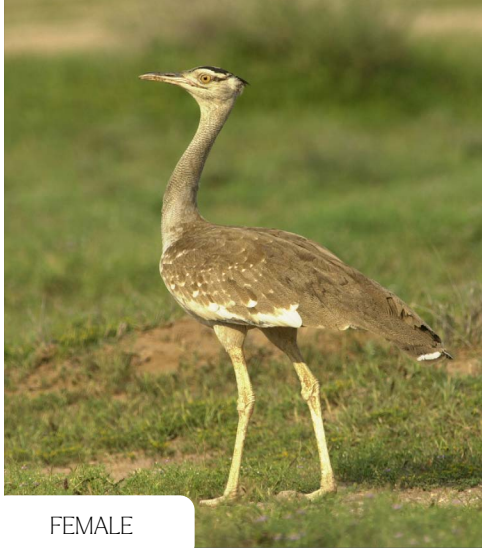
Country	Population Size (individuals)	Population trend (21st century)	National Red List status	Regional Red List status	National Protection Status	Presence in Country	Months of presence	Key sites	Key Threats
Spain	22,000 – 24,000 ind. (2022)	Declining (30% in less than one decade)	VU	LC	Strictly protected; Supplementary protection regimes at subnational level: EN (Andalusía, Aragón, Murcia and Navarra), VU (Castilla La Mancha and Valencia), EX (Catalonia) & Strictly Protected in remainder of Spanish autonomous communities	Breeding, Wintering	Year-round	Castilla y León; Castilla La Mancha; Extremadura; Madrid; Smaller populations in Andalusía, Aragón and Navarra	C: Habitat loss (Energy infrastructure, Transportation networks, Urbanization); Agricultural intensification H: Collision (Overhead cabling, Fencing) U: Poaching; Predation; Climate change
Syrian Arab Republic	Unknown	Steep decline	N/A	N/A	Protected	Rare wintering, Breeding population extinct	Oct-Feb	Al Jazira; Ras al-Ayn; Tual al-'Abba	C: Poaching
Tajikistan	2 – 14 ind.	Declining	CR	N/A	Protected	Migrant	Oct-Nov, Apr	Ganchi Region; Sogdy Province; Dangara Plateau; Sughd Region; Khatlon region; Kayrakkum Reservoir	C: Lack of awareness H: Legal obstacles M: Habitat loss (Conversion of shrublands); Anthropogenic disturbance L: Poaching; Habitat degradation (Overgrazing)

Country	Population Size (individuals)	Population trend (21st century)	National Red List status	Regional Red List status	National Protection Status	Presence in Country	Months of presence	Key sites	Key Threats
Türkiye	559 – 780 ind. (2021)	Declining	EN	LC (Europe)	Protected	Breeding, Wintering	Year-round	Aliken IBA; Acıgöl Basin; Dazkırı Basin; Polatlı TİGEM IBA; Tuz Gölü IBA; Seyfe Lake; Yüksekova; Altıntaş Plateau; Aliken; Çöl Lake; Çalıkdüzü; Bulanık and Malazgirt Plains; Samsam Lake; Upper Murat Valley; Muş Plain; Sarayönü; Yenipazar; Ceylanpınar; Bismil Plain; Karasu Plain; Patnos; Kavuştuk Peninsula; Van Plains	C: Poaching; Legal obstacles; Anthropogenic disturbance (Agriculture, Grazing) H: Agricultural intensification (Irrigation, Chemical application); Habitat loss (Conversion of grasslands); Habitat degradation (Unsustainable water use, Overgrazing); Climate change (Loss of freshwater, Desertification); Lack of awareness M: Collision (Overhead cabling); Anthropogenically subsidized predation (Dogs) Expected in coming years: Increased collision (Overhead cabling); Habitat loss (Energy infrastructure)
Turkmenistan	25 migrating ind., 25 – 50 wintering ind.	Declining	CR	N/A	Protected	Wintering	Oct-Apr	Foothills of NW Kopetdag range; Right bank of the Amudarya in Lebap Province; Chokrak-Tutly IBA	H: Poaching L: Habitat loss (Urbanization) Loc: Climate change (Increased frequency of extreme winter weather) U: Collision (Overhead cabling)
Ukraine*	500 – 650 breeding ind. incl. 120 – 150 females (2014), 1,500 – 2,000 wintering ind. (2014 – 2018)	Declining	EN	LC	Protected	Breeding, Migrant, Wintering	Year-round	Crimea (All year in the Steppe parts); Kherson Regions (All year in S part); Zaporihzhia Regions (Migrates and winters in C and S parts); Donetsk Region (Migrates in the S)	H: Habitat loss; Anthropogenic disturbance (Military activity); Agricultural intensification (Mechanization, Irrigation) L: Agricultural intensification (Chemical application) Loc: Collision (Overhead cabling) U: Anthropogenically subsidized predation (Eggs and chicks); Poaching

Country	Population Size (individuals)	Population trend (21st century)	National Red List status	Regional Red List status	National Protection Status	Presence in Country	Months of presence	Key sites	Key Threats
United Kingdom	50 - 60 ind. (2024)	Slight increase in reintroduced population	N/A (National); CR (Wiltshire County)	LC	Protected	Breeding, Wintering	Year-round	S Wiltshire; Salisbury Plain	H: Agricultural intensification (Mechanization) M: Collision (Power lines); Anthropogenically subsidized predation (Canids) L: Habitat degradation (Monocultures); Anthropogenically subsidized predation (Corvids); Disturbance Loc: Collision (Fences) U: Habitat fragmentation; Climate change; Legal obstacles
Uzbekistan	10 - 30 migrating ind., 50 - 500 wintering ind.	Stable?	CR	N/A	Protected	Wintering, Migrant	Oct-Mar	Gallaral and Forish Areas (Jizzakh Province)	H: Poaching; Habitat fragmentation (Energy infrastructure) Expected in coming years: Increased collision (Overhead cabling); Habitat loss (Energy infrastructure)

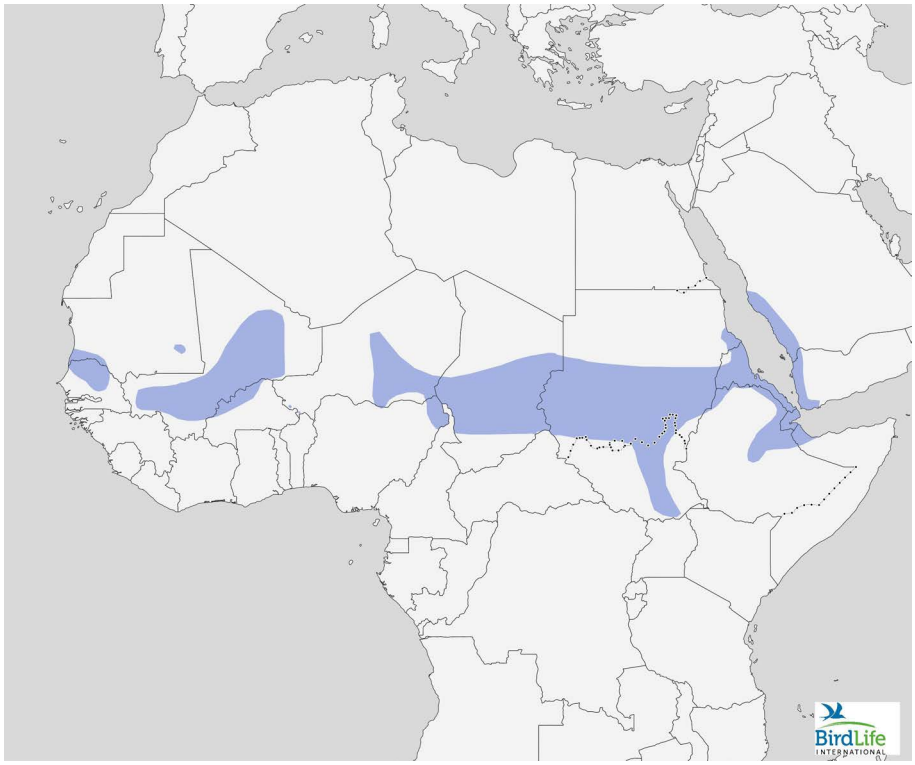
*Signatory to the Memorandum of Understanding on the Conservation and Management of the Middle-European Population of the Great Bustard *(Otis tarda)*

ARABIAN BUSTARD *(Ardeotis arabs)*



FEMALE

MALE



Political boundaries indicated in this map are those of the United Nations.

Year-round

Conservation status	Near Threatened
Global RedList Population Estimate	Unknown. Decreasing.

Regional names	Andola (Afar), الحبرو العربي (Arabic), Outarde arabe (French), Kadaufkara (Hausa), Al lawam (Yemen)
Size	♀ 75 cm, 4,500 g; ♂ 100 cm, 5,700–10,000 g
Subspecies	*A. a. lynesi:* Formerly Morocco; extinct *A. a. stieberi:* SW Mauritania & Senegambia to NE Sudan, W Eritrea & extreme NW Ethiopia *A. a. butleri:* S Sudan; few records in NW Kenya *A. a. arabs:* N & E Eritrea, NE Ethiopia, Djibouti & extreme NW Somalia; SW Saudi Arabia & W Yemen
Habitat	Semi-desert, esp. small vegetated wadis, stony plateaus, sandy areas with low vegetation. Open grassy plains, arid bush country, savanna, Acacia parkland & sometimes open woodland, reaching up to 920 m. Often found far from water but drinks frequently. Uses cultivated areas particularly tall crops (eg sorghum & millet) during hot hours.
Movement	Unclear. In Sahel zone, some migrate N in Jun, S in Oct after breeding. Presence in Sahel in dry season also reported & species is resident in Senegal except during severe conditions. Rare dry-season visitor to extreme N Ghana. *A. e. stieberi* vagrant to Algeria & S Morocco. Flies 150–450 m above ground in flocks, sometimes with *Neotis denhami*.
Breeding	Apr–Jun in Morocco & Arabia, although display noted Oct–Nov in Yemen. Jun–Oct (wetter periods) in Sahel, possibly later. Clutch 1–2 eggs.

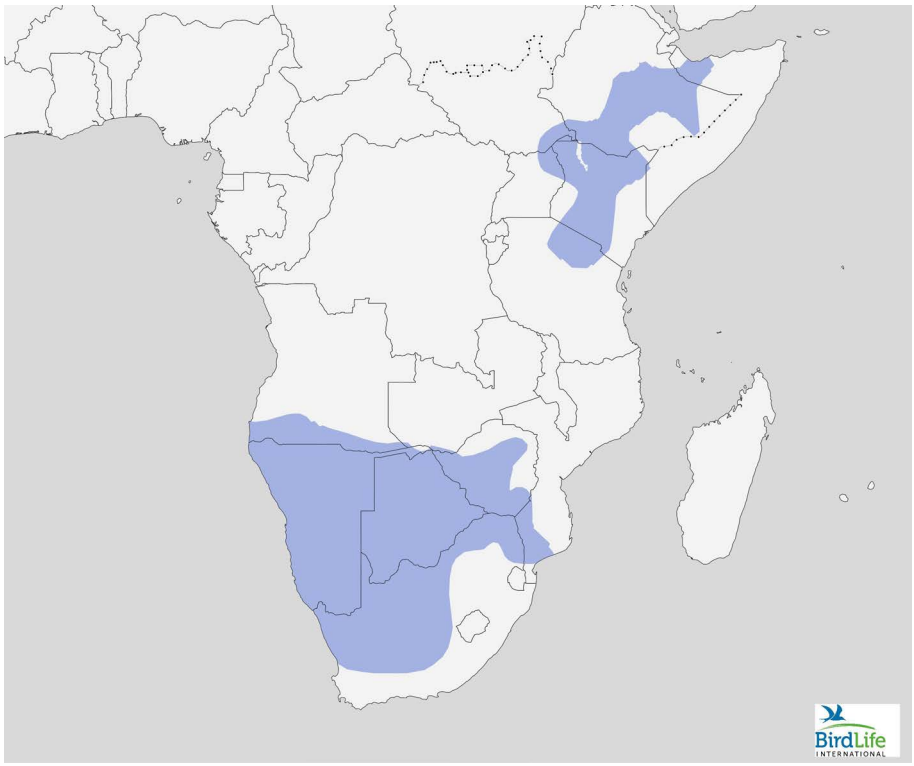
Content partners: BirdLife INTERNATIONAL CornellLab

Country	Population Size	Population trend	National Red List status	Regional Red List status	National Protection Status	Presence in Country	Months of presence	Key sites	Key Threats
Burkina Faso	None recorded out of 2,500 bird records in WABDaB (2022-2023)	Unknown	Unknown	Unknown	Unknown	Unknown	Jun	Sahel Reserve	H: Poaching
Cameroon	Unknown	Unknown	Unknown	Unknown	Unknown	Breeding	Unknown	Waza NP; Kalamaloué NP; Logone Floodplain; Lake Maga	Unknown
Central African Republic	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
Chad	Unknown. Observed at an average density of 0.25 birds/km² from large scale surveys conducted in a central 3,000 km² zone of the Ouadi Rime-Ouadi Achim Faunal Reserve (RFOROA) since 2011)	Unknown. Repeated surveys (2011-2024 in RFOROA indicated seasonal density fluctuations; No evidence of a long-term trend	N/A	N/A	Unknown	Breeding (10 nests recorded (2016-2019), were all found Jul - Sep, with newly fledged young recorded on 5 occasions from Aug – Jan in RFOROA)	Year-round in C Chad;Ouadi Rimé-Ouadi Achim Faunal Reserve	Lake Chad; Ouadi Rimé - Ouadi Achim PA (RFOROA); Ennedi Natural and Cultural Reserve (RNCE)	M: intentional and non-intentional bushfires, increased pastoralism, habitat loss due to agriculture U: Unsustainable hunting; Poaching
Djibouti	A few hundred ind.	Probably declining	N/A	NT	No species-specific conservation laws	Resident	Year-round	Moulhoulé; Madgoul Area; Andabba; 'Alta (Dôda, Dorra); Hanlé Plain (Yoboki); Djibouti-Loyada Area; Petit and Grand Baras; Djalélo; Lake Abhé Area (Alaylou); Goba'ad Plain (Dambillâli; Koûta Boûyya; As Ela, Diksa Dêre); Alaylou; Dambillali; Dorra, Petit Bara; Yoboki, As Eyla; Moul Holi	C: Habitat loss and degradation U: Poaching; Predation
Eritrea	20 breeding ind. in vicinity of Buri peninsula; numbers in other areas unknown	Possibly stable	EN	N/A	Unknown	Resident. May undertake seasonal movements to Saudi Arabia	Year-round	Massawa Coast (Wengobo, Gela'elo subregion, Buri Peninsula, Dahlak Islands); SW Gash Barka (Mogolo, Lailay Gash esp. Setit, Golij, Shambiko subregions); NW Gash Barka (Forto Sawa, Akordet subregions); Barka River	M: Habitat loss and degradation (Agricultural expansion, Chemical use, Human settlement) U: Climate change (Rising temperatures, Changes in rainfall), Human disturbance (Livestock grazing, Transportation)

Country	Population Size	Population trend	National Red List status	Regional Red List status	National Protection Status	Presence in Country	Months of presence	Key sites	Key Threats
Ethiopia	Unknown	Declining, though may be common in reserves	NT	Protected in Parks	Unknown	Breeding	Unknown	Afar lowlands; Awas River Basin Network; Awash NP; Yangudi Rassa NP; Hallaydeghe Asebot NP; Mile Serdo WR; Lake Turkana	C: Poaching (Subsistence); Habitat loss and degradation (Pastoralism) M: Climate change; Human wildlife conflict
Kenya	Very rare species in Kenya having occurred or seen only five times	Declining	NT	N/A	No species-specific conservation laws	Given the span of records from Jan to Jul, it is possible that the species is present in Turkana all year (Wamiti et al. 2016), but numbers seem likely to be small	Jan, Feb, Apr, Jul	N border of Kenya; Sibiloi NP; W Turka; E Turkana	C: Habitat loss and degradation; Poaching; Human wildlife conflict M: Climate change; Habitat degradation (Livestock)
Mali	Unknown	Unknown	N/A	N/A	Unknown	Unknown	Unknown	Falaise de Bandiagara; Reserve des Elephants	Unknown
Mauritania	Unknown	Declining	Unknown	Unknown	Protected	Resident	Year-round	Diawling NP; Chott Boul; Aftout Es Sâheli; Adrar; Wad Initi	C: Poaching
Niger	Unknown	Unknown	N/A	N/A	Unknown	Breeding, partial migrant (Seasonal intra-African movements); Resident in some areas	Year-round	Termit and Tin-Toumma NR (RN-NTT): Termit Massif; Taguedoufat Area; Dilia Achetinamou Aïr; Ténéré NR (RNNAT): Aïr Mountains; W Wadis and W border of Reserve; Makalondi district; "W" NP; Dilia de Lagané; Diffa-Kinzindi; Gadabedji Faunal Reserve	U: Trade (International, Commercial); Habitat loss and degradation; Hunting
Nigeria	Likely <100 ind. Likely rare in the country considering high monitoring effort. At least seven records via NiBAP (2015-2025), plus others outside, including Babban Gida (12.10.24)	Declining	N/A	N/A	Unknown	Unknown	Jul-Nov	Nearly all recent reports from NE Nigeria. Gujba Forest Reserve; Yobe State; Chad Basin NP; Chingurmi - Duguma Sector; Sambisa GR (Borno State)	U: Habitat loss (Conversion of grasslands and scrublands); Habitat degradation (Overgrazing); Unsustainable hunting; Poaching; Climate change; Illegal trade; Agricultural intensification (Chemical application, Mechanization); Legal obstacles; Lack of awareness

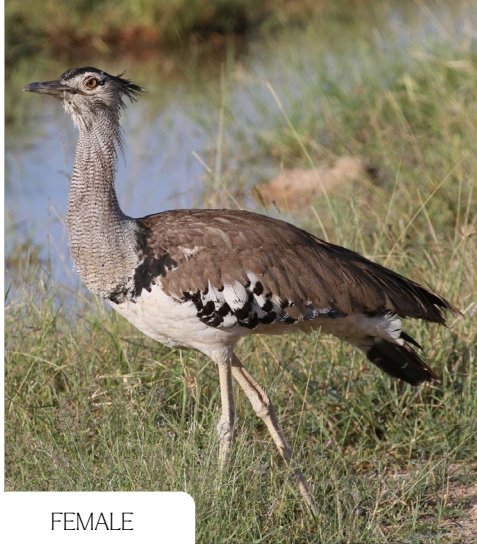
Country	Population Size	Population trend	National Red List status	Regional Red List status	National Protection Status	Presence in Country	Months of presence	Key sites	Key Threats
Saudi Arabia	Last observation in 2018, on Farasan Island	Breeding likely extinct Non-breeding: Steep decline	N/A	CR	Protected	Formerly breeding on mainland; now only non-breeding	Irregular	Farasan Island: Al-Kabir; Tihama Coast: Al-Habrow al-Arabi' IBA; Faj Al Khail (E of Al Lith); Khabt Khamis Harb; Wadi Hali; Wadi Aramram; Jebel Lababa	C: Poaching (accelerated by road development); Illegal trade (Recipient) M: Habitat degradation (Overgrazing, Land-use change); Habitat loss (Infrastructure developments)
Senegal	Unknown	Unknown	Unknown	Unknown	Unknown	Recent observations at Djoudj NP & Reserve Animaliere d'Amboura (3 ind.); No other records (probably no observers in good habitats)	Unknown	Ntiagar to Richard-Toll; Ferlo North; Ferlo South; Djoudj NP; Reserve Animaliere d'Amboura	Unknown
Somalia	Unknown	Unknown	N/A	N/A	Legislation proposed within Somaliland	Likely resident, though nesting not yet reported	Unknown	Awdalland incl. Seylac; Huddisa; Geriyaad Plai	H: Illegal hunting (For sport, in Somaliland) M: Trade (Medicinal use)
Sudan	No record since 1977, Status unclear	Unknown	Unknown	Unknown	Unknown	Breeding	Unknown	Malakal; Imatong Mountains IBA; Kidepo IBA; Namorpus	Unknown
South Sudan	Two records in 21st century (Nyingar 1 ind., 14.09.2021; Nanyangachor 1 ind., 7.12.2005)	Unknown	Unknown	Unknown	Unknown	Status unclear	Unknown	Along the White Nile; Nyingar; Nanyangachor	Unknown
Yemen	20 - 100 ind.	Declining	Unknown	CR	Not protected	Resident	Year-round	Al Kadan IBA; Bajel & Qetfzumila; Al Qutay & Al Murah IBA; Al Marufiyah; Wadi Mawr - Al Zuhrah; Hiswat Al Hugayma	C: Illegal trade (Live birds and eggs); Agricultural intensification (Irrigation, Chemical application) M: Anthropogenically subsidized predation (Dogs)

KORI BUSTARD *(Ardeotis kori)*



Political boundaries indicated in this map are those of the United Nations.

Year-round



FEMALE

MALE

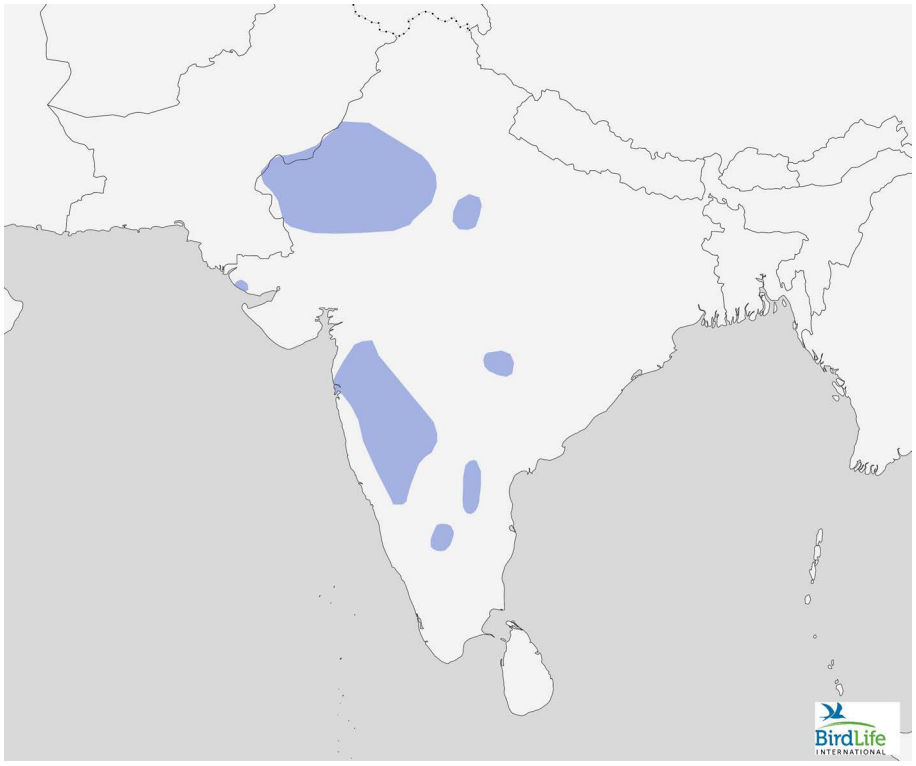
Conservation status	Near Threatened
Global RedList Population Estimate	Unknown. Decreasing.

Regional names	Gompou (Afrikaans), Abetarda-gigante (Angola), حبارى كوري (Arabic), Epwezam-pundu (Kwangali), Etwangema (Oshiherero), Kgori (Setswana), Iseme (Xhosa and Zulu)
Size	♀ 90 cm, 5,900 g; ♂ 120 cm, 10,900–19,000 g
Subspecies	*A. k. struthiunculus:* NW Somalia & C Ethiopia through SE S Sudan, NE Uganda (rare) & Kenya to N Tanzania *A. k. kori:* S Angola & Namibia E through Botswana to S Zimbabwe & S Mozambique & S to S Africa
Habitat	Flat, arid, open country, below 2000 m, eg grassland, karoo, scrubland & savanna, also floodplains, cereal fields & firebreaks. During hot season may use woodlands or closed-canopy scrub.
Movement	Largely sedentary. Local movements during Jan–Mar into woodland, though possibly not by breeding birds.
Breeding	Sept–Feb in S Africa, Dec–Aug (according to rains) in E Africa. Nests on the ground near features like grass clumps or rocks, sometimes in tree shade. The nest is a shallow scrape, occasionally lined with grass. Typically 2 eggs (1 in drier years), incubation 25 days.

Country	Population Size	Population trend	National Red List status	Regional Red List status	National Protection Status	Presence in Country	Months of presence	Key sites	Key Threats
Angola	Unknown	Unknown	N/A	N/A	Unknown	Resident	Unknown	Cuando Cubango	Unknown
Botswana	Unknown	Declining (1991-2005)	N/A	N/A	Unknown	Unknown	Unknown	N Tuli GR	Unknown
Eswatini	Unknown	Declining possibly locally extinct in 1970s	N/A	NT	Unknown	Unknown	Unknown	Unknown	Unknown
Ethiopia	Unknown	Declining (1980s-2009)	N/A	N/A	Unknown	Unknown	Mar-Jun, Oct-Nov	Liben Plain	U: Agricultural intensification; Collision (Overhead cabling); Poaching
Kenya	1,500 - 4,000 ind.	Steep decline	N/A	N/A	Protected in Parks	Resident, Partial migrant	Year-round, Breeding: Dec-Aug, Local movements with wet season	Laikipia IBA; Samburu IBA; Nairobi NP; Amboseli NP; Masai Mara; Tsavo NP; Shimba NP; Masai Mara NR; Narok County	C: Collision (Overhead cabling, Fencing); Habitat loss and fragmentation (Energy infrastructure, Fencing); Habitat fragmentation (on private land in Kajiado) M: Habitat loss (Livestock, Overgrazing) U: Collision (Aircraft during landing or take off)
Mozambique	Unknown	Declining (1970-1999)	N/A	N/A	Unknown	Unknown	Unknown	Unknown	Unknown
Namibia	5,000 - 10,000 ind.	Unknown, possibly declining	NT	N/A	Protected	Resident	Year-round	Throughout Namibia	U: Collision (Overhead cabling, Wind turbines); Habitat loss and fragmentation (Energy infrastructure), Land-use change; Poaching
Somalia	Unknown	Declining (1970s–1998)	N/A	N/A	Legislation proposed within Somaliland	Likely resident	Rainy season	Jawaale; Qool-cade; Aroor Plain; Taagga Duudka; Bannaanka Saraar (Ban Ado Plain)	H: Poaching (For sport, in Somaliland) M: Poaching (Outside Somaliland); Trade (Medicinal use)
South Africa	2,000 - 5,000 ind. (2000)	Declining	N/A	NT	Protected	Resident	Year-round	N Cape: Kgalagadi Transfrontier Park; Meerkat NP Lowveld:Kruger NP N parts of the Bushveld (including Mapungubwe NP); S Nama Karoo (between Beaufort West and Aberdeen); Botsalano NR	H: Collision (Overhead cabling) M: Climate change (Habitat shifting and droughts); Habitat loss and degradation (Land-use change, Invasive alien plant species) U: Poaching

Country	Population Size	Population trend	National Red List status	Regional Red List status	National Protection Status	Presence in Country	Months of presence	Key sites	Key Threats
South Sudan	Unknown	Declining (1976-1989)	N/A	N/A	Unknown	Unknown	Unknown	Unknown	Unknown
Tanzania	Unknown	Declining (1970s-2012)	N/A	N/A	Protected	Resident	Year-round	Ngongoro NP; Serengeti NP; Kitulo NP; Occasional small numbers in the Mtera basin; No space S of Kibaya Ridge; Possible presence in Wembere Steppe, though Area is poorly known	C: Poaching; Habitat loss and degradation (Agriculture, Urbanization, Overgrazing, Land-use change); Collision (Overhead cabling) L: Predation; Climate change (Droughts)
Uganda	Unknown	Declining, possibly locally extinct since 1970s	DD	N/A	Protected	Resident	Year-round	Kidepo NP; Queen Elizabeth NP	C: Poaching;Collision (Overhead cabling) M: Habitat loss and degradation (Agriculture, Invasive alien plant species incl. Prosopis juliflora) L: Natural predation (Large cats and birds of prey)
Zambia	Unknown	Slight increase (1997-2012)	N/A	N/A	Unknown	Unknown	Apr-Nov	Range expansion in Zambia; Zambian side of Zambezi between Simungoma Plain and Kazungula; Tongabezi Area and Livingstone	Unknown
Zimbabwe	Unknown	Declining (1980-1990)	N/A	N/A	Unknown	Unknown	Unknown	Tuli Circle	Unknown

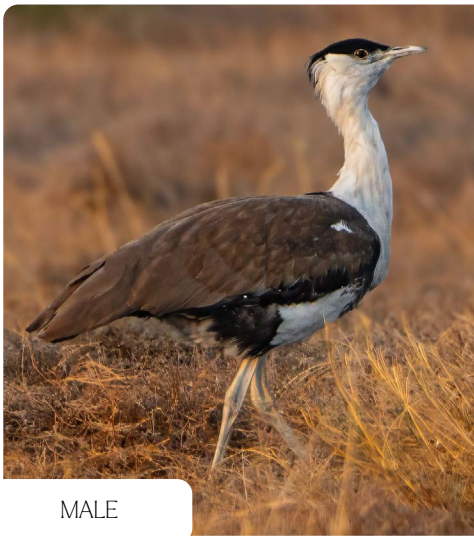
GREAT INDIAN BUSTARD *(Ardeotis nigriceps)*



Political boundaries indicated in this map are those of the United Nations.

Year-round

FEMALE



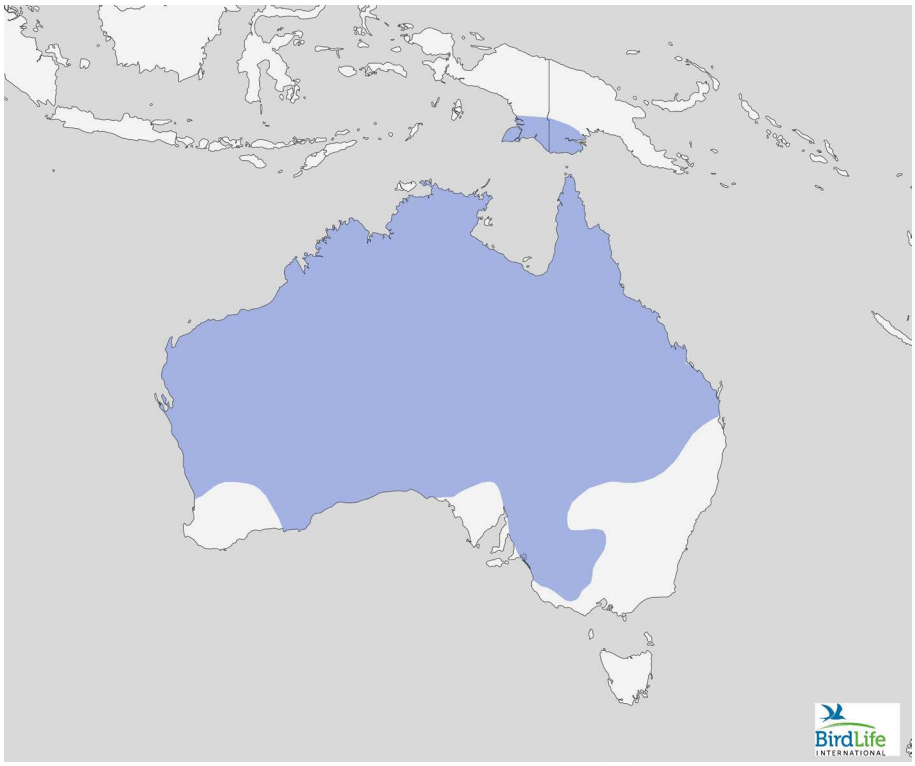
MALE

Conservation status	Critically Endangered
Global RedList Population Estimate	50–249. Decreasing.

Regional names	Ghorada (Gujarati),**गोडावण**(Hindi), Erladdu (Kannada),**माळढोक**(Marathi), (Urdu)تغدر
Size	♀ 76–92 cm, 3,500–6,750 g; ♂ 100–122 cm, 8,000–14,500 g
Subspecies	Monotypic
Habitat	Rolling grassland with vegetation 30–70 cm high, with or without scattered trees; open scrub, sandy semi-desert plains, broad pastures, marginal fields & lightly disturbed cultivation.
Movement	Sedentary or seasonally nomadic, movements at various periods depending probably on availability of water; movement across the international border in Thar desert expected.
Breeding	Mar–Jun in N of range. Courtship display sometimes observed on moonlit nights, as well as by day. Nest is a shallow, sometimes sparsely lined scrape, often with virtually no adjacent cover. Clutch size one egg, rarely two, incubation 27 days. Young remains with ♀ until start of next breeding season.

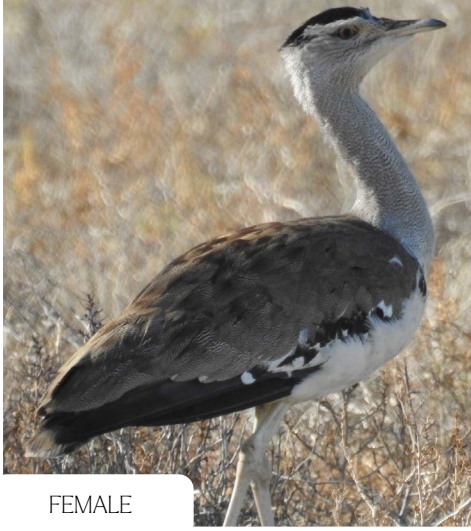
Country	Population Size	Population trend	National Red List status	Regional Red List status	National Protection Status	Presence in Country	Months of presence	Key sites	Key Threats
India	<150 ind. in the wild Of these, ~100 - 140 ind. in Rajasthan, <4 ind. in Kutch, Gujarat, <2 ind. in Maharashtra, <5 ind. in Karnataka, <5 ind. in Andhra Pradesh	Declining	N/A	N/A	Schedule I of Wildlife (Protection) Amendment Act, 2022 – Highest legal protection in India	Resident	Year-round	Rajasthan: Thar Desert, particularly-Desert NP; Pokhran Field Firing Range; Rasla-Degrai Oran Area Gujarat: Abdasa and Mandvi talukas of Kutch District; Naliya Grassland; Kutch Bustard Sanctuary (KBS) & its Eco-sensitive Zone; Godhra-Dedhiya-Bayath-Jakhau Coastal Grasslands Historical records: from Banni Grasslands (1980s) in Kutch; Blackbuck NP (2005); Little Rann of Kutch (2008)	C: Collision (Overhead cabling, (electric) Fences); Habitat loss, degradation and fragmentation (Plantation of exotic tree species, Invasive alien plant species incl. Zizyphus nummularia in Naliya Grassland; Prosopis juliflora, Conversion of grasslands and cereal steppes, Overgrazing, Transportation networks, Energy infrastructure); Agricultural intensification (Irrigation, Mechanization); Anthropogenically increased predation (Dogs, Foxes); Legal obstacles (Lack of grasslands policy) H: Agricultural intensification (Chemical application); Anthropogenic disturbance; Genetic fragmentation and inbreeding; Climate change M: Predation (Natural predation); Lack of awareness L: Collision (Traffic); Anthropogenically subsidized predation (Corvids)
Pakistan	27 - 35 ind.	Unknown	N/A	N/A	Protected	Likely resident, breeding is not confirmed, however chicks seen by locals in Cholistan	Year-round	GIB WS in Cholistan Desert and District; TharParkar in Thar Desert	C: Poaching H: Agricultural intensification (Chemical application during locust control in Cholistan Desert) L: Habitat degradation

AUSTRALIAN BUSTARD *(Ardeotis australis)*

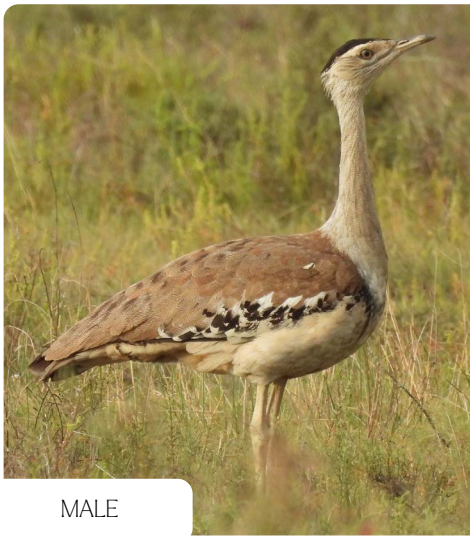


Political boundaries indicated in this map are those of the United Nations.

Year-round



FEMALE



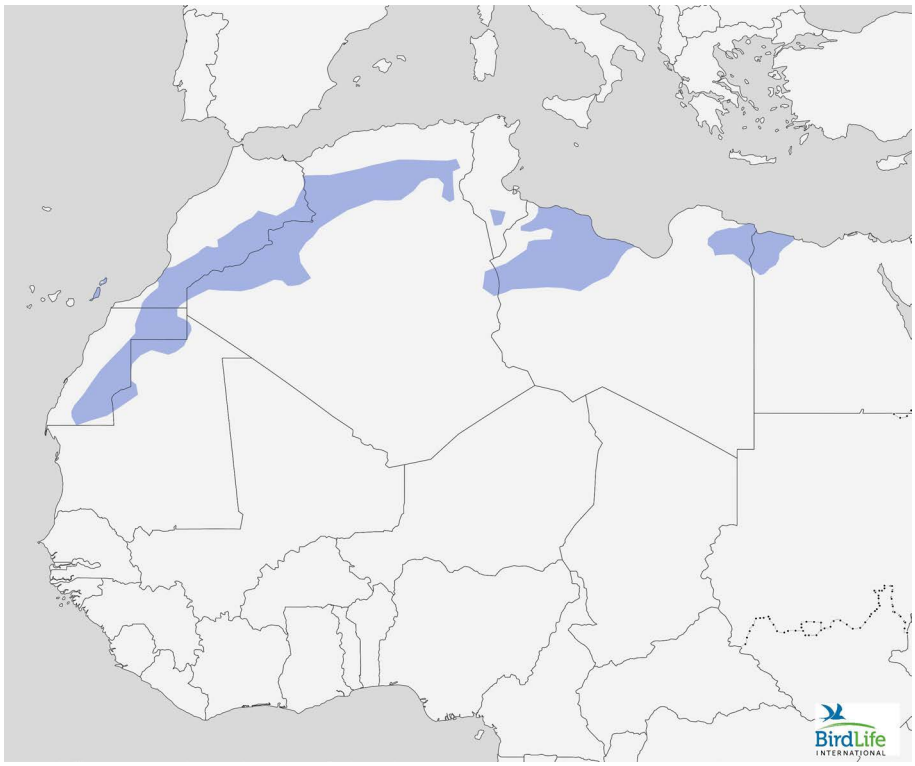
MALE

Conservation status	Least Concern
Global RedList Population Estimate	6700–67,000. Decreasing.

Regional names	Kalkun padang (Bahasa Indonesia), Kipara (Pitjantjatjara), bebilya (Noongar), Kawukawuni (Tiwi), Wardilyka (Warlpiri)
Size	♀ 90 cm, 2,800–3,200 g; ♂ 120 cm, 5,600–8,200 g
Subspecies	Monotypic
Habitat	Grasslands dominated by tussocky grasses, as well as sparse shrubland, savanna, open woodland & swamp edges. Often in burnt, regenerating, or cultivated areas. Breeds in the ecotone between high- & low-cover habitats.
Movement	Sedentary in parts of its range but may disperse nomadically in the non-breeding season. Populations in higher-rainfall N Australia are more sedentary, while those in drier areas may travel further. In S & C Queensland, it moves east in autumn & returns west later. It irrupts in response to droughts, regional rainfall, grasshopper & mouse plagues & bushfires. Migration between New Guinea & Australia is reported but requires further verification.
Breeding	Apr–Nov in the south, aseasonal in more arid northern regions, appearing in response to rainfall. Nests are on bare ground. Clutch size 1–2 eggs, rarely 3; incubation 23–24 days.

Country	Population Size	Population trend	National Red List status	Regional Red List status	National Protection Status	Presence in Country	Months of presence	Key sites	Key Threats
Australia	10,000 –100,000 ind.	Stable in parts of the N; Scarce in S/ Coastal regions	N/A Sub-national level: CR (Victoria); EN (New South Wales); VU (South Australia); NT (Western Australia and the Northern Territory); LC (Queensland)	N/A	Protected under state/territory legislation; Not nationally listed	Resident (arid interior and tropical savanna regions)	Year- round	Mitchell Grass Downs; Great Victoria Desert; Kidman Springs & Daly River; Black Soil Plains; Channel Country; Tanami Desert; Arafura Swamp; Alligator Rivers Floodplains; Boodjamulla; Buckley River; Staaten River; Gulf Plains; Broad Sound; Diamantina and Astrebla Grasslands; Lake Yamma Yamma; Coongie Lakes; Lake Sylvester System; Lake Argyle; Lake Machattie Area; Mornington Sanctuary; Ord Irrigation Area; Fortescue Marshes; Lake Gregory/Paraku; Mandora Marsh and Anna Plains; Roebuck Bay; Diamantina Floodplain; Simpson Desert	U: Anthropogenically introduced predators (Foxes, Cats, Dogs); Unsustainable hunting; Habitat loss and fragmentation (Land-use change, Overgrazing, Invasive alien plant species, Unsustainable fire regimes); Collision (Fences, Overhead cabling); Lack of awareness
Indonesia	Unknown	Unknown	N/A	N/A	Not protected; No species-specific conservation laws	Unknown (Suspected resident)	Year- round	Papua Province	U: Habitat loss and degradation (Land-use change); Unsustainable hunting; Lack of information
Papua New Guinea	Likely <50 ind.	Unknown	N/A	N/A	Not protected; No species-specific conservation laws	Resident	Year- round	Bensbach River area; Trans-Fly region from Wuroi; Near the Oriomo River; W of Kurik; Irian Jaya	U: Habitat change; Unsustainable hunting; No formal assessment due to rarity

AFRICAN HOUBARA *(Chlamydotis undulata)*



Political boundaries indicated in this map are those of the United Nations.

Year-round

FEMALE

MALE

Conservation status	Vulnerable
Global RedList Population Estimate	11,000–30,000 individuals. Decreasing.

Regional names	الحبارى الأفريقية (Arabic), Outarde houbara (French), Tirẓi (Kabyle), Hubara (Spanish)
Size	♀55–66 cm; ♂ 65–75 cm
Subspecies	*C. u. undulata:* Sparsely distributed across N Africa. Few wild populations remain; majority of current sightings involve released captive-bred birds or perhaps their progeny *C. u. fuertaventurae:* E Canary islands, primarily Lanzarote, Fuerteventura and La Graciosa
Habitat	Arid sandy semi-deserts, flat stony plains with xerophytic scrub & marginal cultivations in the non-breeding period. Ideal habitats combine good visibility & dispersed shrubs for concealment. Areas of heavy human activity are avoided by wild individuals.
Movement	*C. u. undulata:* Local movements between breeding & non-breeding grounds, with the latter varying depending on conditions. *C. u. fuertaventurae:* Movements between islands occasionally noted.
Breeding	Nov–Jun. Rainfall is probably the primary factor affecting the timing of breeding. Nests on open ground but usually near cover. Clutch size: 1–3 eggs; incubation period 23–24 days.

*CITES trade data: Units are live individual birds unless otherwise noted. Purpose codes (e.g., Science, Reintroduction) are as reported on CITES permits. Only data pertaining to live birds and eggs are summarized here. Data are from CITES Trade Database v2024.1.

Country	Population Size (Wild ind.)	Population trend	National Red List status	Regional Red List status	National Protection Status	Presence in Country	Months of presence	Key sites	Key Threats	International trade in Houbara per CITES through 2023*:	Breeding Centers
Algeria	2,720 ind. (2005)	Declining and precarious (wild lineages) Observations of released captive-bred birds have increased near border with Morocco	N/A	N/A	Hunting prohibited under Ordinance No. 06-05 of July 15, 2006. Certain authorizations are granted to hunt captive-bred ind.	Resident	Year-round	Biskra; Ouargla; Grand Erg Oriental (Béchar); Oued Mya; Grand Erg Occidental; M'Zab Region (Ghardaïa) Releases of captive-bred birds have been conducted from E (El M'Ghaier and Ouled Djellal) to W (El Bayadh; Nâama; Béchar; Béni Abbes)	C: Poaching; Unsustainable hunting H: Disturbance; Climate change (Aridification) M: Habitat loss, degradation and fragmentation (Overgrazing) U: Anthropogenically subsidized predation (Dogs)	Export: Science: 40 eggs Import: Reintroduction: 21,917 ind.	1) Emirates Bird Breeding Center, in Labiodh Sidi Sheikh, El Bayadh province. 500 Houbara released per year 2) Algerian-Qatari Center in El Bayadh, production of 5,000 bustards per year
Egypt	Wild population likely extinct. Captive-bred birds released	Declining, likely extinct as wild species. No recent evidence confirms breeding	N/A	N/A	Legally protected under Egyptian Law 4/1994 (amended 2009) for the Environment. National Plan for Controlled Hunting concerns captive-bred released birds.	Formerly resident	Year-round	Siwa Oasis; BahariyaEl Alamein and Marsah Matruh (Release of captive-bred ind.) Note: Houbara in Sinai pertain to ***Asian*** species of Houbara; see "Asian Houbara"	C: Poaching; Unsustainable hunting H: Habitat loss, degradation and fragmentation (Infrastructure developments, Oil and gas exploration); Agricultural intensification; Disturbance (Off-road vehicles, Grazing); Climate change (Desertification, Resource scarcity)	Import: Reintroduction: 14,640 ind.	Pre-release facility to hold 2,500 captive-bred Houbara
Libya	1,000 ind. (2004), wild population likely extinct	Declining, likely extinct as wild species	Unknown	N/A	Protected by Environmental Protection Law, Section 9 and Hunting Law	Resident	Year-round	Sirte Released captive-bred birds: 100 ind. S of Derna city, 280 ind. in Ashouba E to Tobruk city	C: Disturbance (Military actions) H: Unsustainable hunting; Habitat degradation	Import: Breeding: 520 ind. Commercial: 322 ind. Science: 142 ind.	Presumably exist, as CITES permits are coded for breeding purposes

*CITES trade data: Units are live individual birds unless otherwise noted. Purpose codes (e.g., Science, Reintroduction) are as reported on CITES permits. Only data pertaining to live birds and eggs are summarized here. Data are from CITES Trade Database v2024.1.

Country	Population Size (Wild ind.)	Population trend	National Red List status	Regional Red List status	National Protection Status	Presence in Country	Months of presence	Key sites	Key Threats	International trade in Houbara per CITES through 2023*:	Breeding Centers
Mauritania	Likely extinct	Likely extinct	Unknown	Unknown	Not protected	Breeding not confirmed	Unknown	Inchiri; Adrar; Tiris Zemmour	C: Unsustainable hunting	Import: Reintroduction: 2,604 ind. Breeding: 934 ind.	One, launched in 2021
Morocco (Western Sahara included)	~5,000 ind. (incl. released birds and their offspring)	Likely extinct as wild species. Increasing numbers of released captive-bred birds with some offspring	N/A	N/A	Protected	Resident	Year-round	High Plateau of E Morocco; Zagora; Mhamid; Boulemane; La'ayoune;Missour; Tata; Goulmimine (captive-bred released birds)	C: Poaching H: Anthropogenically subsidized predation (Dogs);Genetic threats (Genetic swamping from lineages adapted to captivity, Hybrid swarms) L: Habitat degradation (Livestock)	Export: Reintroduction: 48,196 ind. Captive Breeding: 23,376 ind. Science: 56 eggs, 513 live ind. Personal/Commercial: 1,200 ind. Import: Personal: 510 ind. Breeding: 822 ind.	1) International Foundation for the Conservation and Development of Wildlife (IFCDW), Agadir, Annual releases of 1,000 ind. 2-3) Emirates Centre for Wildlife Propagation (ECWP), Missour & Enjil, Annual releases >10,000 ind. 4) Errachidia Wildlife Breeding Center (EWBC), Errachidea 5) International Foundation for Natural and Wildlife Preserves (IFNWP), Guelmim, Annual production 8,000 eggs

*CITES trade data: Units are live individual birds unless otherwise noted. Purpose codes (e.g., Science, Reintroduction) are as reported on CITES permits. Only data pertaining to live birds and eggs are summarized here. Data are from CITES Trade Database v2024.1.

Country	Population Size (Wild ind.)	Population trend	National Red List status	Regional Red List status	National Protection Status	Presence in Country	Months of presence	Key sites	Key Threats	International trade in Houbara per CITES through 2023*:	Breeding Centers
Spain (Canary Islands)	85 - 109 ind. on Fuerteventura (2021), 440 - 452 ind. on Lanzarote (2018), 11 - 16 ind. on La Graciosa (2020)	Declining (50% in the last 15 years)	EN	VU	Strictly protected	Resident	Year-round	Lanzarote: El Jable; Famara; Zonzamas; Plains of La Corona; Plains of Mareta-Hoya de la Yegua Fuerteventura: Llano Laguna; Taca; Time; Majanicho Tindaya Plains; Corralejo; Matas Blancas; Isthmus of Jandía Sandy Plain; Lajares Sandy Plain-Cotillo-Ezquinzo; Morro Tabaiba-Morro de los Rincones-Vallebrón Mountains; Los Molinos Gully-Plain of La Laguna; Cuchillete de Buenavista-Gully of La Torre-Los Alares; Cabras gully; Llano Grande - Malpaís; Grande - Malpaís Chico	C: Habitat loss (Destruction of Launaea shrubland, Sand extraction); Collisions (Overhead cabling); Habitat fragmentation (Tourism development, Urban sprawl) H: Collisions (Traffic); Habitat loss (Abandonment of traditional agriculture "gavias", Energy developments (Wind and solar farms)) M: Climate change; Habitat degradation (Agricultural intensification) Predation (Cats); Anthropogenic disturbance (Tourism) L: Collisions (Fences) Loc: Disturbance (Truffle collectors) U: Anthropogenically subsidized predation (Corvids)	None registered; though 1 tagged captive bred bird identified on the island	None

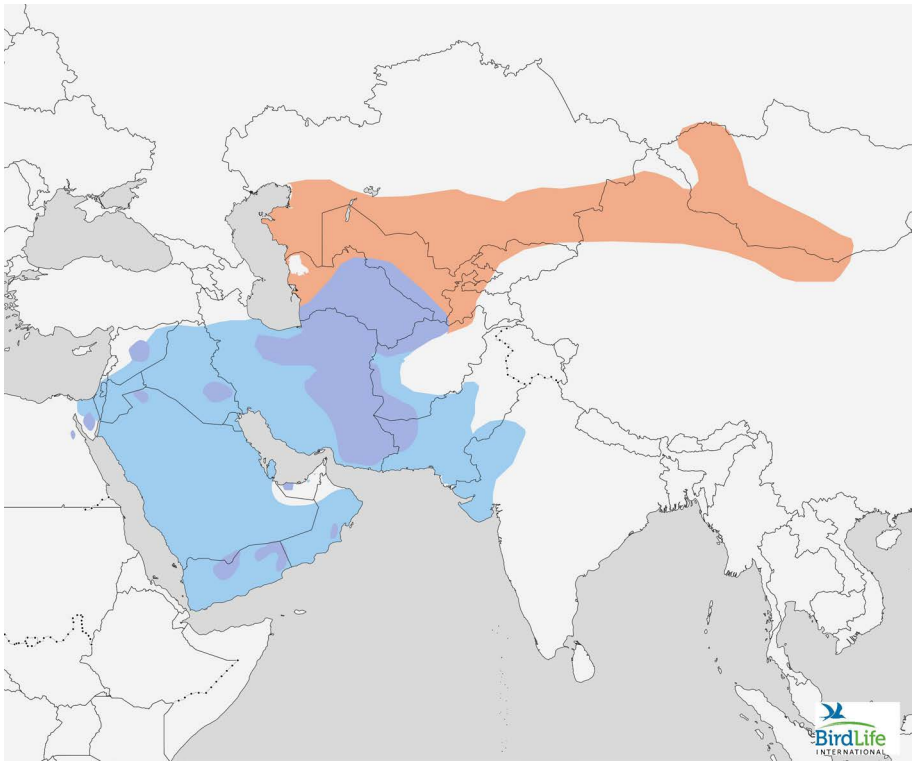
*CITES trade data: Units are live individual birds unless otherwise noted. Purpose codes (e.g., Science, Reintroduction) are as reported on CITES permits. Only data pertaining to live birds and eggs are summarized here. Data are from CITES Trade Database v2024.1.

Country	Population Size (Wild ind.)	Population trend	National Red List status	Regional Red List status	National Protection Status	Presence in Country	Months of presence	Key sites	Key Threats	International trade in Houbara per CITES through 2023*:	Breeding Centers
Tunisia	Small, relict populations	Declining	EN	N/A	Protected	Resident	Year-round	Gouvernorat de Mednine; Gouvernorat de Tataouine; Gouvernorat de Touzer; Gouvernorat de kebili et notamment Sidi Toui NP; El Ouara; Jbil NP; Oum Chiah; Le Daher	C: Poaching H: Disturbance (Off-road vehicles, Dogs) Loc: Habitat loss (Land-use change)	None registered	At the end of 1996, the Institut des Régions Arides de Médenine (IRA) was tasked by the supervisory department (SERST) with initiating a project aimed at conserving this bird in Tunisia and setting up a captive breeding unit; outcomes are unknown

ASIAN HOUBARA *(Chlamydotis macqueenii)*

FEMALE

MALE



Political boundaries indicated in this map are those of the United Nations.

Year-round **Breeding** **Non-Breeding**

Conservation status	Vulnerable
Global RedList Population Estimate	33,000–67,000. Decreasing.

Regional names	حباری آسیوی(Arabic), 波斑 (Chinese), Macqueen's bustard (English alternative), Tilōra (Gujarati), חוברה מדברית (Hebrew), Жек дуадак (Kazakh), Жороо тоодог (Mongolian), هوبره (Persian), ਤਲੌਰ (Punjabi), Джек, Дрофа-красотка (Russian), Togdary (Turkmen), Йўрға тувалоқ (Uzbek)
Size	♀ 55–66 cm, 1,100–1,700 g; ♂ 65–75 cm, 1,500–2,400 g
Subspecies	Monotypic
Habitat	Semi-deserts, deserts & Artemisia steppe. Open, arid plains with clay, sandy, or gravel substrates. Ideal habitats combine good visibility & dispersed shrubs 1-2 m height for concealment. Areas of heavy human activity are avoided by wild individuals. Rarely found in low-intensity cultivation during winter.
Movement	Sedentary & locally nomadic in SW Asia and SW Iran, wandering irregularly in response to drought. C Asian populations are highly migratory, leaving breeding grounds between Aug–Oct. Juveniles migrate separately from adults. Winter populations vary yearly based on habitat conditions. Birds return N in Mar–Apr.
Breeding	Breeding immediately following spring arrival. Nest is a shallow, unlined scrape on the ground, often in open desert but usually shaded by some cover. Clutch of resident birds is 2–3 eggs; of migratory birds 3–5 eggs.

*CITES trade data: Units are live individual birds unless otherwise noted. Purpose codes (e.g., Science, Reintroduction) are as reported on CITES permits. Because Asian Houbara was only recently split from African Houbara, permits pertaining to both *Chlamydotis* species are summarized for each country. Only data pertaining to live birds and eggs are summarized here. Data are from CITES Trade Database v2024.1.

Country	Wild Population Size	Population trend	National Red List status	Regional Red List status	National protection status	Presence in Country	Months of presence	Key sites	Key Threats	International trade in Houbara per CITES through 2023*	Breeding Centers in Country
Afghanistan	Unknown	Unknown	N/A	N/A	Unknown	Migrant, Wintering, Formerly resident in S, breeding migrant in N near Mazar-e-Sharif	Year-round	Unknown	H: Foreign hunting parties U: Illegal trade (Live birds)	None registered	May exist
Azerbaijan	<10 ind. (highly variable depending on reintroduction activity)	Increasing (Captive bred birds with unusual migration)	CR	N/A	Protected	Migrant, Wintering, Formerly breeding	Oct-Dec	Nakhchivan (historically)	C: Habitat loss (Nakhchivan) U: Genetic threats (Translocation of inappropriate lineages within Kazakhstan resulting in unusual migration observations in Azerbaijan)	None registered	Planned for Qakh
Bahrain	2 - 4 ind.	Unknown	N/A	CR	Protected	Wintering	Oct-Feb	S Bahrain	M: Disturbance; Poaching	Import: Reintroduction: 2,197 ind. Personal: 233 ind.	None known
China	Xinjiang: 60 - 500 breeding ind.; up to 1,500 migrating ind. Gansu: Unknown, fewer than Xinjiang	Steep decline	EN	N/A	Protected (National first-class protected status)	Breeding, Migrant	Mar-Oct	Altay; Mori Grassland IBA; Karamay Mountains IBA; Baytik Shan; Ebi Nur and Kuytun River; Burgen River Valley	C: Habitat loss (Energy infrastructure) H: Habitat fragmentation and degradation (Energy infrastructure, Overgrazing); Collision (Energy infrastructure) M: Collision (Fences) U: Poaching	None registered	Houbara breeding to be added to existing falcon breeding facility

*CITES trade data: Units are live individual birds unless otherwise noted. Purpose codes (e.g., Science, Reintroduction) are as reported on CITES permits. Because Asian Houbara was only recently split from African Houbara, permits pertaining to both *Chlamydotis* species are summarized for each country. Only data pertaining to live birds and eggs are summarized here. Data are from CITES Trade Database v2024.1.

Country	Wild Population Size	Population trend	National Red List status	Regional Red List status	National protection status	Presence in Country	Months of presence	Key sites	Key Threats	International trade in Houbara per CITES through 2023*	Breeding Centers in Country
Egypt	~ 24 ind.	Declining	N/A	N/A	Legally protected under Egyptian Law 4/1994 (amended 2009) for the Environment. National Plan for Controlled Hunting concerns captive-bred released birds	Breeding, Irregular wintering	Resident Sinai birds: Year-round; Winter visitors: Oct-Mar	Sinai Peninsula: E border region; Nekhel Note: W of the Nile, *African* species of Houbara previously resided and captive bred birds have been released; see "African Houbara"	C: Poaching; Anthropogenic disturbance (Off-road vehicles, Grazing) H: Habitat loss and degradation (Land-use change, Infrastructure developments, Oil and gas exploration); Agricultural intensification; Climate change (Desertification, Resource scarcity)	Trade registered in African (not Asian) Houbara	None known
India	149 ind. in Gujarat state (2006-2007) Also observed in Rajasthan	Declining	N/A	N/A	Listed under Schedule 1 of Wildlife (Protection) Amendment Act, 2022	Wintering	Oct-Mar	Gujarat: Kutch Desert WS; Great Rann of Kutch; Little Rann of Kutch; Coastal Grasslands of Kutch; Abdasa Grasslands; Naliya Grasslands; Konathiya; Khirsara; Dhufi; Jakhau; Banni Grasslands Reser; Grasslands around Pingleshwar Beach; Khavda; Mandvi; Positra and Mithapur; Jamnagar; Bhal area around Velavadar, Coastal grasslands of Gariyadhar; Jafrabad; Suigam; Par Village of Santalpur Taluka Rajasthan: Desert NP; Pokhran Field Firing Range; Phulia; Poochina; Mehboob-ka-par; Gaiamata; Sorsan; Sonkhaliya; Gosabara Wetland Complex	C: Habitat loss (Salt production, Agricultural intensification and expansion, Plantations and invasion of exotic tree species); Habitat degradation (Overgrazing); Hunting and poaching (along migratory route) H: Habitat fragmentation (Salt production, Irrigation canals, Transportation networks, Energy infrastructure); Collision (Energy infrastructure) M: Disturbance (Tourism) U: Poaching (Local)	None registered	None known

*CITES trade data: Units are live individual birds unless otherwise noted. Purpose codes (e.g., Science, Reintroduction) are as reported on CITES permits. Because Asian Houbara was only recently split from African Houbara, permits pertaining to both *Chlamydotis* species are summarized for each country. Only data pertaining to live birds and eggs are summarized here. Data are from CITES Trade Database v2024.1.

Country	Wild Population Size	Population trend	National Red List status	Regional Red List status	National protection status	Presence in Country	Months of presence	Key sites	Key Threats	International trade in Houbara per CITES through 2023*	Breeding Centers in Country
Iran (Islamic Republic of)	3,797 ind. in winter (2017)	Declining (Breeding); Stable (Wintering)	N/A	N/A	Protected	Breeding, Wintering	Resident birds: Year-round Winter visitors: Oct-Feb	Bahram-e-Gour PA; Touran IBA; Hamoun-i Gabi IBA; Hormod PA; Lake Bakhtegan; Lake Tashk and Kamjan marshes IBA; Monde PA; Kavir region; Kalmand PA; Hamoun-i Gabi	H: Illegal trade (Live birds traded internationally for falconry and breeding centers); Poaching M: Habitat degradation (Overgrazing, Land-use change); Climate change; Legal obstacles; Translocations of captive bred birds of inappropriate lineages in C Asia (Resulting in unusual migration observations in Iran)	Export: Science: 328 live ind. Breeding: 114 ind. Commercial: 64 ind. Import: Commercial: 1,000 ind. Science: 1,000 ind. Reintroduction: 631 ind.	Planned
Iraq	<60 breeding ind.	Declining	N/A	CR	Protected	Rare breeding; Migrant, Wintering	Wintering: Oct-Apr Uncertain breeding dates	Darbandikhan; Erbil steppe, Al Najaf; Salman; Jazman; Shuweicha Marsh; Dalmaj Marsh; Hoshiya and Saaroot; Teeb Oasis and Zubaidaat; Suwaibaat; Shuweicha Marsh; Jazman (Zurbatia); Sawa Lake and Area; Teab Seasonal Wetlands;	C: Poaching (Sport hunting); Illegal trade (Live birds for falconry) M: Habitat loss and degradation	Export: Private: 2 ind. Import: Breeding: 20 ind.	Numerous small-scale breeding effort by hunters for personal use
Israel	150 - 200 breeding ind., 400 - 600 wintering ind.	Stable/ Declining (Breeding); Declining (Wintering)	EN	CR	Protected	Resident populations; also receives winter visitors	Year-round	Nizzana-Ezuz; N Negev Corridor; W Negev IBA; Hatzerim; Hameishar; Cliffs of Zin	H: Habitat loss (Afforestation, Infrastructuredevelopments); Agricultural intensification; Anthropogenically subsidized predation; Collision (Overhead cabling) M: Habitat degradation (Overgrazing); Loc: Poaching	Export: Commercial: 6 ind.	Zoo only

*CITES trade data: Units are live individual birds unless otherwise noted. Purpose codes (e.g., Science, Reintroduction) are as reported on CITES permits. Because Asian Houbara was only recently split from African Houbara, permits pertaining to both *Chlamydotis* species are summarized for each country. Only data pertaining to live birds and eggs are summarized here. Data are from CITES Trade Database v2024.1.

Country	Wild Population Size	Population trend	National Red List status	Regional Red List status	National protection status	Presence in Country	Months of presence	Key sites	Key Threats	International trade in Houbara per CITES through 2023*	Breeding Centers in Country
Jordan	1 - 5 ind. observed in winter, unclear whether these are birds from releases for hunting	Declining	N/A	CR	Protected	Rare wintering, Formerly breeding	Oct-Mar	Wadi Araba; Ruweished Desert; Wadi Sirhan; Wadi Bayer; Shaumari Reserve; Wadi Ghadaf; Azraq IBA; Burqu'	C: Poaching; Unsustainable take M: Habitat loss; Agricultural intensification; Habitat degradation (Overgrazing)	Import: Reintroduction: 17,066 ind.	Pre-release holding facility, Shaumari Wildlife Reserve
Kazakhstan	49,000 ind. (2011)	Unknown	EN	N/A	Purchasable hunting permits	Breeding, Migrant	Apr-Nov	Betpak Dala and Balkhash Regions; Mangystau	H: Poaching; Unsustainable hunting M: Collisions (Overhead cabling); Habitat loss U: Genetic threats (Genetic swamping, Introgression of lineages adapted to captivity)	Export: Reintroduction: 9,531 ind. Personal & Commercial: 1,610 ind. Breeding: 744 ind. and 100 eggs Science: 188 ind. (live) Import: Reintroduction: 34,316 ind. Breeding: 3,528 ind. Circus: 1,550 ind. Science: 633 ind. (live) Commercial: 30 ind.	Sheikh Khalifa Houbara Breeding Centre, 28,000 ind. released since 2009

*CITES trade data: Units are live individual birds unless otherwise noted. Purpose codes (e.g., Science, Reintroduction) are as reported on CITES permits. Because Asian Houbara was only recently split from African Houbara, permits pertaining to both *Chlamydotis* species are summarized for each country. Only data pertaining to live birds and eggs are summarized here. Data are from CITES Trade Database v2024.1.

Country	Wild Population Size	Population trend	National Red List status	Regional Red List status	National protection status	Presence in Country	Months of presence	Key sites	Key Threats	International trade in Houbara per CITES through 2023*	Breeding Centers in Country
Kuwait	1 – 14 recorded per winter; likely released from breeding centers). More unrecorded birds believed to cross Kuwait in passage	Extinct (Breeding); Declining (Migrant)	N/A	CR	Purchasable hunting permits in designated areas	Extinct as possible breeder. Declining numbers in winter	Oct-Feb	Sabah Al-Ahmad PA; Al-Liyah PA; Sandy and sparsely vegetated habitats across Kuwait	C: Poaching (Sport hunting) H: Collisions (Energy infrastructure) M: Illegal trade (Live birds for falconry); Habitat loss (Land-use change, Urbanization); Habitat degradation (Overgrazing)	Import: Reintroduction: 18,740 ind. Science: 135 ind. (live) Breeding: 275 ind. Private: 52 ind. Re-export: Sourced from UAE and shipped to Kazakhstan, Qatar & Saudi Arabia: 7,846 ind.	Planned: Kuwait Houbara Breeding Center, with releases of 2,500 ind. annually
Kyrgyzstan	Unknown	Unknown	CR	N/A	Unknown	Occasional migrant, Wintering	Unknown	Unknown	U: Poaching	None registered	None known; country not within breeding range
Mongolia	150 – 300 ind.	Stable	VU	N/A	Protected	Breeding	Apr-Oct	Galba Gobi IBA; Achit Lake IBA; Borzon Gobi IBA; Boon Tsagaan Lake; Khasagt Khairkhan Mountain; Uush Gobi; Ergeliin Zoo NP; Trans Altai Gobi; Valley of Lakes; Uws Lakes SPA; Great Lakes Depression	M: Collision (Overhead cabling); Habitat degradation (Overgrazing) U: Genetic threats (Translocation of inappropriate lineages)	Import: Reintroduction: 120 ind.	Unlicensed foreign facility present
Oman	Resident population may be extinct; wintering birds rare	Steep decline	N/A	CR	Protected	Rare wintering, Formerly common resident	Aug-Mar	Jiddat al Harasis IBA & central desert (Rare resident); NE Coast & Khawr Dhirif (Wintering birds)	Unknown	Export: Commercial: 17 ind. Import: Science: 200 ind. (live)	Royal facility contains a few birds
Palestine	Not observed	Unknown	N/A	CR	Unknown	Unknown	Unknown	Unknown	U: Habitat loss	None registered	None known

*CITES trade data: Units are live individual birds unless otherwise noted. Purpose codes (e.g., Science, Reintroduction) are as reported on CITES permits. Because Asian Houbara was only recently split from African Houbara, permits pertaining to both *Chlamydotis* species are summarized for each country. Only data pertaining to live birds and eggs are summarized here. Data are from CITES Trade Database v2024.1.

Country	Wild Population Size	Population trend	National Red List status	Regional Red List status	National protection status	Presence in Country	Months of presence	Key sites	Key Threats	International trade in Houbara per CITES through 2023*	Breeding Centers in Country
Pakistan	20 - 30 breeding 'pairs' in Nag Valley (1999); 4,800 - 6,200 wintering ind.	Unknown	N/A	N/A	Protected by wildlife acts but special hunting permits issued to foreign dignitaries	Wintering, Possibly residents remain	Nov-Mar, Possibly residents persist year-round in Chagai, Nushk	Wintering: Punjab; Sindh; Balochistan; Khyber; Pakhtunkhwa provinces; Small resident population likely exists in Chagai; Nushki; Kharan; Washuk districts	C: Habitat degradation H: Habitat Loss (Land-use change); Agricultural intensification M: Unsustainable hunting L: Poaching	Export: Science: 201 ind. (live) and 5 eggs Zoo: 70 ind. Medical: 25 ind. (live) Breeding: 6 ind. Personal: 4 ind. Import: Reintroduction: 46,721 ind. Science: 282 ind. (live) Personal: 260 ind. Unknown: 74 ind.	None known

*CITES trade data: Units are live individual birds unless otherwise noted. Purpose codes (e.g., Science, Reintroduction) are as reported on CITES permits. Because Asian Houbara was only recently split from African Houbara, permits pertaining to both *Chlamydotis* species are summarized for each country. Only data pertaining to live birds and eggs are summarized here. Data are from CITES Trade Database v2024.1.

Country	Wild Population Size	Population trend	National Red List status	Regional Red List status	National protection status	Presence in Country	Months of presence	Key sites	Key Threats	International trade in Houbara per CITES through 2023*	Breeding Centers in Country
Qatar	Unknown, perhaps dozens of birds per winter	Declining	N/A	CR	Falconry permitted in pursuit of captive bred birds in winter	Wintering	Oct-Feb	Natural areas of the peninsula	C: Unsustainable hunting	Export: Reintroduction: 4,065 ind. Personal & Commercial: 1,004 ind. Science: 1,000 ind. (live) Import: Introduction: 8,643 ind. Breeding: 5,583 ind. Science: 1,156 ind. (live) Personal/Commercial: 185 ind.	1) Al Baida Centre, annual releases of 450 ind. 2) International Foundation for Ecological Research, Doha 3) Rawdat Al Faras Center, 5,000 breeding birds 4) Centre for Breeding and Reproduction of Falcons and Houbara, Oum Haich 5) Citizens encouraged to undertake small-scale captive-breeding
Russian Federation	~1 breeding female per year	N/A	CR	N/A	Protected through Red List status, however, official plans for sport hunting exist	Marginal breeding in Tyva, Extralimital introduction to Kalmykia	May-Jul	Tyva; Ubsunur Basin Biosphere Reserve	Expected in coming years: Genetic threats (Translocation of inappropriate lineages, Genetic swamping with lineages adapted to captivity)	Export: Breeding: 100 eggs Import: Reintroduction: 90 ind. Science: 50 ind. (live)	1) Kalmykia: under construction, annual release of 1,500 ind. planned 2) Tyva: new center planned

*CITES trade data: Units are live individual birds unless otherwise noted. Purpose codes (e.g., Science, Reintroduction) are as reported on CITES permits. Because Asian Houbara was only recently split from African Houbara, permits pertaining to both *Chlamydotis* species are summarized for each country. Only data pertaining to live birds and eggs are summarized here. Data are from CITES Trade Database v2024.1.

Country	Wild Population Size	Population trend	National Red List status	Regional Red List status	National protection status	Presence in Country	Months of presence	Key sites	Key Threats	International trade in Houbara per CITES through 2023*	Breeding Centers in Country
Saudi Arabia	~ 140 resident ind. of captive-bred lineages Wintering: >300 ind. wild and captive-bred birds	Declining (Migrant and Wintering); Wild breeding lineages may be extinct	N/A	CR	Wild birds protected by law; Hunting of captive bred birds in winter in designated areas	Migrant, Wintering, Formerly wild residents, now introduced resident population	Residents: year-round, Wintering: Nov-Jan	Breeding: Introduced population at Imam Saud bin Abdulaziz Royal NR (formerly Mahazat As-Sayd PA); Last known breeding sites of wild birds in Harrat A-Harrah; AlTaisyah in Imam Turki bin Abdullah Royal NR, and N border region Wintering: N border area and E coastline	C: Poaching (Falconry) H: Habitat degradation (Overgrazing, Off-road vehicle use) M: Habitat loss (Resource extraction)	Export: Science: 716 ind. (live), 37 eggs Reintroduction: 712 ind. Personal/Commercial: 510 ind. Medical: 351 (live+unspecified) Breeding: 140 ind. Import: Reintroduction: 27,559 ind. Personal & Commercial: 940 ind. Science: 61 ind. (live) and 115 eggs Zoo: 71 ind. Breeding: 50 ind. Unknown: 9 ind.	1) Prince Saud Al-Faisal Center, Taif, flock of 1,100; producing 50-500 ind. for release, depending on year 2) AlJuraish, Qassim 3) Under development at Imam Turki Royal Reserve, planned to hold 25,000 breeding birds 4) Under development, Prince Mohammad bin Salman Houbara Conservation Foundation, plans to produce 5,000 ind. for release per year
Syrian Arab Republic	Unknown	Steep decline	N/A	CR	Protected	Wintering, Breeding populations likely extinct	Sep-Mar	Al-Badia; Al-Jazira; Buhayrat al-Khatuniyah; Tadmur Desert; Jabal Sis	C: Poaching M: Habitat loss and degradation (Overgrazing; Land-use change); Lack of awareness	None registered	None known

*CITES trade data: Units are live individual birds unless otherwise noted. Purpose codes (e.g., Science, Reintroduction) are as reported on CITES permits. Because Asian Houbara was only recently split from African Houbara, permits pertaining to both *Chlamydotis* species are summarized for each country. Only data pertaining to live birds and eggs are summarized here. Data are from CITES Trade Database v2024.1.

Country	Wild Population Size	Population trend	National Red List status	Regional Red List status	National protection status	Presence in Country	Months of presence	Key sites	Key Threats	International trade in Houbara per CITES through 2023*	Breeding Centers in Country
Tajikistan	3 - 45 ind.	Declining	VU	N/A	Protected	Breeding (2 - 3 'pairs'/year), Migrant, Wintering	Year-round	Ashtskii Massif; Sogdi Province; Zapovednik "Tigrovaya Balka"; Sughd; Khatlon	H: Habitat loss (Development of virgin lands) M: Habitat degradation (Overgrazing); Poaching U: Genetic threats (Translocation of inappropriate lineages)	Import: Reintroduction: 900 ind.	None known
Turkmenistan	Breeding: <50 pairs Migration and wintering: 3,500 - 4,500 ind.	Declining	VU	N/A	Unknown	Breeding, Migrant, Wintering	Wintering: Feb-Nov	PAs and IBAs: Delili-Garajabatyr; Ersarybaba-Akkyr; Chokrak-Tutly; Kaplankyr; Sarygamysh (Coastal zone); Shasenem Reserve; Akchagaya, Badkhyz; Tejen (Meana-Chaacha) Unprotected sites: Tejen; NE Garabogaz; Mashat-Messirian	C: Poaching; Unsustainable hunting; Legal obstacles H: Habitat degradation (Overgrazing) M: Disturbance (at stopover and breeding sites); Climate change; Collision (Energy infrastructure) L: Natural predation U: Agricultural intensification (Chemical application); Genetic threats (Translocation of inappropriate lineages)	Export: Science: 80 ind. (live) Import: Reintroduction: 1,653 ind.	None known

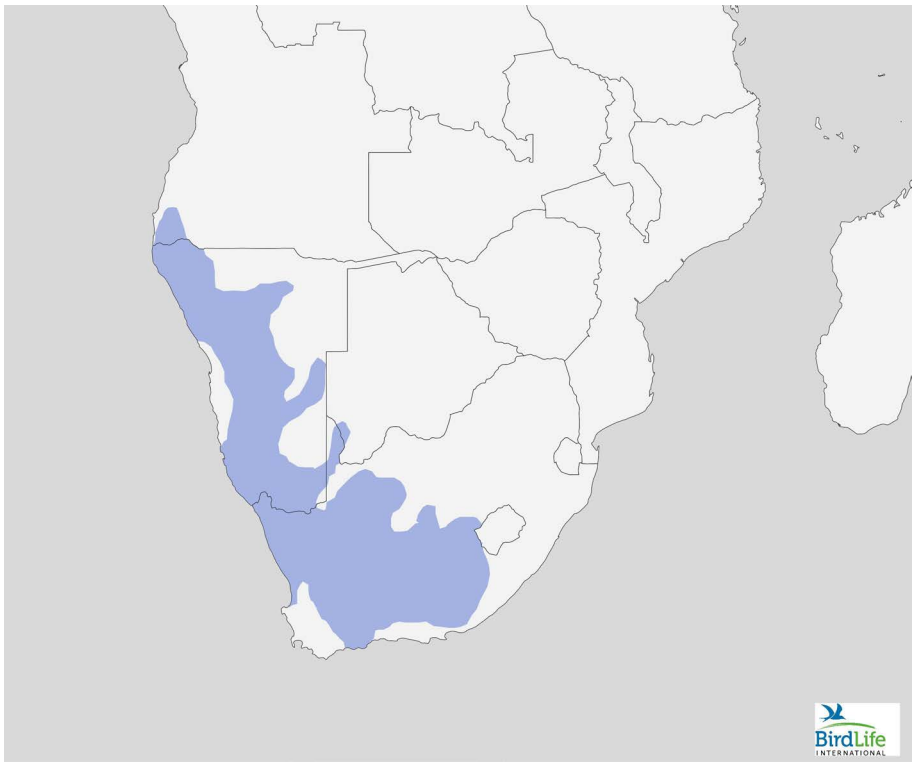
*CITES trade data: Units are live individual birds unless otherwise noted. Purpose codes (e.g., Science, Reintroduction) are as reported on CITES permits. Because Asian Houbara was only recently split from African Houbara, permits pertaining to both *Chlamydotis* species are summarized for each country. Only data pertaining to live birds and eggs are summarized here. Data are from CITES Trade Database v2024.1.

Country	Wild Population Size	Population trend	National Red List status	Regional Red List status	National protection status	Presence in Country	Months of presence	Key sites	Key Threats	International trade in Houbara per CITES through 2023*	Breeding Centers in Country
United Arab Emirates	Wintering: 50 - 75 ind. Introduced breeding population reproduces with low levels of success; Population is supported by irrigation, plantations, and releases of captive-bred birds	Declining	CR (UAE); EN (Abu Dhabi Emirate)	CR	Falconry allowed by license using captive bred birds in winter in designated areas	Wintering, Introduced breeding population	Wintering: Nov-Feb	Coastal Areas; Khor; Dubai Desert; Al-Houbari IBA (Baynunah and Tawi Reserves); Al Marmoom Desert	C: Poaching M: Habitat loss and degradation (Infrastructure developments)	Export: Live birds: Reintroduction: 192,347 ind. Breeding: 6,970 ind. Science: 2,375 ind. (live) Personal & Commercial: 1,704 ind. Circus: 1,600 ind. Unknown: 624 ind. Zoo: 9 ind. Eggs: Personal, Circus, & Education: 6 eggs Import: Reintroduction: 27,015 ind. Breeding: 18,534 ind., 105 eggs Personal & Commercial: 1231 ind. Science: 1148 ind. (live), 60 eggs Medical: 66 ind. (live) Unknown: 26 ind.	1) Sheikh Khalifa Houbara Breeding Centre, Abu Dhabi 2) Central Veterinary Research Laboratory, Dubai 3) Sheikh Butti Maktoum's Wildlife Center, Dubai 4) National Avian Research Center, Sweihan

*CITES trade data: Units are live individual birds unless otherwise noted. Purpose codes (e.g., Science, Reintroduction) are as reported on CITES permits. Because Asian Houbara was only recently split from African Houbara, permits pertaining to both *Chlamydotis* species are summarized for each country. Only data pertaining to live birds and eggs are summarized here. Data are from CITES Trade Database v2024.1.

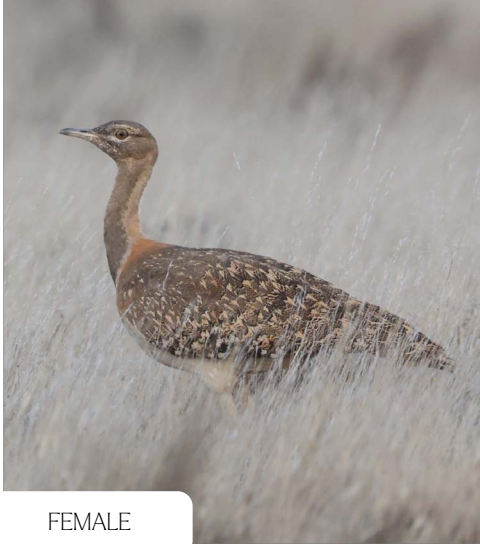
Country	Wild Population Size	Population trend	National Red List status	Regional Red List status	National protection status	Presence in Country	Months of presence	Key sites	Key Threats	International trade in Houbara per CITES through 2023*	Breeding Centers in Country
Uzbekistan	8,000 – 13,000 breeding ind., 40,000 migrating ind., <100 wintering ind. (rare)	Unknown		N/A	Protected. Hunting licenses issued on case-by-case basis	Breeding, Migrant, Wintering	Mar-Nov	Bukhara Province	H: Poaching (on wintering grounds); Genetic threats (Genetic swamping and hybrid swarms) M: Collision (Overhead cabling); Unsustainable hunting L: Habitat loss and fragmentation (Infrastructure developments)	Import: Reintroduction: 26,351 ind. Breeding: 2,152 ind. Personal & Commercial: 470 ind. Science: 6 ind. Export: Science: 912 ind. Reintroduction: 519 ind. Commercial: 20 ind.	1) Emirates Bird Breeding Center for Conservation, 2007, Bukhara region, annual releases 1,000-2,000 ind. 2) Emirates Centre for the Conservation of Houbara, 2007, 8,500 released since 2008, annual releases of ~3,000 ind. 3) Center in Karakalpakstan region
Yemen	40 – 100 ind.	Declining	N/A	CR	Not protected	Breeding, Migrant, Wintering	Breeding: Year-round, Wintering: Oct-Mar	Desert W of Al-Ghayda; Al Darw; E of Hadhramout; Shabwah; Maifa'a	H: Habitat loss and degradation M: Unsustainable hunting (Sport); Legal and illegal trade in live birds (For falconry and breeding facilities) U: Anthropogenically increased predation (Corvids)	Export: Breeding: 18 ind., 5 eggs Science, 13 ind. (live), 5 eggs Import: Reintroduction: 419 ind.	None, but previous exports to breeding center in UA

LUDWIG'S BUSTARD *(Neotis ludwigii)*

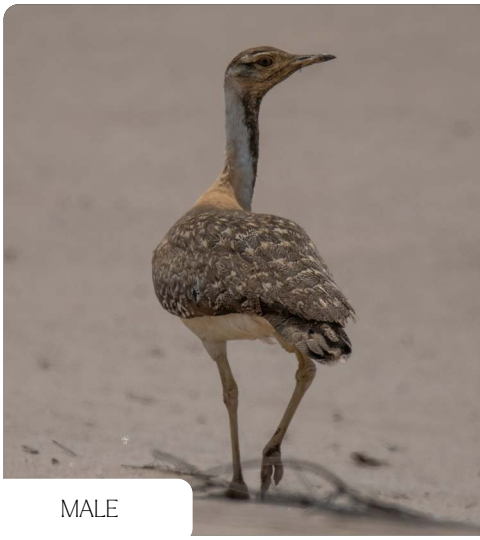


Political boundaries indicated in this map are those of the United Nations.

Year-round



FEMALE



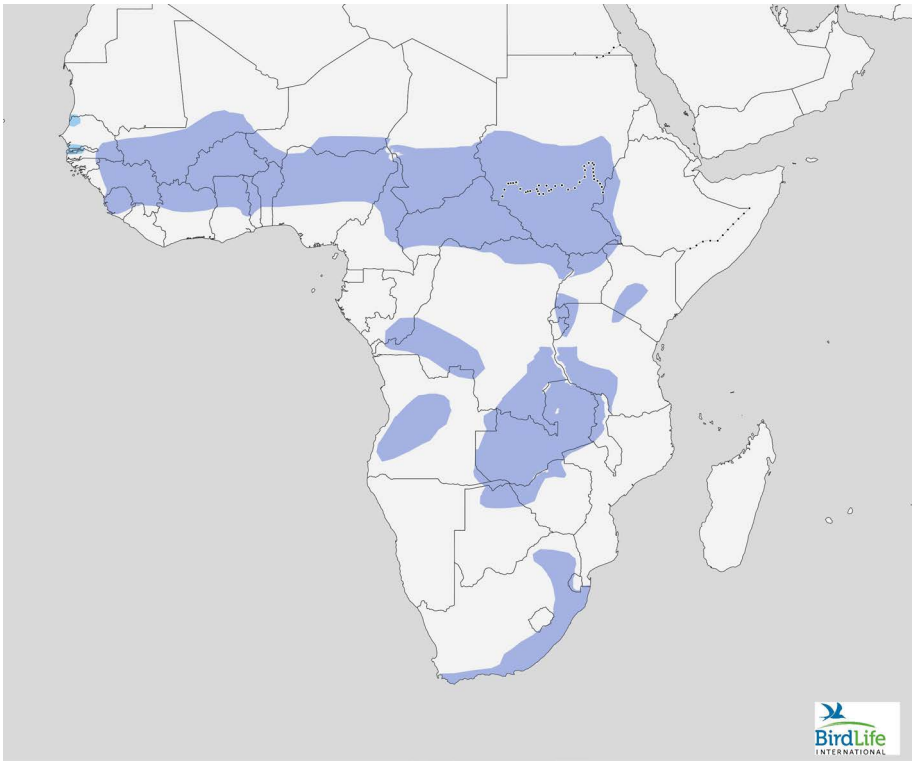
MALE

Conservation status	Endangered
Global RedList Population Estimate	Estimated at 100,000-500,000 individuals. Decreasing.

Regional names	Ludwigpou (Afrikaans), Kai !huib (Nama), Oruzeu rwaLudwig (Oshiherero), Eshana (Oshiwambo), Korhaan yaLudwig (Setswana), kgupa-ya-bophirima (Sesotho), Iseme Lasehlane (Zulu)
Size	♂ 85 cm, 4,200–6,000 g; ♀ 2,200–2,500 g
Subspecies	Monotypic
Distribution	Extreme SW Angola through W Namibia to S South Africa.
Habitat	Open lowland and upland plains with grass and light thornbush, sandy open shrub veld and semi-desert in the arid and semi-arid Namib and Karoo biomes.
Movement	Species is partial migrant towards SW from the more northerly and interior summer rainfall region (Nama Karoo), where present Nov–Apr, to the more southerly and coastal winter rainfall region (Succulent Karoo), for the period May–Oct.
Breeding	Aug–Dec. Nest is a scrape on bare ground often among stones, on crest of low ridge or hill slope. Eggs 2; chick has reddish down streaked blackish.

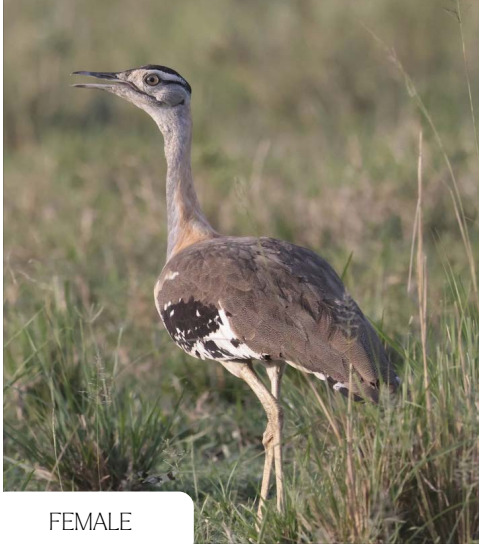
Country	Population Size	Population trend	National Red List status	Regional Red List status	National Protection Status	Presence in Country	Months of presence	Key sites	Key Threats
Angola	Likely <5,000 ind.	Unknown	N/A	N/A	Unknown	Possibly partial migrant, Possibly nomadic in some areas, Possibly resident in open shrubland and on plains (2000)	Dec-Jan (Namibe)	Namibe Province; Iona NP	U: Poaching; Predation (Natural); Climate change (Desertification); Lack of awareness
Botswana	Likely <5,000 ind.	Unknown	N/A	N/A	Protected	Unknown, Possibly breeding and partial migrant	Year-round, with a peak in Nov-Mar	Kgalagadi Transfrontier Park	U: Predation (Natural);Poaching; Climate change (Desertification); Lack of awareness
Lesotho	Likely <1,000 ind.	Declining	N/A	EN	Protected	Migrant	Nov-Mar	Unknown	U: Collision (Overhead cabling, Wind turbines); Poaching; Lack of awareness
Namibia	Likely >10,000 ind.	Possibly declining	EN	N/A	Protected	Breeding, Partial migrant	Year-round, increasing in the W during winter and in the E during summer	Namib Desert; Tsau Khaeb NP; Namib-Naukluft Park	U: Collision (Overhead cabling); Predation (Natural); Poaching; Collision (Fencing); Climate change (Desertification); Anthropogenically subsidized predation (Corvids); Habitat loss (Mining); Lack of awareness
South Africa	58,290 - 99,160 ind.	Declining	N/A	EN	Protected	Breeding, Partial migrant	Year-round, increasing in W (Succulent Karoo) during winter and in E (Nama Karoo) during summer	Namaqua NP; Knersvlakte NR; Nieuwoudtville; Meerkat NP; Tankwa Karoo NP; Karoo NP; Mountain Zebra NP; Camdeboo NP; Augrabies Falls NP; Orange River Mouth Wetlands; Matheus-Gat Conservation Area; Haramoep and Black Mountain Mine; Bitterputs Conservation Area; Platberg-Karoo Conservancy; Camdeboo NP; Olifants River Estuary; Benfontein; Upper Orange River Bushmanland Interior; Cambedoo; Gouritz Cluster – Towsberg; Hantam; Knersvlakte; N and S Namaqualand Hardeveld; Roggeveld	C: Collisions (Overhead cabling) H: Habitat loss and fragmentation (Mining, Energy infrastructure) M: Poaching; Climate change (Desertification); Collision (Wind turbines, Fencing) U: Predation (Natural); Anthropogenically subsidized predation (Invasive raptors) L: Lack of awareness

DENHAM'S BUSTARD *(Neotis denhami)*

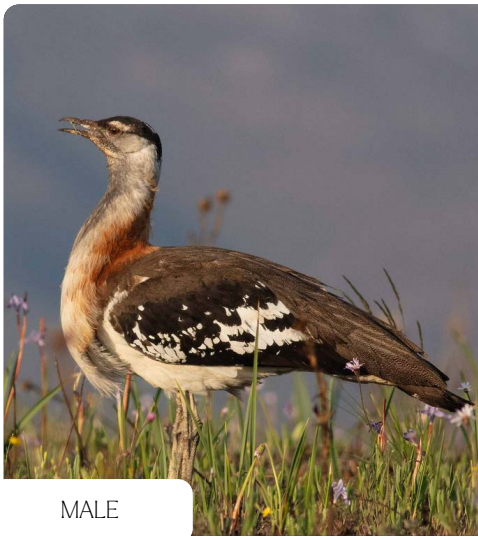


Political boundaries indicated in this map are those of the United Nations.

Year-round



FEMALE



MALE

Conservation status	Near Threatened
Global RedList Population Estimate	Unknown. Decreasing.

Regional names	الحبارى الدنهام (Arabic), Veldpou (Afrikaans), Abetarda-real (Angola), Kolonkɔnɔ (Bambara), Outarde de Denham (French), kgupa-ya-dithota (Sesotho), Inseme (Siswati), iseme (Zulu)
Size	♀ 80 cm, 3,000 g; ♂ 100 cm, 9,000–10,000 g
Subspecies	*N. d. denhami:* E Senegambia to N Uganda & W Ethiopia. Rarely in rainy season in SW Mauritania & W Senegambia, Zambia, N Botswana & N Zimbabwe; non-breeding visitor to S Congo, W DRC & SW Angola *N. d. jacksoni:* Kenya & W Tanzania to SE DRC *N. d. stanleyi:* S Africa & Swaziland; non-breeding in Lesotho
Habitat	Grasslands to 3000 m, grassy Acacia dunes, dense shrubland, light woodland, farmland, dried marshes & arid scrub plains
Movement	*N. d. denhami:* Migrates N May–Jun, returning Sep–Dec. Present in S Niger & Ivory Coast during dry season. Sedentary in CAR. *N. d. jacksoni:* May–Oct in SE DRC & Aug–May in Zimbabwe & Botswana. Montane populations move lower Jun–Aug. *N. d. stanleyi:* Montane populations move to coastal Zululand for breeding Jun–Aug.
Breeding	Breeding schedule unclear in many areas, possibly opportunistic to rainfall. Displays in Sahel Jun–Oct; Sierra Leone in Jan; Ivory Coast Feb–Mar; Nigeria in May; N DRC Dec–Feb but S DRC Jun; E Africa Jan–Mar & Jul; C & S Africa chiefly Oct–Jan. Nest is shallow scrape amidst grass or on low prominence. Clutch 1–2 eggs.

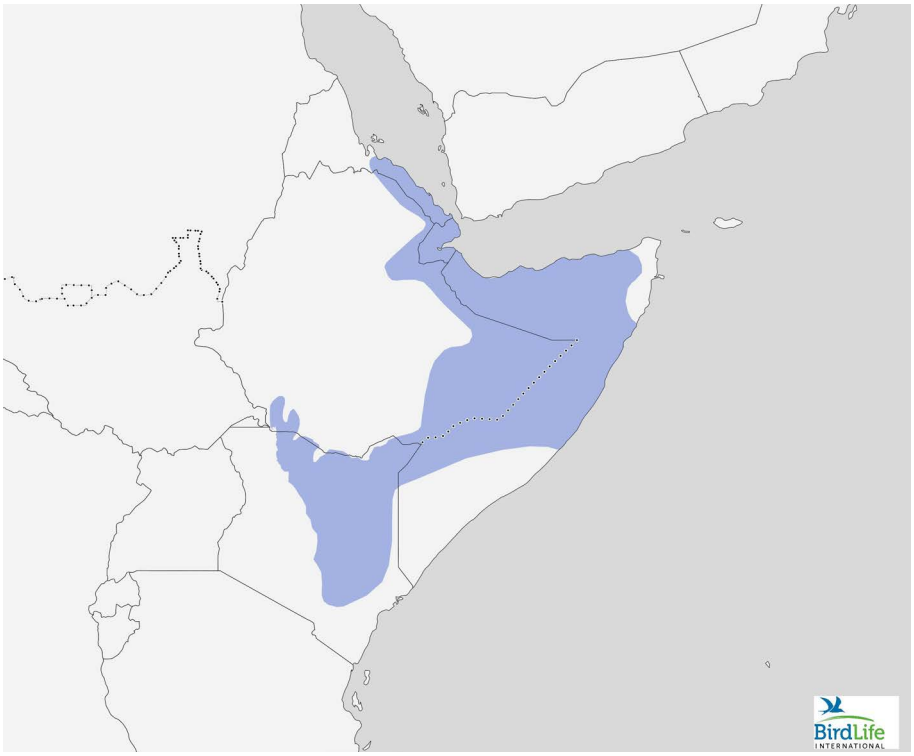
Country	Population Size	Population trend	National Red List status	Regional Red List status	National Protection Status	Presence in Country	Months of presence	Key sites	Key Threats
Angola	Unknown	Unknown	N/A	N/A	Unknown	Probably not uncommon resident. No breeding records (2000)	Unknown	Across C plateau from Huíla to Bié N to Cuanza Sul; Malanje; Moxico; Lunda Northe and Lunda Sul	Unknown
Benin	Unknown	Unknown	N/A	N/A	Unknown	Unknown	Unknown	Unknown	Unknown
Botswana	Unknown	Unknown	N/A	N/A	Unknown	Unknown	Unknown	Unknown	Unknown
Burkina Faso	10 - 15 ind.	Declining	N/A	N/A	Protected	Breeding	May-Oct	Sahelian zone	L: Illegal trade (Live birds); Habitat loss (Unsustainable fire regimes); Lack of awareness U: Poaching; Agricultural intensification (Chemical application); Disturbance; Legal obstacles
Burundi	Unknown	Declining	N/A	EN	Unknown	Unknown	Unknown	Unknown	C: Habitat loss; Poaching; Collision (Overhead cabling) L: Agricultural intensification (Chemical application)
Cameroon	Unknown	Unknown	N/A	N/A	Unknown	Unknown	Unknown	Unknown	Unknown
Central African Republic	Unknown	Unknown	N/A	N/A	Unknown	Unknown	Unknown	Unknown	Unknown
Chad	Unknown. Observed at densities ranging from 0.2 to 0.3 birds/km² from surveys in a central zone of RFOROA since 2011	Unknown	N/A	N/A	Unknown	Unknown	Wet season visitor in C Chad	Ouadi Rimé - Ouadi Achim PA	M: Unsustainable fire regime (Intentional and Unintentional bushfires); Habitat degradation (Grazing); Habitat loss (Agriculture) U: Poaching
Congo	Unknown	Unknown	N/A	N/A	Unknown	Unknown	Unknown	Unknown	Unknown
Côte d'Ivoire	Unknown	Unknown	N/A	N/A	Unknown	Unknown	Reported around Dec – Jan in Comoé NP	N regions, Comoé NP	Unknown
Democratic Republic of the Congo	Unknown	Unknown	N/A	N/A	Unknown	Unknown	Unknown	Unknown	Unknown
Eswatini	Unknown	Unknown	N/A	VU	Unknown	Unknown	Unknown	Unknown	Unknown

Country	Population Size	Population trend	National Red List status	Regional Red List status	National Protection Status	Presence in Country	Months of presence	Key sites	Key Threats
Ethiopia	Unknown	Unknown	N/A	N/A	Unknown	Unknown	Unknown	Unknown	Unknown
Gambia	Unknown	Unknown	N/A	N/A	Unknown	Unknown	Unknown	Unknown	Unknown
Ghana	Unknown	Unknown	N/A	N/A	Unknown	Unknown	Reported in Jan and Mar from Mole NP	Digya NP; Mole NP (Savannah Region)	Unknown
Guinea	Unknown	Unknown	N/A	N/A	Unknown	Unknown	Unknown	Unknown	Unknown
Guinea-Bissau	Unknown	Unknown	N/A	N/A	Unknown	Unknown	Unknown	Unknown	Unknown
Kenya	100 - 400 ind.	Steep decline	N/A	EN	Protected in Parks. No species-specific conservation laws	Year-round	Unknown	Laikipia (main stronghold); Masai Mara; Narok; Nairobi NP; Ol Ari Nyiro	C: Habitat loss; Climate change; Lack of awareness; Legal obstacles H: Habitat fragmentation (Energy infrastructure) M: Collision (Overhead cabling); Habitat loss (Conversion of shrublands) Loc: Habitat loss (Overgrazing); Habitat fragmentation (Transportation network) U: Poaching
Lesotho	Unknown	Unknown	N/A	VU	Unknown	Unknown	Unknown	Unknown	Unknown
Malawi	Unknown	Unknown	NT	N/A	Protected within Nyika NP	Resident	Year-round	Nyika; S Viphya Plateau; S to Ntchisi District	U: Habitat loss (Pine afforestation)
Mali	Unknown	Unknown	N/A	N/A	Unknown	Breeding	Jul-Oct	Unknown	Unknown
Mauritania	Unknown	Unknown	N/A	N/A	Unknown	Unknown	Unknown	Unknown	Unknown
Mozambique	Unknown	Unknown	N/A	N/A	Unknown	Unknown	Unknown	Unknown	Unknown
Namibia	Unknown	Unknown	NT	N/A	Protected	Non-breeding; Migrant	Unknown	NE Namibia (Zambezi Region); Etosha (Andoni)	U: Collision (Overhead cabling, Wind turbines); Habitat loss and fragmentation (Energy infrastructure, often in previously undisturbed areas); Anthropogenic disturbance; Poaching
Niger	Unknown	Unknown	N/A	N/A	Unknown	Unknown	Unknown	Unknown	U: Habitat loss and degradation; Poaching

Country	Population Size	Population trend	National Red List status	Regional Red List status	National Protection Status	Presence in Country	Months of presence	Key sites	Key Threats
Nigeria	<200 ind. (~20 observations recorded through NiBAP (2015-2025) mostly from sites in NE Nigeria)	Declining	N/A	N/A	Unknown	Breeding, Non-breeding	Year-round	Yankari GR (Bauchi State)	C: Unsustainable hunting; Poaching; Habitat loss (Conversion of grasslands and scrublands, Overgrazing) U: Climate change; Illegal trade; Agricultural intensification (Chemical application, Mechanization); Legal obstacles (Missing or ineffective policies, laws and enforcement); Lack of awareness
Rwanda	Unknown	Declining/Locally extinct	N/A	EN	Protected	Resident, Partial migrant	Yea-round	E Province of Rwanda (mostly Akagera NP); Huye; C Rwanda	U: Poaching L: Habitat loss (Unsustainable fire regimes)
Senegal	Unknown	Unknown	N/A	N/A	Unknown	Unknown	Unknown	Unknown	Unknown
Sierra Leone	Unknown	Unknown	N/A	N/A	Unknown	Unknown	Unknown	Unknown	Unknown
South Africa	<10,000 ind.	Declining	N/A	VU	Protected	Resident, Partial migrant	Year-round	Overberg; Highveld Grasslands; Grasslands near Utrecht; Natal Midlands; Foothills of Drakensberg Escarpment; Thicket Biome; KwaZulu-Natal Mistbelt Grasslands; iSimangaliso Wetland Park; Blyde River Canyon; Amatola – Katberg Mountain	C: Collisions (Overhead cabling) M: Collisions (Wind turbines), Agricultural intensification; Habitat loss-(Afforestation), Climate change (Habitat shifting and droughts) U: Poaching (Scale and intensity unknown)
South Sudan	Unknown	Unknown	N/A	N/A	Unknown	Unknown	Unknown	Unknown	Unknown
Sudan	Unknown	Unknown	N/A	N/A	Unknown	Unknown	Unknown	Unknown	Unknown
Tanzania	Unknown	Declining	N/A	EN	Protected in Parks	Migrant	Jan–Mar, Jul, Nov	Kitulo Plateu NP; Ndutu NP;Tarangire NP	H: Habitat loss (Urbanization, Land-use change); Collision (Overhead cabling) M: Poaching L: Poisoning (Unintentional, from baits targeting other animals); Habitat degradation (Overgrazing)
Togo	Unknown	Unknown	N/A	N/A	Unknown	Unknown	Unknown	Unknown	Unknown
Uganda	Unknown. Few records since 1970	Declining	CR	EN	Unknown	Resident, Occasional migrant	Year-round	Murchison Falls NP	M: Hunting U: Habitat loss and degradation (Urbanization, Land-use change)

Country	Population Size	Population trend	National Red List status	Regional Red List status	National Protection Status	Presence in Country	Months of presence	Key sites	Key Threats
Zambia	400 ind.	Unknown	N/A	N/A	Unknown	Resident	Year-round	Sumbu NP; Tondwa Game MA; E to Kafue Flats; Nyika Plateau; Possibly in Bangweulu and Sumbu area	Unknown
Zimbabwe	Unknown	Unknown	N/A	N/A	Unknown	Unknown	Unknown	Unknown	Unknown

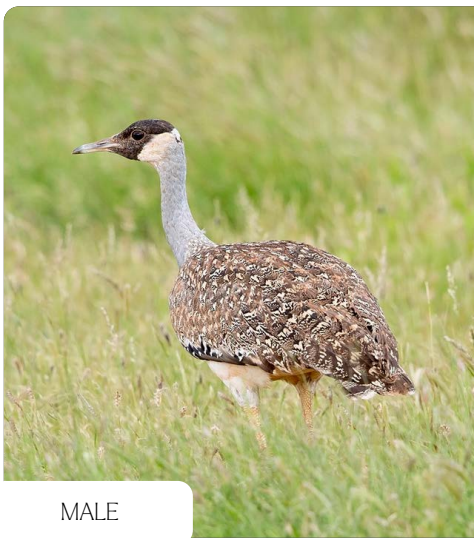
HEUGLIN'S BUSTARD *(Neotis heuglinii)*



Political boundaries indicated in this map are those of the United Nations.

Year-round

FEMALE



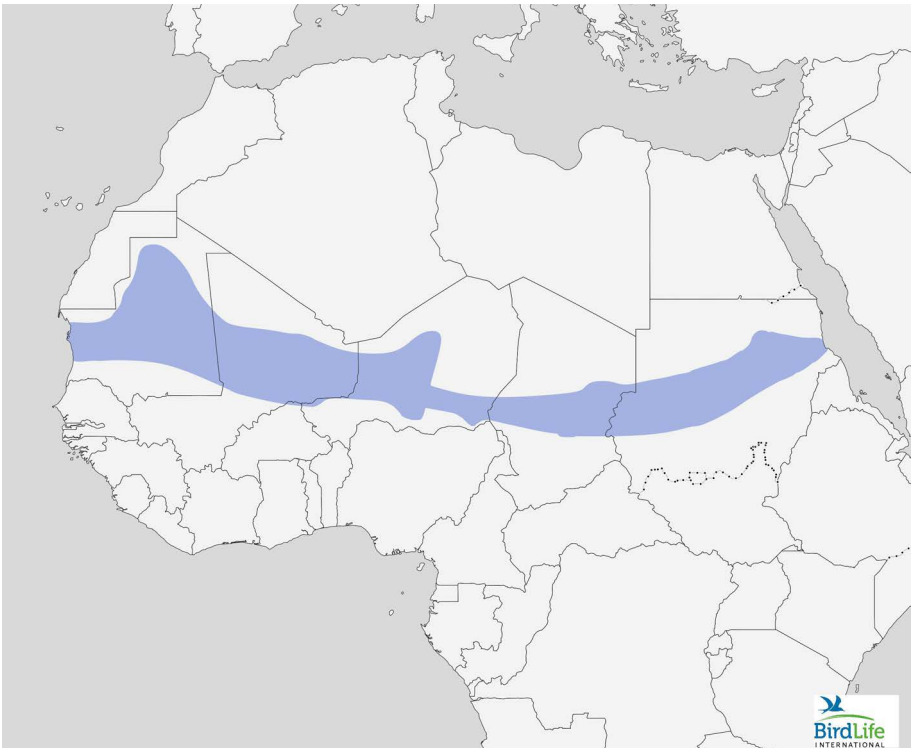
MALE

Conservation status	Least concern
Global RedList Population Estimate	Unknown. Stable.

Regional names	الحبارى الهيغلينية (Arabic)
Size	♀ 2,600–3,000 g; ♂ 75 cm, 4,000–8,000 g
Subspecies	Monotypic
Habitat	Arid lowlands in open desert with annual grass, semi-desert savanna & tussocky grassland. Recorded to at least 700 m in Ethiopia.
Movement	Sedentary & nomadic
Breeding	Apr–Jun in NE Africa (Ethiopia & Somalia), Jan & Jun in N Kenya, timed for when rains make grass tallest. Nest is a scrape on bare ground. Eggs two, colored warm buff or pale clay, with chestnut markings.

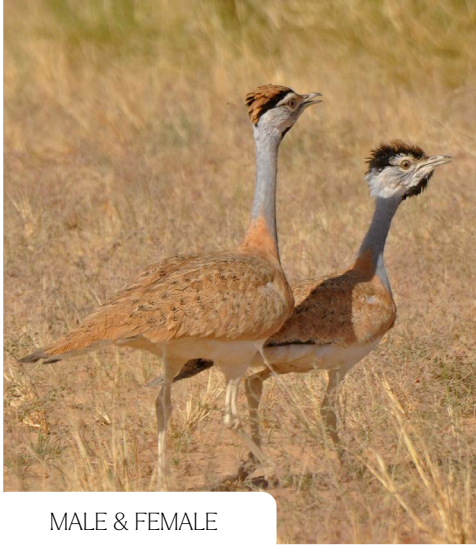
Country	Population Size	Population trend	National Red List status	Regional Red List status	National Protection Status	Presence in Country	Months of presence	Key sites	Key Threats
Djibouti	Likely <100 ind.	Possibly declining	N/A	N/A	Unknown	Resident	Year-round except Jul, Aug and Sep (probably due to lack of data)	Dadda'to, Andabba (E); 'Assa Gaïla area (N, S); 'As Dora; Yaguer massif; Gamarré Plateau; Grand bara (N); Hanlé Plain (SW, Tew'o); Chekayti Wadi; Ali Sabieh - Assâmo; Waadi Siig (?); Giriyaad Plains (?)	U: Habitat loss and degradation; Predation
Ethiopia	Unknown	Unknown	N/A	N/A	Unknown	Resident	Unknown	Awash NP; Negele woodlands; Lake Chew Bahir; Lower Wabi Shebelle River and Warder; Godere; Fejeje	Unknown
Kenya	Unknown	Steep decline	N/A	NT	Not protected	Resident, Partial migrant	Year-round	Lake Turkana; Dida Galgalu Desert; Tsavo East NP; Shaba NR	C: Collision (Wind turbines); Habitat degradation (Invasive alien plant species, esp. Prosopis juliflora) L: Climate change (Changes in rainfall)
Somalia	Unknown	Unknown	N/A	N/A	Legislation proposed within Somaliland	Resident	Unknown	Awdalland incl. Seylac; Taagga Duudka; Gacan Libaax; Bannaanka Saraar (Ban Ado Plain); Daalo; Hobyo; Xarardheere - Awale Rugno; Lower, Jowhar – Warsheikh; Wabi Shebelle incl. Buulobarde	H: Poaching (For sport, in Somaliland) M: Illegal trade (Medicinal use)

NUBIAN BUSTARD *(Neotis nuba)*

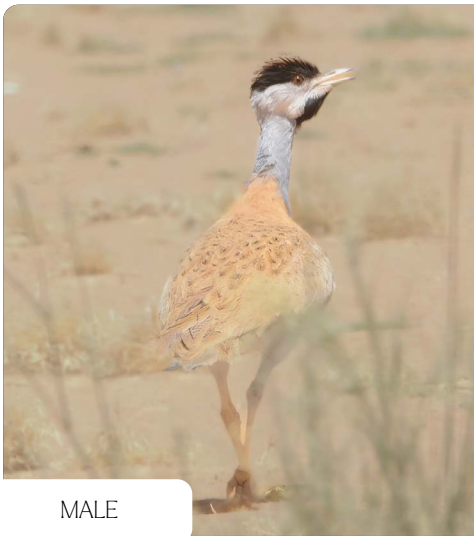


Political boundaries indicated in this map are those of the United Nations.

Year-round



MALE & FEMALE



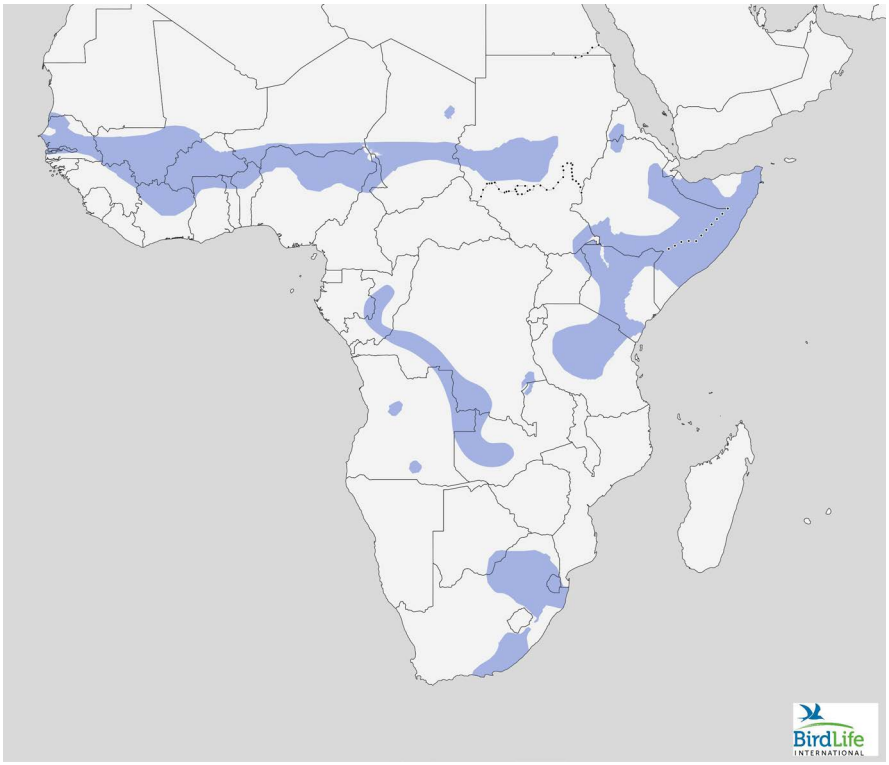
MALE

Conservation status	Near Threatened
Global RedList Population Estimate	Unknown. Decreasing.

Regional names	الحبارى النوبية (Arabic), Outarde nubienne (French)
Size	♀ 50 cm, no data on weight; ♂ 70 cm, 5,400 g
Subspecies	Monotypic
Habitat	Arid & semi-arid scrub & savanna on desert fringes, penetrating further N into Sahara than other bustard species.
Movement	Sedentary & almost certainly nomadic; in Mauritania, tends to move S in winter, returning N with rains.
Breeding	Jul–Oct; with nesting synchronized to suitable conditions. Nest situated on bare sand; one nest was between forks of a fallen branch. Clutch size 2 eggs.

Country	Population Size	Population trend	National Red List status	Regional Red List status	National Protection Status	Presence in Country	Months of presence	Key sites	Key Threats
Burkina Faso	<10 ind.	Declining	N/A	N/A	Protected	Breeding	Oct-Mar	C and S Burkina Faso	L: Illegal Trade (Live birds); Unsustainable fire regimes; Lack of awareness U: Poaching; Agricultural intensification (Chemical application); Disturbance; Legal obstacles
Chad	200 (dry season min.) – 2,000 ind. (wet season max.) Observed at an average density of 0.23 birds/km² from surveys in a central zone of RFOROA since 2011	Declining	N/A	N/A	Unknown	Unknown	Year-round in C Chad	Chad Mission Quad 129, 166, 167; Mourdi Depression; W Enn-edi; Ouadi Negoka; Ouadi Rimé – Ouadi Achim Faunal Reserve	M: Unsustainable fire regime (Intentional and non-intentional bushfires); Habitat degradation (Grazing); Habitat loss (Agriculture) U: Poaching
Mali	Possibly Extinct	Unknown	N/A	N/A	Unknown	Unknown	Unknown	Unknown	Unknown
Mauritania	Possibly Extinct	Unknown	N/A	N/A	Unknown	Unknown	Unknown	Tamreikat; El Mréiti; El Ghallâouîya; Arâguîb el Jahfa; Kediet ej Jill; Banc d'Arguin NP; Ibi (Graret el Frass); Wagchogda; Tinigart; Wad Initi	Unknown
Niger	Unknown	Declining	N/A	N/A	Unknown	Breeding	Year-round	Gadafaoua; Taguedoufat; Aguéliough; Dilia Achetinamou; Dangoumi; Termit Mountains; Dilia de Lagané; NNR Aïr – Ténéré; Diffa-Kinzindi Grassland and Wetlands	U: Disturbance;Habitat loss and degradation; Poaching
Sudan	Unknown	Declining	N/A	N/A	Unknown	Unknown	Unknown	Jebel Marra; Um Badr lake	Unknown

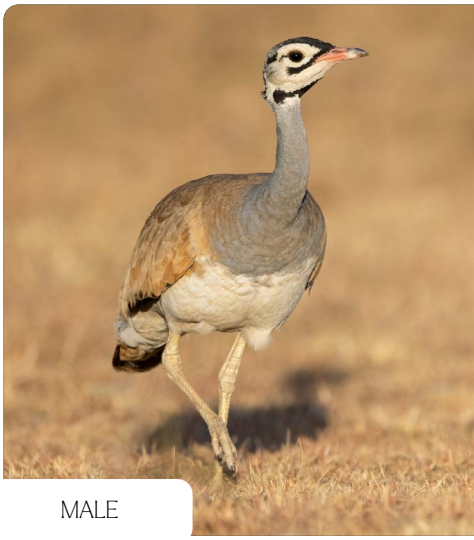
WHITE-BELLIED BUSTARD *(Eupodotis senegalensis)*



Political boundaries indicated in this map are those of the United Nations.

Year-round

FEMALE



MALE

Conservation status	Least concern
Global RedList Population Estimate	Unknown. Decreasing.

Regional names	Witpenskorhaan (Afrikaans), White-bellied korhaan (English South Africa), Outarde du Sénégal (French), Lekakarane la mpasweu (Sesotho), inkakulo (Zulu)
Size	♀ 48–61 cm; ♂ averaging smaller
Subspecies	*E. s. senegalensis:* Range shown within W Africa & Sahel through Sudan & Eritrea *E. s. canicollis:* Horn of Africa into northern E Africa *E. s. erlangeri:* SW Kenya & W Tanzania *E. s. barrowii/mackenziei:* Gabon, Congo & DRC, southern Africa
Habitat	Open, relatively tall grasslands (30–50 cm), savannas, bushy or wooded grasslands, cultivated areas up to 2000 m.
Movement	Mostly resident & sedentary. Though: in Chad moves N during wet season; in S Africa, some birds winter at lower altitudes; in W Africa moves into deserts during wet season. Family groups have home ranges of c40 ha.
Breeding	Jul–Oct in W Africa; Jun & Aug–Oct in C Sahel; Mar–Jun in NE Africa; Oct–Feb in S Africa. Nest is sited between grass tufts or below a bush. Clutch size: 1–3 eggs. Incubation by ♀ alone; however, ♂ & other group members in proximity.

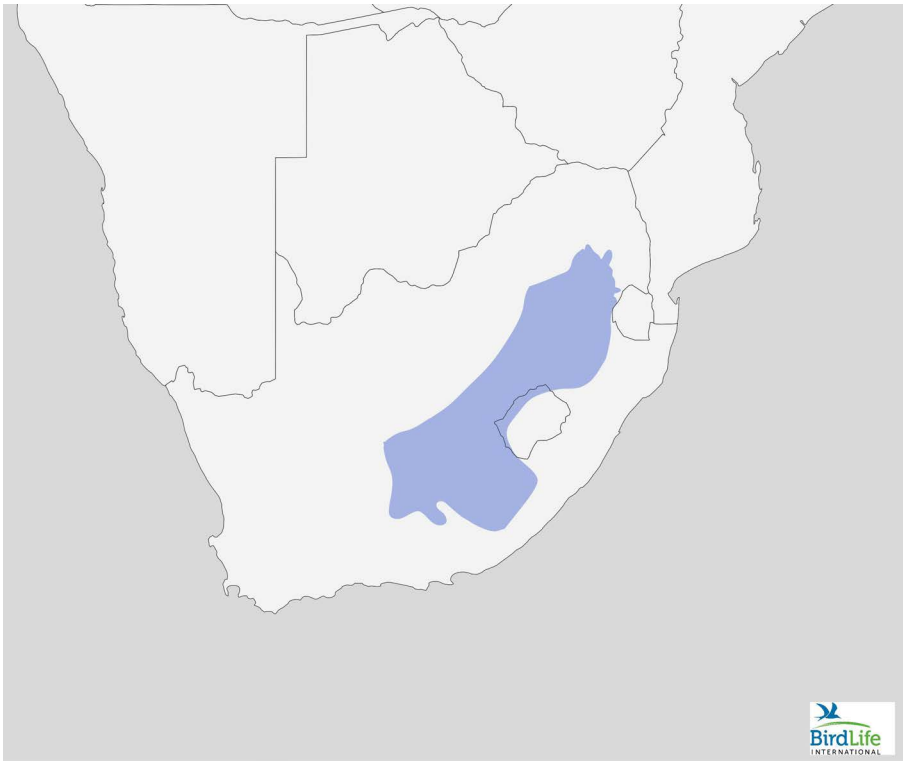
Content partners: BirdLife INTERNATIONAL CornellLab

Country	Population Size	Population trend	National Red List status	Regional Red List status	National Protection Status	Presence in Country	Months of presence	Key sites	Key Threats
Angola	Unknown	Unknown	N/A	N/A	Unknown	Resident	Unknown	C Plateau from Cuando Cubango N through Moxico; Bié and Lunda Sol to Lunda Norte and W to Malanje	Unknown
Benin	Unknown	Unknown	N/A	N/A	Unknown	Resident	Unknown	Unknown	Unknown
Botswana	Unknown	Unknown	N/A	N/A	Unknown	Resident	Unknown	Unknown	Unknown
Burkina Faso	<10 ind.	Declining	N/A	N/A	Protected	Breeding	Mar-Jun	C and S Burkina Faso	L: Illegal Trade (Live birds); Unsustainable fire regimes; Lack of awareness U: Poaching; Agricultural intensification (Chemical application); Disturbance; Legal obstacles
Cameroon	Unknown	Unknown	N/A	N/A	Unknown	Unknown	Unknown	Unknown	Unknown
Chad	Unknown	Unknown	N/A	N/A	Unknown	Unknown	Unknown	Unknown	Unknown
Congo	Unknown	Unknown	N/A	N/A	Unknown	Unknown	Unknown	Unknown	Unknown
Côte d'Ivoire	Unknown	Unknown	N/A	N/A	Unknown	Resident	Unknown	Unknown	Unknown
Democratic Republic of the Congo	Unknown	Unknown	N/A	N/A	Unknown	Resident	Unknown	Unknown	Unknown
Eritrea	Unknown	Unknown	N/A	N/A	Unknown	Unknown	Unknown	Gash Barka, down and E of the Rift Valley as far as 45°E (Dhige, Monsura, Mogolo, Akordet subregions)	Unknown
Eswatini	Unknown	Unknown	N/A	VU	Unknown	Resident	Unknown	Unknown	Unknown
Ethiopia	Unknown	Declining	N/A	N/A	Unknown	Resident	Unknown	Awash NP; Yabello-Mega Area; Ali Dege Plains	C: Habitat loss and degradation M: Agricultural intensification (Eucalyptus plantations); Habitat degradation and fragmentation (Overgrazing; Infrastructure developments)
Gabon	Unknown	Unknown	N/A	N/A	Unknown	Resident	Unknown	Unknown	Unknown
Gambia	Unknown	Unknown	N/A	N/A	Unknown	Resident	Unknown	Unknown	Unknown
Ghana	Unknown	Unknown	N/A	N/A	Unknown	Resident	Unknown	Mole NP (Savannah Region)	Unknown
Guinea	Unknown	Unknown	N/A	N/A	Unknown	Resident	Unknown	Unknown	Unknown

Country	Population Size	Population trend	National Red List status	Regional Red List status	National Protection Status	Presence in Country	Months of presence	Key sites	Key Threats
Kenya	Unknown	Declining	N/A	N/A	No species-specific conservation laws besides PA management and regulations	Resident	Year-round	N and E Kenya, Nairobi NP, Amboseli NP, Masai Mara GR	C: Habitat loss and fragmentation; Collision (Overhead cabling) M: Habitat degradation (Overgrazing))
Mali	Unknown	Unknown	N/A	N/A	Unknown	Resident	Unknown	Unknown	Unknown
Mauritania	Unknown	Declining	N/A	N/A	Protected	Resident	Year-round	Lekser Senegal Delta Diawling	U: Poaching
Mozambique	Unknown	Unknown	N/A	N/A	Unknown	Unknown	Unknown	Unknown	Unknown
Niger	Unknown	Unknown	N/A	N/A	Unknown	Resident	Year-round	NNR Aïr - Ténéré, Termit Mountains, Diffa-Kinzindi grassland and wetlands, Dilia de Lagané	U: Disturbance; Habitat loss and degradation; Poaching
Nigeria	1,000 ind. < 50 records via NiBAP (2015–2025), mostly from NC to NE Nigeria	Declining	N/A	N/A	Unknown	Resident	Year-round	Gujba Forest Reserve; Yankari GR	C: Unsustainable hunting; Poaching; Habitat loss (Conversion of grasslands and scrublands); Lack of awareness; Legal obstacles H: Illegal trade (dead and live birds); Habitat degradation (Overgrazing); Agricultural intensification (Chemical application, Mechanization); Climate change M: Unsustainable fire regimes; Agricultural intensification (Irrigation) L: Anthropogenic disturbance Loc: Collision (Overhead cabling, Traffic); Habitat loss andfragmentation (Conversion of cereal steppes, Transportation networks); Agricultural intensification (Monocultures); Predation (Other);
Senegal	Unknown	Unknown	N/A	N/A	Unknown	Unknown	Unknown	Unknown	Unknown
Somalia	Unknown	Unknown	N/A	N/A	Legislation proposed within Somaliland	Resident	Year-round	Awdalland incl. Gabiley Region; Berbera; Taagga Duudka; Bannaanka Saraar (Ban Ado Plain); Laascanood; Haded Plain; Puntland; Galmudug; Hirshabelle; Southwest State; Jubaland State	H: Poaching (For sport, in Somaliland) U: Trade (International, for falconry)

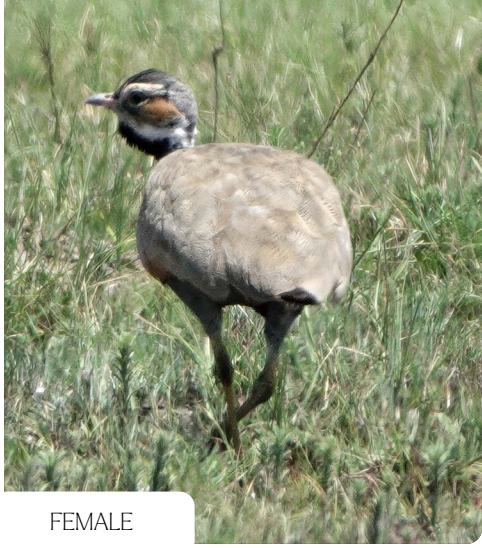
Country	Population Size	Population trend	National Red List status	Regional Red List status	National Protection Status	Presence in Country	Months of presence	Key sites	Key Threats
South Africa	1,000 - 2,000 mature ind.	Declining	N/A	VU	Protected	Resident	Year-round	Grassland Biome (Gauteng, Mpumalanga, KwaZulu-Natal, Limpopo); Eastern Cape	H: Habitat loss and degradation (Agriculture, Afforestation, Overgrazing) L: Habitat loss (Urbanization) U: Poaching; Collision (Wind turbines)
South Sudan	Unknown	Unknown	N/A	N/A	Unknown	Resident	Unknown	Unknown	Unknown
Sudan	Unknown	Unknown	N/A	N/A	Unknown	Unknown	Unknown	Unknown	Unknown
Tanzania	Unknown	Declining	N/A	N/A	No species-specific conservation laws, protected in PAs	Resident	Year-round	Serengeti NP	C: Habitat loss, degradation and fragmentation (Land-use change, Overgrazing) M: Poaching
Togo	Unknown	Unknown	N/A	N/A	Unknown	Unknown	Unknown	Unknown	Unknown
Uganda	Unknown	Unknown	LC	N/A	Protected in PAs	Resident	Year-round	Kidepo Valley NP	M: Poaching U: Habitat loss and degradation (Agricultural expansion, Human settlements)
Zambia	Unknown	Unknown	N/A	N/A	Unknown	Resident	Unknown	From Kakoma area S in the Zambezi drainage to Masese (but commonly W of the river)	Unknown

BLUE BUSTARD *(Eupodotis caerulescens)*

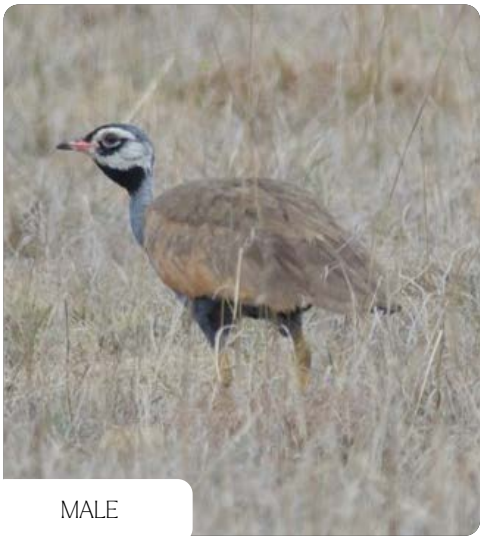


Political boundaries indicated in this map are those of the United Nations.

Year-round



FEMALE



MALE

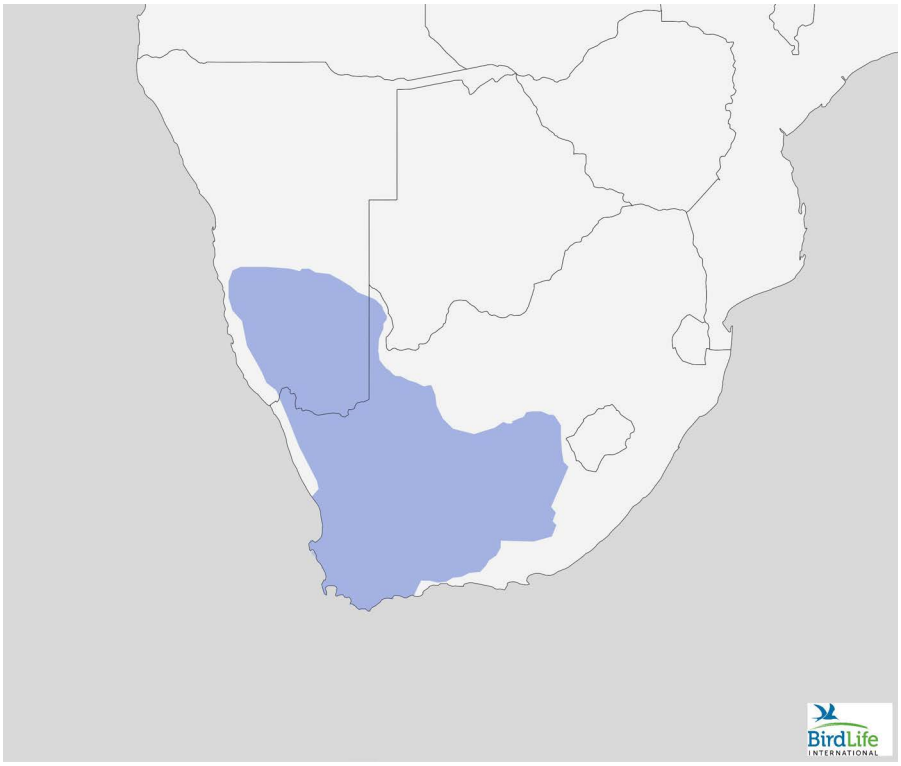
Conservation status	Near Threatened
Global RedList Population Estimate	8,000–10,000 individuals. Decreasing.

Regional names	Bloukorhaan (Afrikaans), lekakarane-phutswa (Sesotho), umbhukwane (Zulu)
Size	50–58 cm, 1,120–1,612 g
Subspecies	Monotypic
Habitat	Grassveld above 1500 m with short grass, termite mounds & few trees. Also uses old cropland, fallows, pastures & winter cultivation in flat or undulating open highveld grasslands, including recently burnt areas. Strongly associated with large Alfalfa fields. Rarely more than 1 km from water.
Movement	Resident & sedentary
Breeding	Aug–Mar with peak in laying Oct–Nov. Nest is situated on bare open ground, often in short, thick grass (sufficient to conceal the sitting ♀), but also in old cropland & occasionally in irrigated fields. Clutch size typically two eggs. If first clutch fails early, may re-lay.

Content partners: BirdLife INTERNATIONAL CornellLab

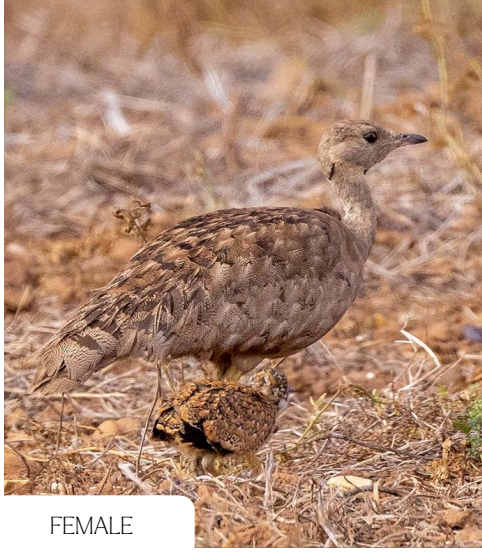
Country	Population Size	Population trend	National Red List status	Regional Red List status	National Protection Status	Presence in Country	Months of presence	Key sites	Key Threats
Lesotho	< 1,000	Unknown	N/A	VU	Not protected	Unknown	Unknown	Unknown	Unknown
South Africa	2,500 - 10,000 ind.	Declining	N/A	VU	Not protected	Resident	Year-round	Highveld Grasslands near Morgenzon and Daggakraal; Bethulie; Colesberg; Devon; Suikerbosrand NR; Golden Gate NP; Devon Grasslands; Wakkerstroom; Gariep Dam PA	C: Habitat loss; Agricultural intensification H: Habitat loss (Mining) M: Collision (Overhead cabling, Wind turbines) L: Habitat loss (Afforestation)

KAROO BUSTARD *(Heterotetrax vigorsii)*



Political boundaries indicated in this map are those of the United Nations.

Year-round



FEMALE

MALE

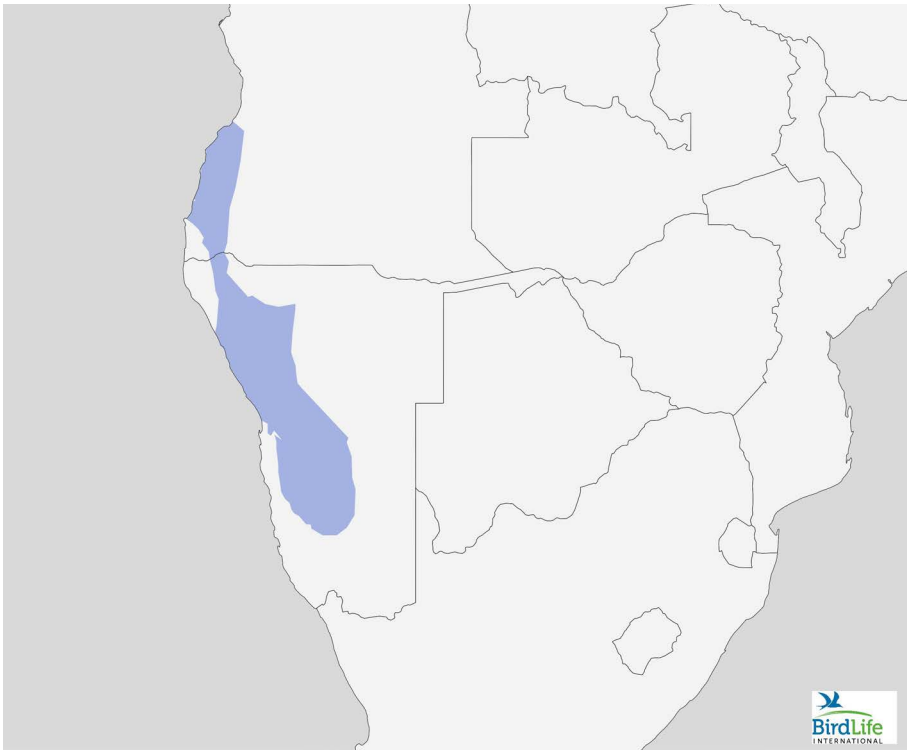
Conservation status	Least Concern
Global RedList Population Estimate	Unknown. Increasing.

Regional names	Vaalkorhaan (Afrikaans), Lekakarane la Karu (Sesotho), isemelimpunga (Zulu)
Size	60 cm
Subspecies	*H. v. vigorsii:* SW S Africa, N to Brandvlei & Van Wyks Vlei in North Cape *H. v. namaqua:* S Namibia & NW S Africa, to N of range of *H. v. vigorsii*
Habitat	Arid, flat or undulating gravel or sandy plains with scattered dwarf shrubs, ranging into veld with taller bushes, preferring perennial shrubs & annuals, but little grass. An isolated population exists in SW Cape Province in karooid-like coastal fynbos areas with cereal cultivation & pastures.
Movement	Sedentary & site-faithful, with pairs defending a movable territory year-round. Individuals can range over many km. ♀s disperse more readily than ♂s.
Breeding	Typically Aug–Mar but laying dates span Jun–Feb. Usually sited on stony ground. The nest is a slight scrape on bare ground, sometimes ringed with pebbles. Clutch size one egg. Eggs incubated by ♀ alone, although ♂ remains nearby & the two forage together during ♀'s breaks.

Content partners: BirdLife INTERNATIONAL CornellLab

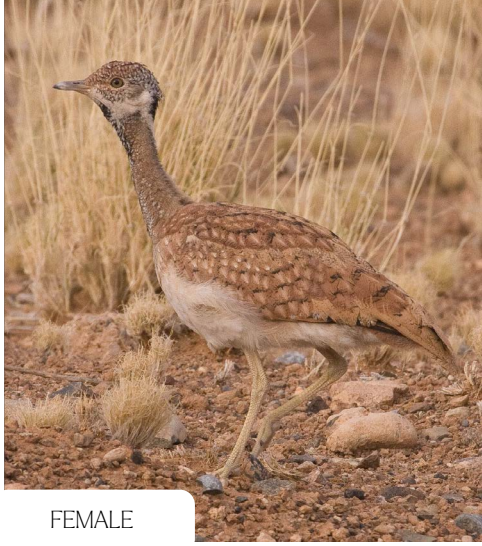
Country	Population Size	Population trend	National Red List status	Regional Red List status	National Protection Status	Presence in Country	Months of presence	Key sites	Key Threats
Namibia	Unknown	Unknown	N/A	N/A	Protected	Resident	Year-round	Namib-Naukluft Park; Tsau Khaeb NP; S Namibia	U: Collision (Overhead cabling, Wind turbines); Habitat loss and fragmentation (Energy infrastructure, Land-use change) Anthropogenic disturbance (Infrastructure developments in previously undisturbed areas); Poaching
South Africa	76,000 - 130,203 mature ind.	Declining	N/A	NT	Protected	Resident	Year-round	Nama Karoo (Karoo NP); Meerkat NP; Namaqua NP; Augrabies Falls NP; Mattheus-Gat Conservation Area; Haramoep and Black Mountain Mine; Bitterputs Conservation Area; Platberg-Karoo Conservancy; Camdeboo NP; Olifants River Estuary; Upper Orange River; Overberg	H: Collision (Overhead cabling); Climate change (Habitat shifting and droughts); Habitat loss (Land-use change) M: Habitat loss (Mining); Collision (Wind turbines) U: Anthropogenically subsidized predation (Invasive raptors, Corvids)

RUPPELL'S BUSTARD *(Heterotetrax rueppelii)*

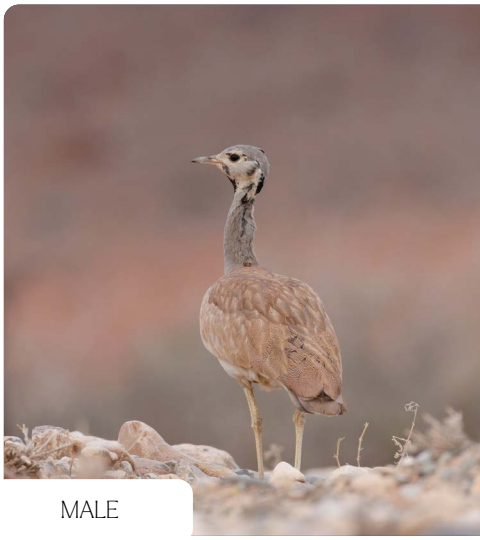


Political boundaries indicated in this map are those of the United Nations.

Year-round



FEMALE



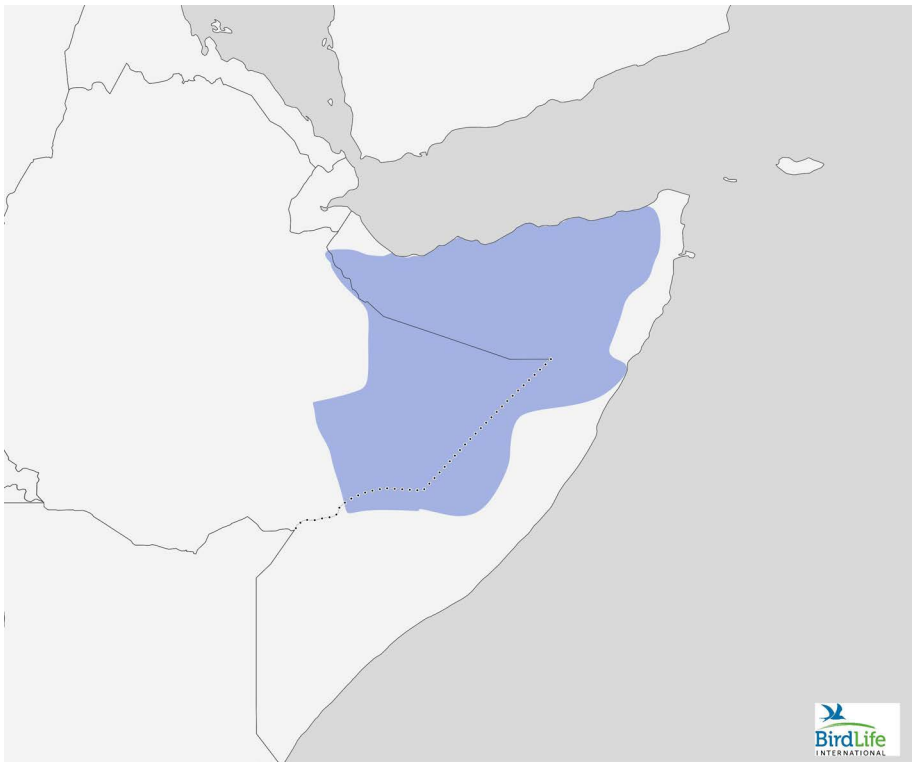
MALE

Conservation status	Least Concern
Global RedList Population Estimate	Unknown. Stable.

Regional names	Abetarda de Rüppell (Angola), Woestynkorhaan (Afrikaans)
Size	60 cm, no data on weight
Subspecies	*H. r. rueppelii*: Coastal S Angola (south from Benguela) & NW Namibia *H. r. fitzsimonsi*: Central western Namibia
Habitat	Desert edge & subdesert, on flat dark basaltic gravel plains & barren flats with thin grass & sparse stunted scrub.
Movement	Sedentary
Breeding	Mostly Sep–Feb, probably at any time of year, depending on rainfall & food supply. Apparently monogamous. Nest on bare stony ground. Clutch size1 egg, possibly sometimes 2.

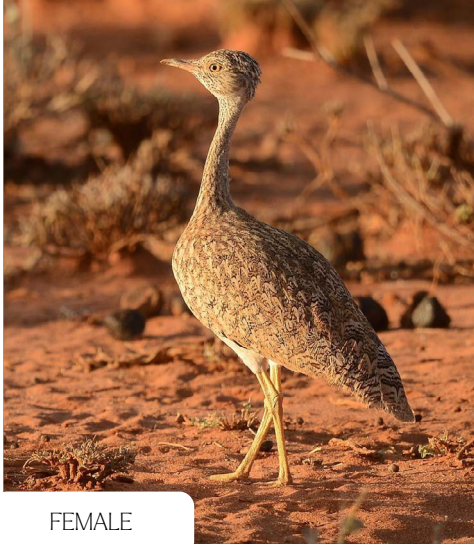
Country	Population Size	Population trend	National Red List status	Regional Red List status	National Protection Status	Presence in Country	Months of presence	Key sites	Key Threats
Angola	Unknown	Unknown	N/A	N/A	Unknown	Resident	Unknown	SW Angola; Iona NP	Unknown
Namibia	99,900 ind.	Unknown	LC	N/A	Protected	Resident (Near-endemic, 90% in Namibia)	Year-round	W Namibia; From the escarpment W to the coast; avoids the unvegetated dunes of the Namib sand sea S of Walvis Bay; Namib-Naukluft Park	U: Collision (Overhead cabling, Wind turbines); Habitat loss and fragmentation (Energy infrastructure); Disturbance; Poaching

LITTLE BROWN BUSTARD *(Heterotetrax humilis)*



Political boundaries indicated in this map are those of the United Nations.

Year-round **Breeding** **Non-Breeding**



FEMALE

MALE

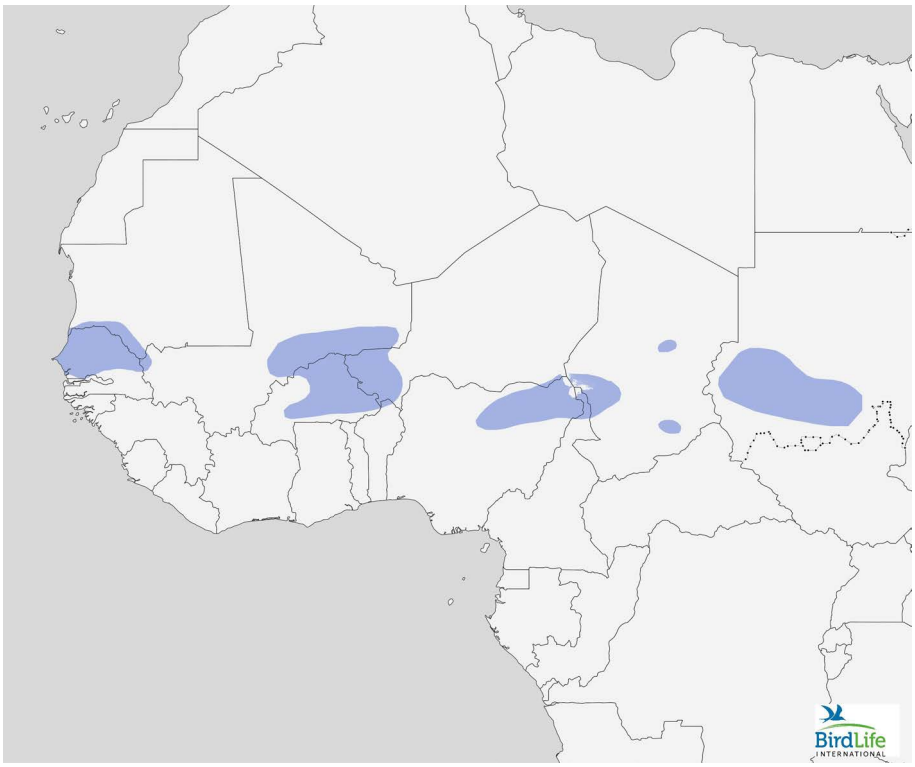
Conservation status	Near Threatened
Global RedList Population Estimate	Unknown. Decreasing.

Regional names	Outarde somalienne (French), Dhabad (Somali)
Size	40 cm, 700 g
Subspecies	Monotypic
Habitat	Dry, sandy, grassland with bushes, light open thornbush & adjacent tussock grass plains. *Acacia-Commiphora* deciduous bushland & thicket.
Movement	Sedentary.
Breeding	In Somalia chiefly May–Jun. Nest placed on sandy soil, usually without a scrape. Usually 2 eggs. Breeding system not well documented, may be monogamous & live in small family groups.

Content partners: BirdLife INTERNATIONAL CornellLab

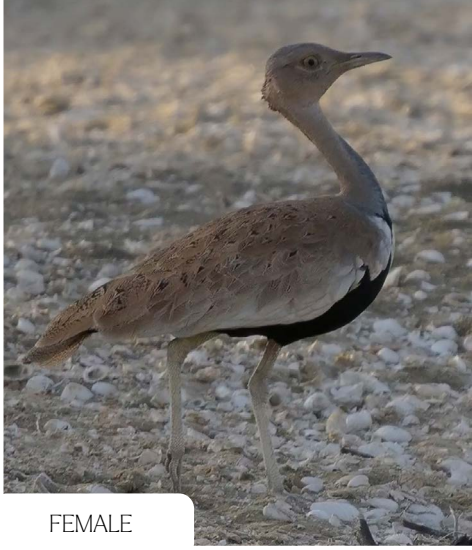
Country	Population Size	Population trend	National Red List status	Regional Red List status	National Protection Status	Presence in Country	Months of presence	Key sites	Key Threats
Ethiopia	Unknown	Unknown	N/A	N/A	Unknown	Resident	Unknown	Mago NP; Yabello Sanctuary; Lower Wabi Shebelle River and Warder	Unknown
Somalia	Unknown	Unknown	N/A	N/A	Legislation proposed within Somaliland	Resident	Unknown	Awdalland incl. Gabiley; Berbera; Taagga Duudka; Bannaanka Saraar (Ban Ado Plain); Laas-canood; Haded Plain; Gacan Libaax; Daalo; Ceel Hammure; Lascaanod; Taleex; Ceel Chebet; Garawe-Eyle; Adaado; Dhuse-mareeb	H: Poaching (For sport, in Somaliland); Trade (International, for falconry & Domestic, for medicinal use)

SAVILE'S BUSTARD *(Lophotis savilei)*

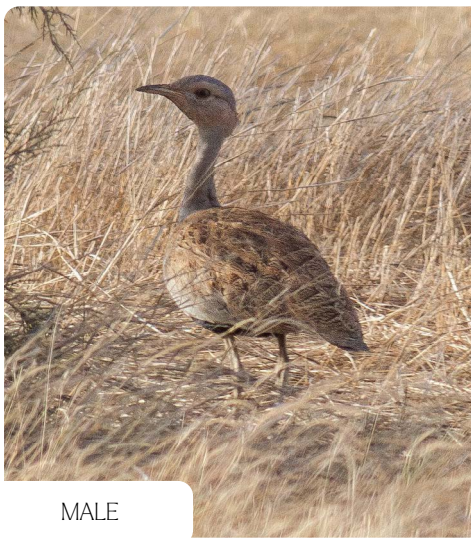


Political boundaries indicated in this map are those of the United Nations.

Year-round



FEMALE



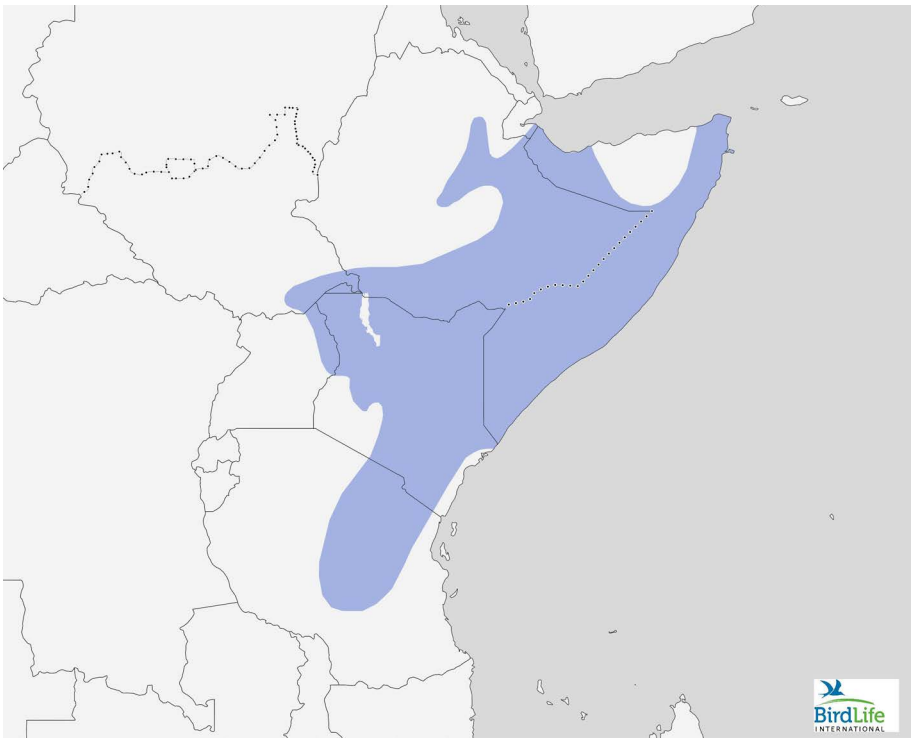
MALE

Conservation status	Least Concern
Global RedList Population Estimate	Unknown. Stable.

Regional names	الحبارى السافيلزية (Arabic), Outarde de Savile (French)
Size	42 cm, no data on weight
Subspecies	Monotypic
Habitat	Bush & light woodland, thickets near dried pools & clearings, flat scrub with *Aristida* grass & *Acacia raddiana*.
Movement	Generally considered sedentary, but known to be a dry season (Dec–May) visitor to Niger's W National Park & may move north out of Nigeria during rains to breed.
Breeding	Sep–Oct in W part of range; Jun–Aug (wet season) in Chad; Jul–Sep in Sudan. Nest details presumably similar to those of Red-crested Bustard

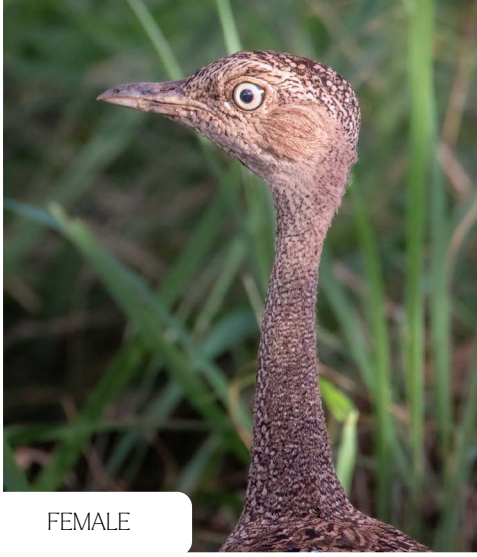
Country	Population Size	Population trend	National Red List status	Regional Red List status	National Protection Status	Presence in Country	Months of presence	Key sites	Key Threats
Benin	Unknown	Unknown	N/A	N/A	Unknown	Unknown	Unknown	Unknown	Unknown
Burkina Faso	<10 ind.	Declining	N/A	N/A	Protected	Breeding	Jun, Sep-Dec	Extreme N, C and S Burkina Faso	H: Habitat loss (Conversion of tiger bush) L: Illegal Trade (live birds); Unsustainable fire regimes; Lack of awareness U: Poaching; Agricultural intensification (Chemical application); Disturbance; Legal obstacles
Cameroon	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Waza NP; Logone Flood-Plain	Unknown
Chad	Unknown	Unknown	N/A	N/A	Unknown	Unknown	Unknown	Unknown	Unknown
Gambia	Unknown	Unknown	N/A	N/A	Unknown	Unknown	Unknown	Unknown	Unknown
Mali	Unknown	Unknown	N/A	N/A	Unknown	Unknown	Unknown	Unknown	Unknown
Mauritania	Unknown	Declining	N/A	N/A	Protected	Occasional breeder	Year-round	S of 18°N; Rosso/Trazra; Afollé; Hodh El gharbi; Hodh Chargui	U: Poaching
Niger	Unknown	Unknown	N/A	N/A	Unknown	Unknown	Unknown	"W" NP; Makalondi District; Dallol Boboye	U: Habitat loss and degradation; Poaching
Nigeria	>200 ind. 60+ records via NiBAP, mostly from NE Nigeria; 200+ at YGR in 2008 - 2010 (Da'an 2010)	Declining, though population at YGR reportedly increasing	N/A	N/A	Unknown	Non-breeding	Apr-Sep, Nov-Dec, but likely year-round in YGR	Hadejia-Nguru Wetlands; Sambisa GR; Chad Basin NP; Chingurmi - Duguma Sector; Ngelzarma Forest Reserve; Fune Local Government Area; Yobe State; Yankari GR (YGR)	C: Habitat loss (Conversion of grasslands); Lack of awareness; Legal obstacles H: Poaching; Illegal trade (live birds) in NE Nigeria; Habitat degradation (Overgrazing); Agricultural intensification (Chemical application, Mechanization); Climate change M: Habitat loss (Conversion of shrublands); Agricultural intensification (Irrigation) L: Collision (Overhead cabling); Unsustainable fire regimes, Agricultural intensification (Monocultures); Anthropogenic Disturbance Loc: Collision (Traffic); Habitat loss and fragmentation (Conversion of cereal steppes, Transportation networks); Predation (Other)
Senegal	Unknown	Unknown	N/A	N/A	Unknown	Unknown	Unknown	Ferlo North; Ferlo South; River Sénégal (Ntiagar to Richard-Toll)	Unknown
Sudan	Unknown	Unknown	N/A	N/A	Unknown	Unknown	Unknown	En Nahud	Unknown

BUFF-CRESTED BUSTARD *(Lophotis gindiana)*

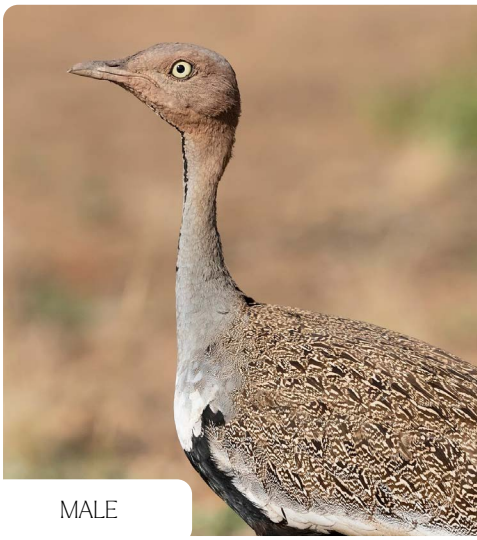


Political boundaries indicated in this map are those of the United Nations.

Year-round



FEMALE



MALE

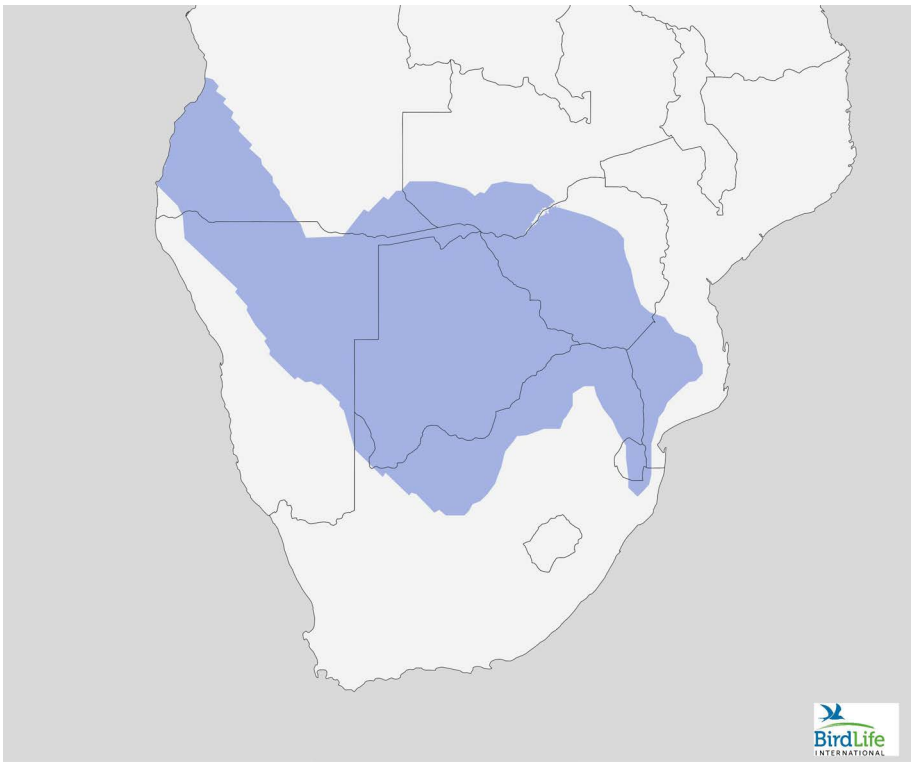
Conservation status	Least concern
Global RedList Population Estimate	Unknown. Stable

Regional names	Outarde d'oustalet (French)
Size	♂ 50 cm, 675–900 g
Subspecies	Monotypic
Habitat	Arid & semi-arid bushland, extending up to 1200 m in Ethiopia & 1800 m in Kenya.
Movement	Generally sedentary; local migration reported in Kenya.
Breeding	Mar–Jun or later. Nest situated on bare ground. Clutch size 1–2 eggs. First breeding at 2 years.

Content partners: BirdLife INTERNATIONAL CornellLab

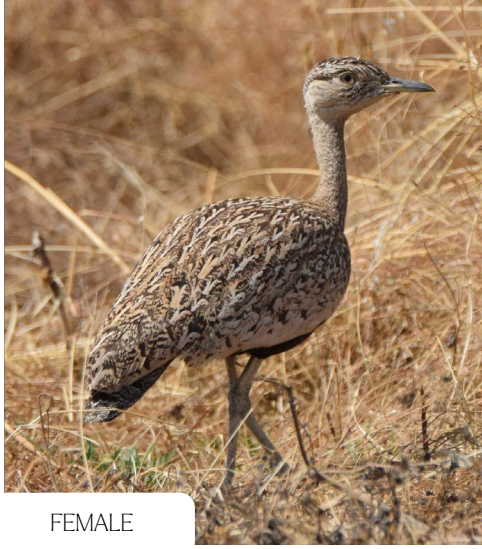
Country	Population Size	Population trend	National Red List status	Regional Red List status	National Protection Status	Presence in Country	Months of presence	Key sites	Key Threats
Ethiopia	Unknown	Unknown	N/A	N/A	Unknown	Resident	Year-round, Breeding from Mar-Jun	Awash NP; Ogaden; Negele Woodlands; Lake Chew Bahir; Yangudi-Rassa NP; Bogol Manyo – Dolo; Konso-Segen; Omo NP; Mago NP; Lower Wabi Shebelle River and Warder; Dawa; Wachile; E Hararghe (Harar-Wabi Shebelle)	Unknown
Kenya	Unknown	Declining	N/A	N/A	Protected in Parks and Reserves	Resident	Year-round	Tsavo NP; Amboseli, Samburu NR; Lake Bogoria and Baringo	C: Habitat loss and degradation (Urbanization and human activities, Invasive alien plant species incl. *Prosopis juliflora*, Agricultural expansion) M: Poaching
Somalia	Unknown	Unknown	N/A	N/A	Legislation proposed within Somaliland	Resident	Unknown	Awdalland incl. Seylac; Berbera; Taagga Duudka; Bannaanka Saraar (Ban Ado Plain); Laascanood; Haded Plain; Gacan Libaax; Xarardheere - Awale Rugno; Lower Wabi Shebelle River and Warder; Jowhar – Warsheikh; E Hararghe (Harar-Wabi Shebelle); Boorama Plains; Ceel Hammure; Xawaadley Reservoir; Balcad NR; Jasiira Lagoon and Muqdisho Islets; Boja Swamps; Aangole – Farbiito; Laag Dheere; Far Waamo; Laag Badaana; Buulobarde; Arbowerow	H: Poaching (For sport, in Somaliland) U: Trade (International, for falconry & Domestic, Medicinal use)
South Sudan	Unknown	Unknown	N/A	N/A	Unknown	Resident	Unknown	Imatong Mountains; Kidepo	Unknown
Tanzania	Unknown	Stable	N/A	N/A	Protected in PAs	Resident	Year-round	Mkomazi NP; Nyumba ya Mungu Reserve; Longido Game Controlled Area; Lake Natron and Engaruka Basin; Raandilen Wildlife CA; Lake Mayara; Tarangire NP; Ruaha NP; Usangu flats; Ngorongoro CA	U: Habitat loss
Uganda	Unknown	Unknown	DD	N/A	Unknown	Unknown	Unknown	Moroto Forest Reserve; Kidepo Valley NP; Karamoja sub-region	H: Habitat loss (Human settlement, Agricultural expansion) L: Hunting and poaching

RED-CRESTED BUSTARD *(Lophotis ruficrista)*



Political boundaries indicated in this map are those of the United Nations.

Year-round



FEMALE

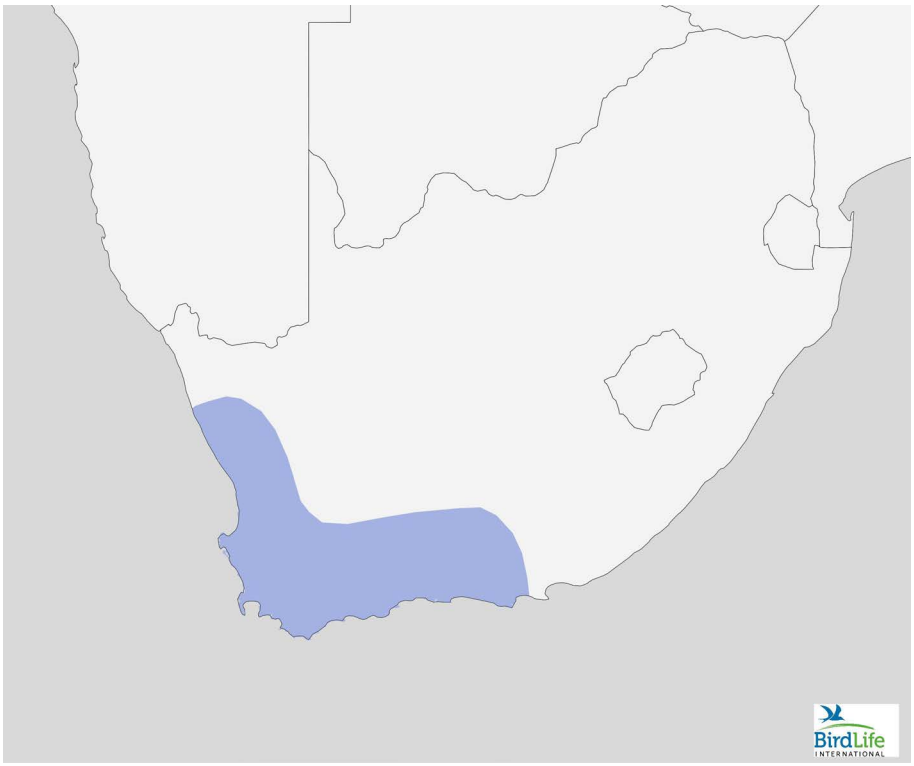
MALE

Conservation status	Least Concern
Global RedList Population Estimate	Unknown. Stable.

Regional names	Boskorhaan (Afrikaans), Abetarda-de-poupa (Portuguese), umngqithi (Zulu)
Size	♀ 50 cm, 500–732 g;. ♂ 50 cm, 550–845 g
Subspecies	Monotypic
Habitat	Thorn country, dry light woodland, bush savanna & riparian areas with long grass on sandy soils. In open habitats replaced by *A. afraoides*. A distinct population with a different call lives in treeless grassy dunes in the southern Kalahari & at elevations up to 1150 m in Zambia.
Movement	Generally considered sedentary & site-faithful, but there is evidence of occasional wandering. Movements into moister woodlands during dry periods are noted.
Breeding	Sep–Apr. Peaking in Transvaal in Oct–Nov, with peaks 1–2 months later in the west of the species' distribution than the east. Not well documented in Angola & Zambia. Clutch size: 1–2 eggs; 22 days incubation.

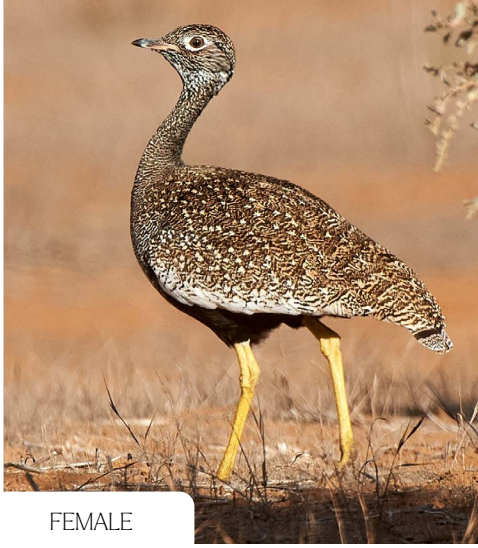
Country	Population Size	Population trend	National Red List status	Regional Red List status	National Protection Status	Presence in Country	Months of presence	Key sites	Key Threats
Angola	Unknown	Unknown	N/A	N/A	Unknown	Possibly resident (2000)	Unknown	From S Namibe and W Huíla N to Catumbela; Benguela	Unknown
Botswana	Unknown	Unknown	N/A	N/A	Unknown	Unknown	Unknown	Unknown	Unknown
Eswatini	Unknown	Unknown	N/A	N/A	Unknown	Unknown	Unknown	Unknown	Unknown
Mozambique	Unknown	Unknown	N/A	N/A	Unknown	Unknown	Unknown	Unknown	Unknown
Namibia	Unknown	Unknown	N/A	N/A	Protected	Resident (S African near-endemic, 35% in Namibia)	Year-round	N and NE parts of Namibia, excluding coast	U: Collision (Overhead cabling, Wind turbines); Habitat loss and fragmentation (Energy infrastructure); Disturbance; Poaching
South Africa	Unknown	Unknown	N/A	N/A	Unknown	Unknown	Unknown	Unknown	Unknown
Zambia	Unknown	Unknown	N/A	N/A	Unknown	Resident, Partial migrant	Unknown	Kalahari Sand-Woodlands; Zambezi Valley to near Chavuma; E of the river to the Loma area; Rarely along Zambezi as far as Livingstone	Unknown
Zimbabwe	Unknown	Unknown	N/A	N/A	Unknown	Unknown	Unknown	Unknown	Unknown

SOUTHERN BLACK BUSTARD *(Afrotis afra)*

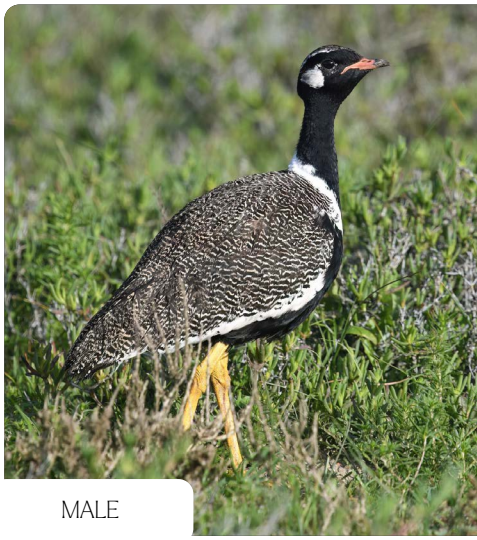


Political boundaries indicated in this map are those of the United Nations.

Year-round



FEMALE



MALE

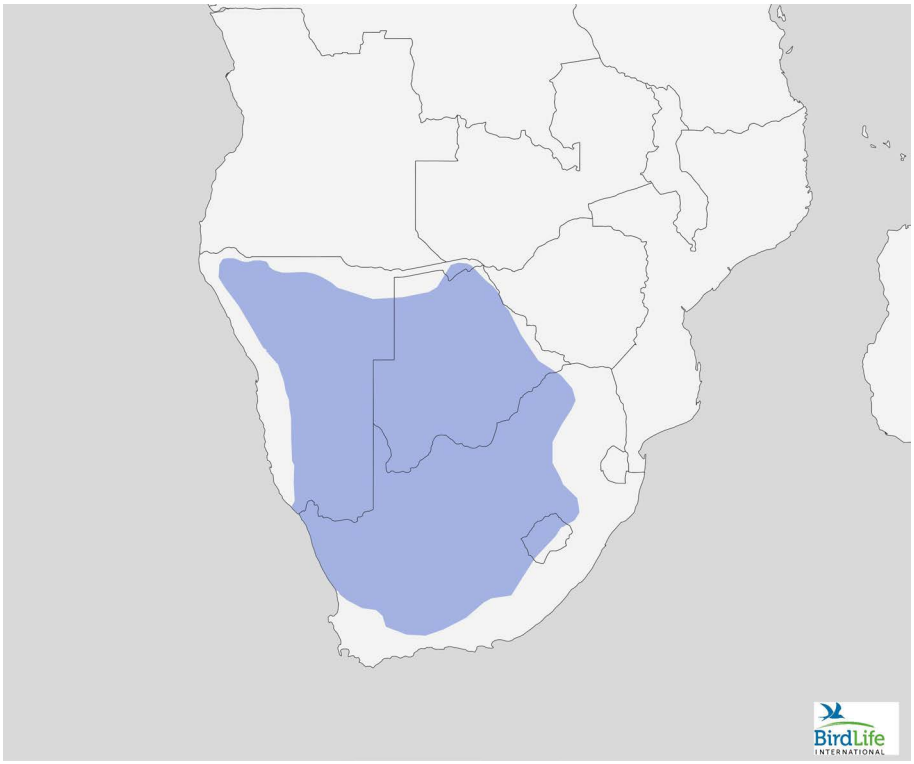
Conservation status	Vulnerable
Global RedList Population Estimate	Unknown. Decreasing.

Regional names	Swartvlerkkorhaan (Afrikaans), Black bustard (English alternative), Lekakarane (Sesotho), iseme laseKapa (Zulu)
Size	50–53 cm. ♂ 700 g, but likely an underestimate
Subspecies	Monotypic
Habitat	Occupies coastal fynbos, semi-arid scrub, dunes with succulent vegetation & extending into renosterveld scrub in the lowland semi-arid karoo. Frequently associated with cereal cropland. Tolerant of rather tall vegetation (up to 3 m high), provided some open spaces are available.
Movement	Sedentary
Breeding	Aug–Jan. Eggs laid directly on the ground. Clutch is one egg, occasionally two.

Content partners: BirdLife INTERNATIONAL CornellLab

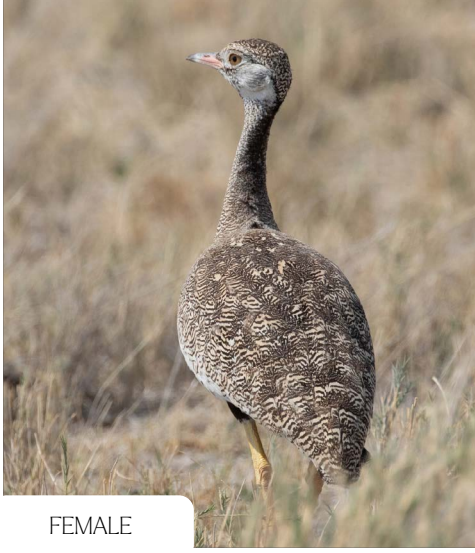
Country	Population Size	Population trend	National Red List status	Regional Red List status	National Protection Status	Presence in Country	Months of presence	Key sites	Key Threats
South Africa	Likely <10,000 ind.	Declining	N/A	VU	Protected	Resident	Year-round	Fynbos Biome; Overberg; Bokkeveld Escarpment; De Hoop; Gouritz Cluster (Canca Coast, Kammanassie, Touwsberg); Hantam; Knersvlakte; Namaqualand; Hardeveld South; Namaqualand Sandveld South; West Coast Sandveld; Steytlerville Karoo; Swartruggens; Touws River; West Coast Biosphere Reserve; Succulent Karoo; Nama Karoo; Aberdeen Basin; Albany Thicket; Addo Elephant NP	C: Habitat loss (Mining, Land-use change) H: Collision (Overhead cabling, Wind turbines) U: Anthropogenically subsidized predation (Corvids); Climate change

NORTHERN BLACK BUSTARD *(Afrotis afraoides)*

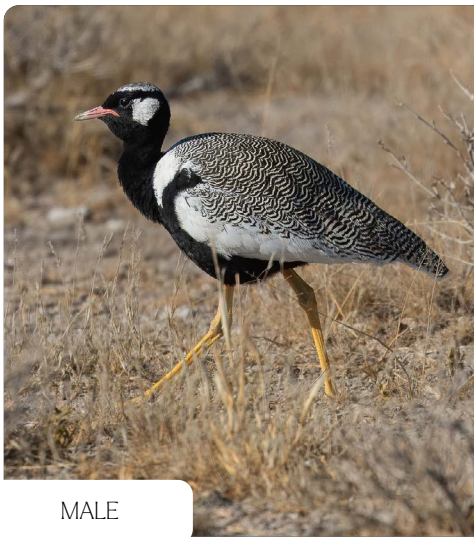


Political boundaries indicated in this map are those of the United Nations.

Year-round



FEMALE



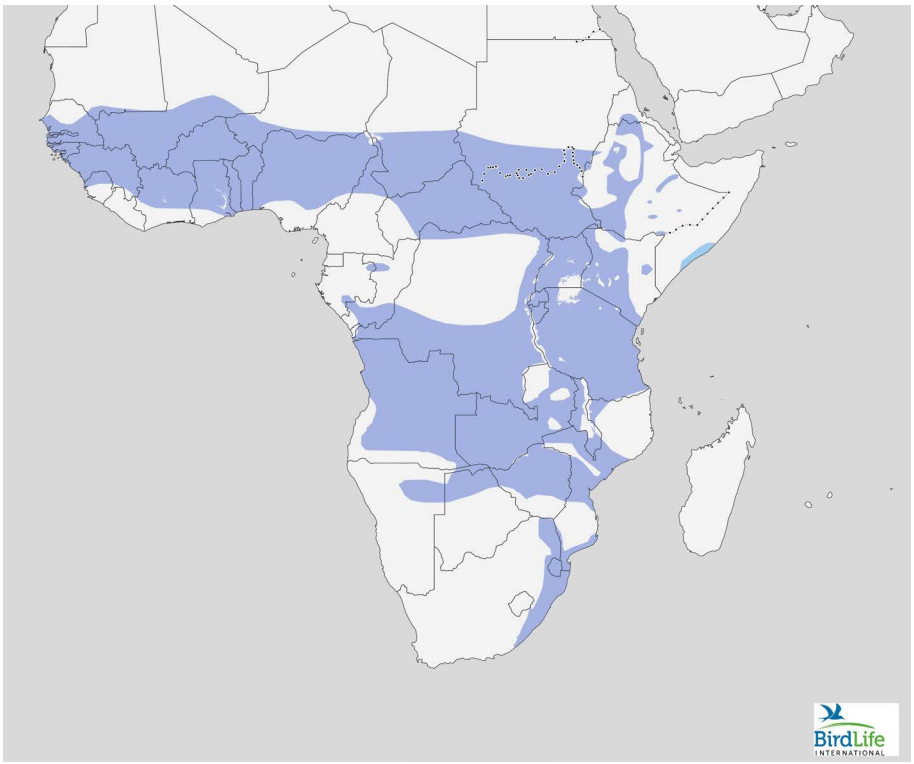
MALE

Conservation status	Least concern
Global RedList Population Estimate	Unknown. Stable.

Regional names	Witvlerkkorhaan (Afrikaans), White-quilled bustard (English alternative), iseme lethafa (Zulu)
Size	50 cm
Subspecies	*A. a. etoschae:* N Namibia & N Botswana *A. a. damarensis:* Namibia & C Botswana, S to N Cape in S Africa *A. a. afraoides:* SE Botswana through N & NE S Africa to W Lesotho
Habitat	Flat grassland with grass 50–100 cm high, open shrub veld, semi-desert scrub, grassy dunes & dry bush savanna, often in heavily grazed areas or those with patchy, sparse grass cover including old cropland. Males use elevated vantage points for display.
Movement	A sedentary species, but is reported to undertake local movements in response to rainfall.
Breeding	Active year-round, but mostly Sep–Mar. Nests on the ground among scattered grass tufts & shrubs. Clutch size 1–2 eggs, rarely 3.

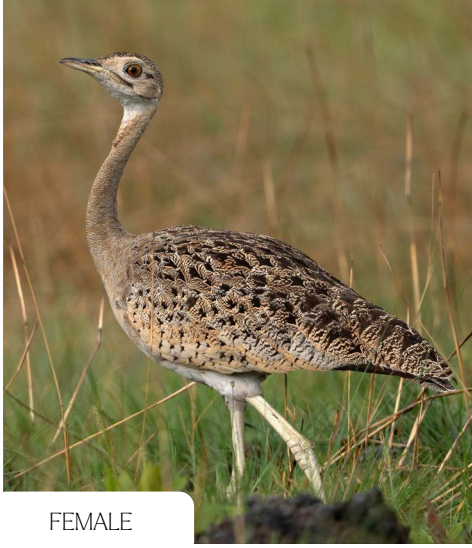
Country	Population Size	Population trend	National Red List status	Regional Red List status	National Protection Status	Presence in Country	Months of presence	Key sites	Key Threats
Botswana	Unknown	Unknown	N/A	N/A	Unknown	Unknown	Unknown	Unknown	Unknown
Lesotho	Unknown	Unknown	N/A	N/A	Unknown	Unknown	Unknown	Unknown	Unknown
Namibia	Unknown	Unknown	LC	N/A	Protected	Resident (S African endemic; 35% in Namibia)	Year-round	Throughout Namibia, excluding coast	U: Collision (Overhead cabling, Wind turbines); Habitat loss and fragmentation (Energy infrastructure); Anthropogenic disturbance; Poaching
South Africa	Unknown	Unknown	N/A	N/A	Protected within PAs	Resident	Unknown	Kgalagadi Transfrontier Park and other PAs	M: Collision (Overhead cabling) L: Habitat loss and fragmentation (Agricultural transformation; Mining; Solar energy) U: Anthropogenic disturbance; Poaching
Zimbabwe	Unknown	Unknown	N/A	N/A	Unknown	Unknown	Unknown	Unknown	Unknown

BLACK-BELLIED BUSTARD *(Lissotis melanogaster)*

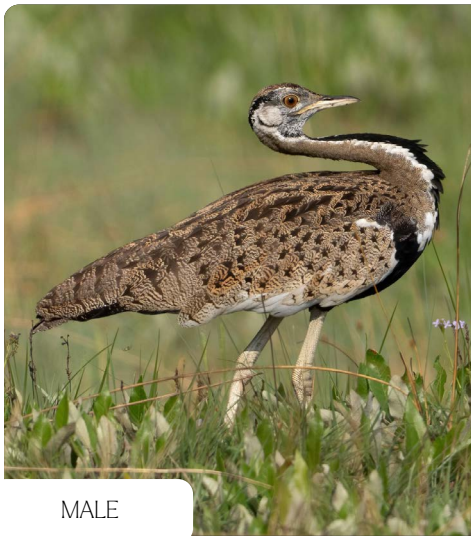


Political boundaries indicated in this map are those of the United Nations.

Year-round



FEMALE



MALE

Conservation status	Least Concern
Global RedList Population Estimate	Unknown. Decreasing.

Regional names	Langbeenkorhaan (Afrikaans), Abetarda-de-barriga-preta (Angola), Nyasiawo *fe* tsofe (Ewe), Outarde à ventre noir (French), Bakin kasko (Hausa), ufumba (Zulu)
Size	♀ 60 cm, 1,400 g; ♂ 60 cm, 1,800–2,700 g
Subspecies	*L. m. melanogaster:* Suitable habitats S of Sahel to Zambezi river & S Angola *L. m. notophila:* Mozambique S of Zambezi, Zimbabwe & southern Africa
Habitat	Tall dense open grassland with bushes up to 2500 m, savanna woodland, also margins of vleis & dambos. Uses cultivated areas, pastures & burnt woodland. Often close to water. Termite mounds used for look-out & display.
Movement	Both sedentary & at least partially migratory. In Mali & Nigeria moves N to breed in rains in Jun. Observations suggest seasonal movements in Ghana. Recorded in Sierra Leone only May–Oct, whereas in CAR only Oct–Jun. Numbers increase in Jun in Ethiopian uplands & in Kenya Aug–Nov & parts of Tanzanian coast during dry season.
Breeding	Jun–Sep in sub-Sahel, in Nigeria possible also Dec–Jan. Apr & Sep in Ethiopia; Feb–Jun & Sep in E Africa; generally within Oct–Mar in C & S Africa & not necessarily in the rainy season. Nest is a shallow scrape on bare ground in grass, commonly near a feature such as an anthill, a bush or water. Clutch size 1–2 eggs.

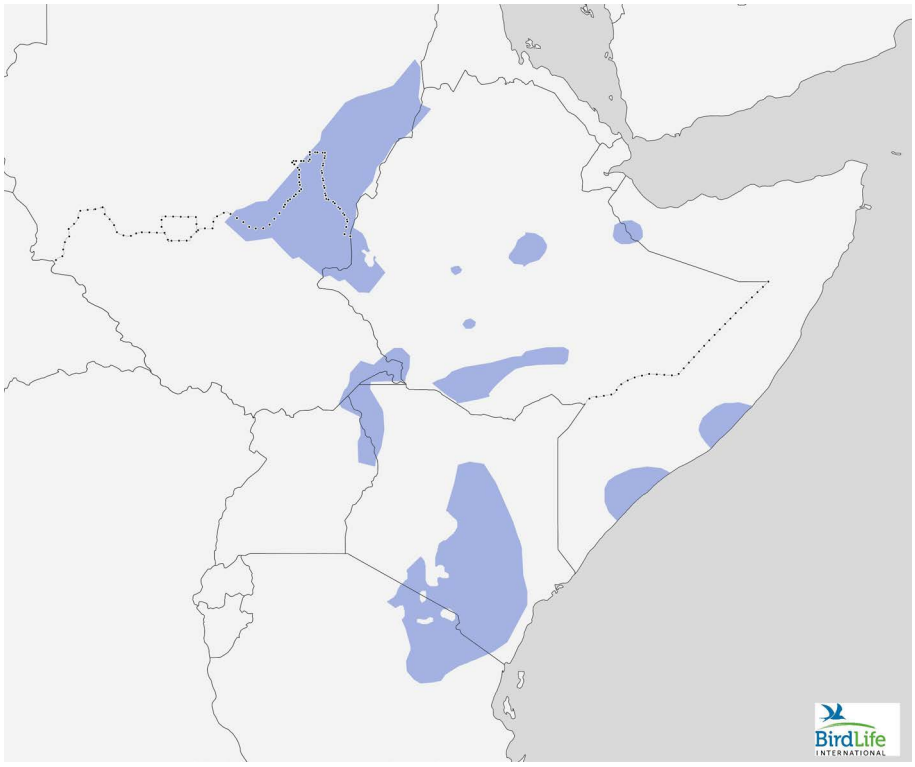
Country	Population Size	Population trend	National Red List status	Regional Red List status	National Protection Status	Presence in Country	Months of presence	Key sites	Key Threats
Angola	Unknown	Unknown	N/A	N/A	Unknown	Likely resident	Unknown	Unknown	Unknown
Benin	Unknown	Unknown	N/A	N/A	Unknown	Likely resident	Unknown	Unknown	U: Trade (Live birds for captive breeding)
Botswana	Unknown	Unknown	N/A	N/A	Unknown	Likely resident	Unknown	Unknown	Unknown
Burkina Faso	15 - 20 ind.	Declining	N/A	N/A	Protected	Breeding	Jun-Sep	C and S Burkina Faso	L: Unsustainable fire regimes; Lack of awareness U: Poaching; Agricultural intensification (Chemical application); Anthropogenic disturbance; Legal obstacles
Burundi	Unknown	Declining	N/A	N/A	Unknown	Observed in breeding season when males display	Oct-Feb	Kibira NP; Rusizi NP; Ruvubu NP	C: Habitat loss (Agricultural expansion); Poaching; Disturbance
Cameroon	Unknown	Unknown	N/A	N/A	Unknown	Likely resident	Unknown	Unknown	Unknown
Central African Republic	Unknown	Unknown	N/A	N/A	Unknown	Likely resident	Unknown	Unknown	Unknown
Chad	Unknown	Unknown	N/A	N/A	Unknown	Likely resident	Unknown	Unknown	Unknown
Congo	Unknown	Unknown	N/A	N/A	Unknown	Likely resident	Unknown	Unknown	Unknown
Côte d'Ivoire	Unknown	Unknown	N/A	N/A	Unknown	Likely resident	Year-round	Yamoussoukro; Comoé NP	C: Lack of awareness H: Habitat loss (Conversion of grasslands, Unsustainable fire regimes); Agricultural intensification (Monocultures); Climate change; Legal obstacles L: Illegal trade (Dead birds)
Democratic Republic of the Congo	Unknown	Unknown	N/A	N/A	Unknown	Likely resident	Unknown	Unknown	Unknown
Eritrea	Unknown	Unknown	N/A	N/A	Unknown	Unknown	Unknown	Debub Region	Unknown
Eswatini	Unknown	Unknown	N/A	N/A	Unknown	Likely resident	Unknown	Unknown	Unknown
Ethiopia	Unknown	Unknown	N/A	N/A	Unknown	Likely resident	Unknown	Unknown	Unknown
Gabon	Unknown	Unknown	N/A	N/A	Unknown	Likely resident	Unknown	Unknown	Unknown
Gambia	Unknown	Unknown	N/A	N/A	Unknown	Likely resident	Unknown	Unknown	Unknown

Country	Population Size	Population trend	National Red List status	Regional Red List status	National Protection Status	Presence in Country	Months of presence	Key sites	Key Threats
Ghana	Unknown	Unknown	N/A	N/A	Unknown	Likely resident	Jan (Reported from Mole NP)	Mole NP (Savannah Region)	Unknown
Guinea	Unknown	Unknown	N/A	N/A	Unknown	Likely resident	Unknown	Unknown	Unknown
Guinea-Bissau	Unknown	Unknown	N/A	N/A	Unknown	Likely resident	Unknown	Unknown	Unknown
Kenya	Unknown	Declining	N/A	N/A	Protected in Parks, Reserves and IBAs	Resident	Year-round	NE Kenya; Laikipia; Nairobi NP; Masai Mara	C: Collision (Overhead cabling); Habitat fragmentation M: Habitat loss (Overgrazing, Livestock from pastoral community)
Malawi	Unknown	Unknown	N/A	N/A	Unknown	Likely resident	Breeding from Nov-Feb	Nyika, regular to 2,200 m; S Viphya; Malosa; Nyika and Kasangu NP; Vwaza Marsh and Nkhotakota WS; Liwonde; Lengwe NP and adjacent Reserves	U: Habitat loss (Extensive cultivation, Increasing human pressure, esp. in Shire Highlands and Lower Shire Valley); Anthropogenic disturbance (Human pressure)
Mali	Unknown	Unknown	N/A	N/A	Unknown	Likely resident	Unknown	Unknown	Unknown
Mauritania	Unknown	Unknown	N/A	N/A	Unknown	Non-breeding	Unknown	Unknown	Unknown
Mozambique	Unknown	Unknown	N/A	N/A	Unknown	Likely resident	Unknown	Unknown	Unknown
Namibia	Unknown (Low numbers)	Declining	LC	N/A	Protected	Resident	Unknown	NE Namibia	H: Collision (Overhead cabling, Wind turbines in Zambezi Region); Anthropogenic disturbance (Energy infrastructure); Habitat loss, degradation and fragmentation (Human settlement, Energy infrastructure, Overgrazing, Agriculture); Poaching; Anthropogenically subsidized predation (Dogs) M: Collision (Overhead cabling, E of Grootfontein-Tsumkwe Area)

Country	Population Size	Population trend	National Red List status	Regional Red List status	National Protection Status	Presence in Country	Months of presence	Key sites	Key Threats
Niger	Unknown	Unknown	N/A	N/A	Unknown	Likely resident	Unknown	Unknown	U: Habitat loss and degradation (Clearing of suitable tiger bush habitat); Poaching
Nigeria	>200 ind. 80+ observations in the NiBAP database between 2015-2025	Declining	N/A	N/A	Unknown	Resident	Year-round	Yankari GR; Bauchi State; N Nigeria; recorded from several sites including PAs north of 7°N	C: Unsustainable hunting; Poaching; Habitat loss (Conversion of grasslands and scrublands); Lack of awareness; Legal obstacles H: Illegal trade (Live and dead birds); Habitat loss (Overgrazing); Agricultural intensification (Chemical application, Mechanization), Climate change M: Habitat loss (Unsustainable fire regimes); Agricultural intensification (Irrigation) L: Habitat loss (Conversion of cereal steppes); Anthropogenic disturbance Loc: Collision (Overhead cabling, Automobiles, Trains); Habitat loss and fragmentation (Transportation networks); Agricultural intensification (Monocultures); Predation
Rwanda	Unknown	Declining	N/A	N/A	Protected in PAs	Resident	Year- round	Akagera NP; Akagera NP and E Province of Rwanda	C: Habitat loss (Urbanization, Overgrazing); Agricultural intensification (Mechanization) M: Poaching; Illegal trade L: Unsustainable fire regimes
Senegal	Unknown	Unknown	N/A	N/A	Unknown	Likely resident	Unknown	Unknown	Unknown
Sierra Leone	Unknown	Unknown	N/A	N/A	Unknown	Likely resident	Unknown	Unknown	Unknown

Country	Population Size	Population trend	National Red List status	Regional Red List status	National Protection Status	Presence in Country	Months of presence	Key sites	Key Threats
Somalia	Unknown	Unknown	N/A	N/A	Unknown	One breeding record	Unknown	Lower and Middle Shabelle River; Juba River close to Kenyan border	Unknown
South Africa	Unknown	Unknown	N/A	N/A	Unknown	Likely resident	Unknown	Unknown	Unknown
South Sudan	Unknown	Unknown	N/A	N/A	Unknown	Likely resident	Unknown	Unknown	Unknown
Sudan	Unknown	Unknown	N/A	N/A	Unknown	Likely resident	Unknown	Unknown	Unknown
Tanzania	Unknown	Declining	N/A	N/A	Protected in PAs	Likely resident	Year-round	Tarangiri; Mikumi NP; Ngorongoro CA	C: Habitat loss and degradation; Agricultural intensification; Wildebeest migration route affects bustards M: Livestock; Climate change L: Poaching
Togo	Unknown	Unknown	N/A	N/A	Unknown	Likely resident	Unknown	Unknown	Unknown
Uganda	Unknown	Declining	LC	N/A	Protected in PAs	Likely resident	Year-round	Queen Elizabeth NP; Lake Mburo NP; Murchison Falls NP; Kidepo Valley NP	C: Habitat loss (Oil and gas exploration)
Zambia	Unknown	Unknown	N/A	N/A	Unknown	Likely resident	Year-round	Throughout Zambia	Unknown
Zimbabwe	Unknown	Unknown	N/A	N/A	Unknown	Likely resident	Unknown	Unknown	Unknown

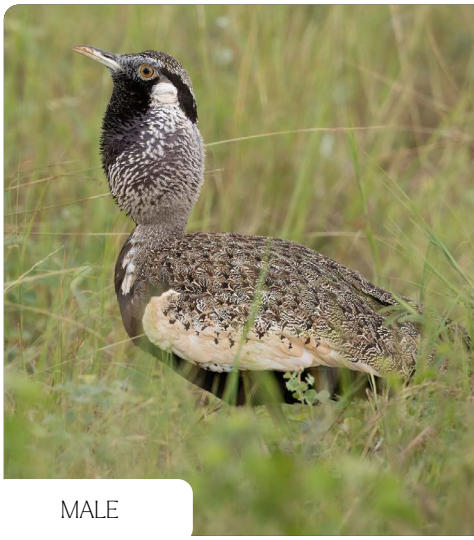
HARTLAUB'S BUSTARD *(Lissotis hartlaubii)*



Political boundaries indicated in this map are those of the United Nations.

Year-round

FEMALE



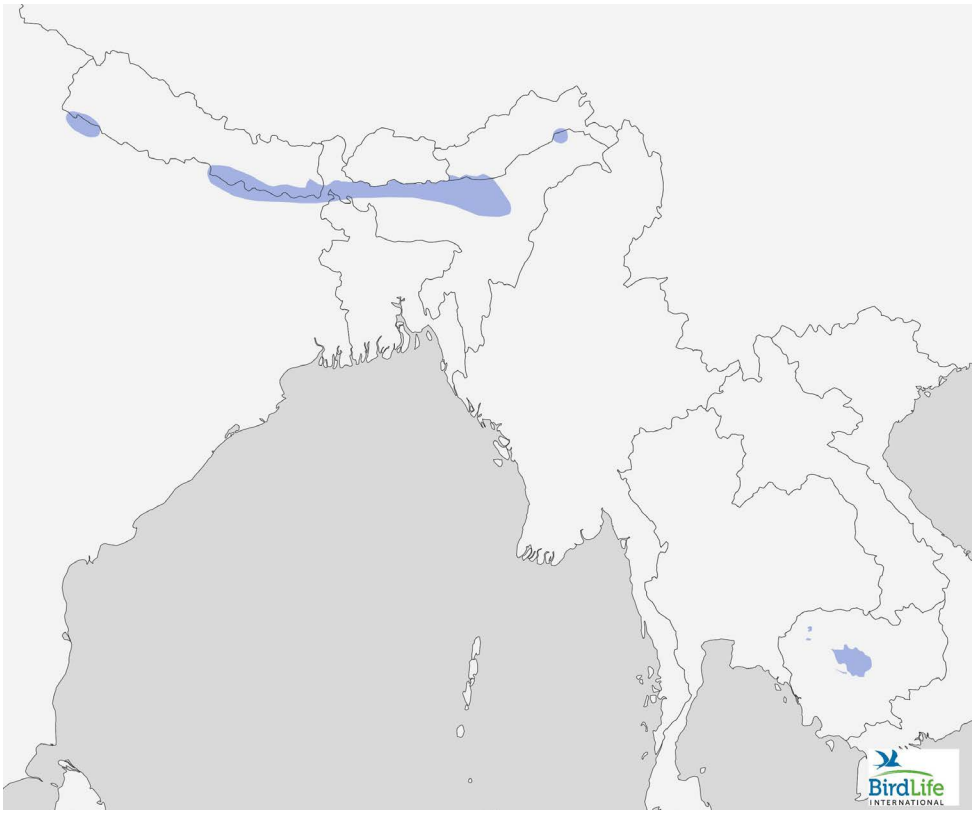
MALE

Conservation status	Least concern
Global RedList Population Estimate	Unknown. Stable.

Regional names	حبارى هارتلوب (Arabic), Galow (Somali)
Size	♂ 60 cm, 1,500–1,600 g
Subspecies	Monotypic
Habitat	Open, tall grassland with scattered Acacia, up to 1600 m. In Kenya, occurs in lower, drier habitat than *L. melanogaster*; in Ethiopia, may prefer *Acacia* short-grass savanna, which extends up to 2000 m, whereas *L. melanogaster* occupies tall-grass savanna, extending only up to 1500 m.
Movement	Sedentary & nomadic, although considered a partial migrant based on records in Jan–Feb & Sept–Oct in Serengeti.
Breeding	Apr in Ethiopia; Jan & Jun in E Africa (in both rainy periods when grass tallest), with aerial display also recorded in Nov. Clutch size probably two eggs.

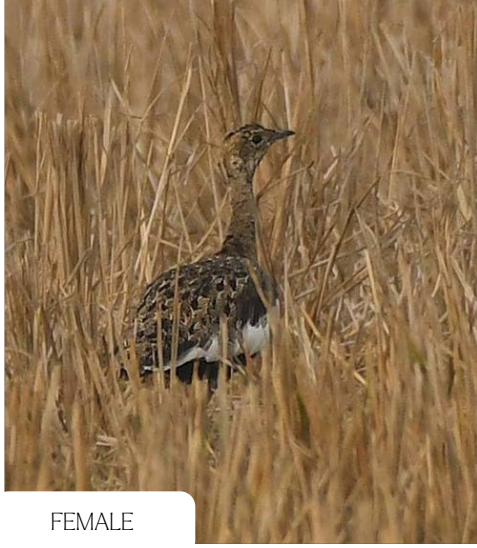
Country	Population Size	Population trend	National Red List status	Regional Red List status	National Protection Status	Presence in Country	Months of presence	Key sites	Key Threats
Ethiopia	Unknown	Unknown	N/A	N/A	Unknown	Uncommon resident	Recorded in Jan, Feb, Apr, Jun, Aug-Nov	Scattered distribution S of 13°N and W of 43°E; Awash NP; Negelle Area; Mui	Unknown
Kenya	Unknown	Declining	N/A	NT	Protected in parks. No species-specific conservation laws	Resident	Year-round	Nairobi NP; Tsavo NP; Amboseli NP; Serengeti, Loita Plains; Kedong; Suswa; Athi Plains	C: Habitat loss (Urbanization, Overgrazing, Land-use change); Agricultural intensification (Mechanization) M: Poaching; Illegal trade; Pollution; Human-wildlife conflict L: Predation (Eggs)
Somalia	Unknown	Unknown	N/A	N/A	Legislation proposed within Somaliland	Unknown	Unknown	Lower and Middle Shabelle; Juba River; Qool-cade; Wajaale	H: Poaching (For sport, in Somaliland); Trade (International, for falconry & Domestic, for medicinal use)
South Sudan	Unknown	Unknown	N/A	N/A	Unknown	Unknown	Unknown	Unknown	Unknown
Sudan	Unknown	Unknown	N/A	N/A	Unknown	Unknown	Unknown	Unknown	Unknown
Tanzania	Unknown	Stable	N/A	NT	No species-specific conservation laws	Resident	Year-round	Terangire NP; Ngorongoro Conservation Area; Arusha NP	C: Habitat loss and degradation; Poaching; Illegal trade L: Climate change
Uganda	Unknown	Declining, as indicated from few records from NE Uganda	EN	NT	No species-specific conservation laws	Resident	Year-round	Mount Moroto Forest Reserve; Murchison Falls NP; Queen Elizabeth NP; Kidepo Valley NP; S Karamoja	C: Habitat loss (Conversion of grasslands, Land-use change, Urbanization, Infrastructure developments)

BENGAL FLORICAN *(Houbaropsis bengalensis)*

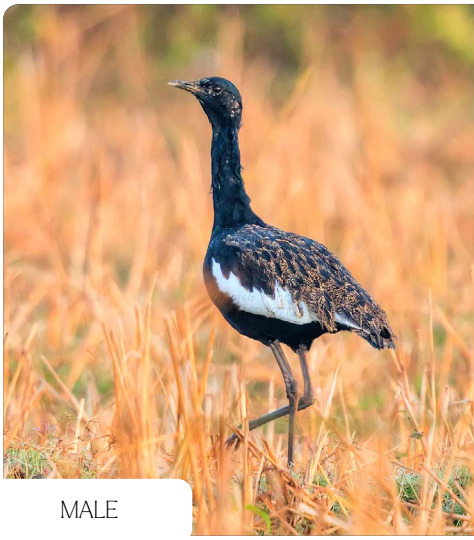


Political boundaries indicated in this map are those of the United Nations.

Year-round



FEMALE



MALE

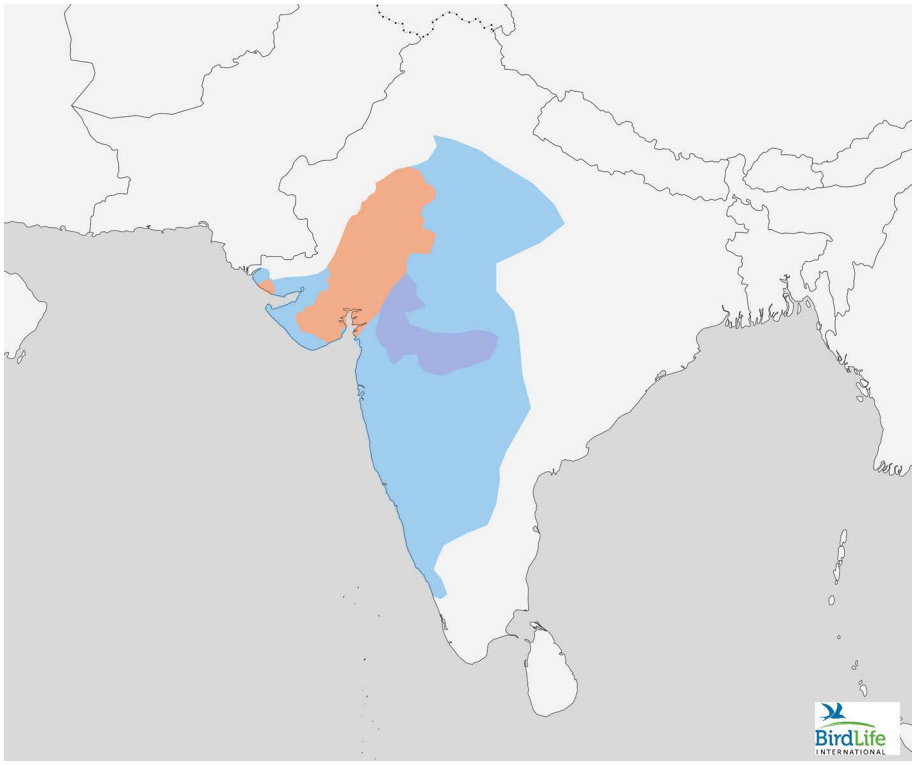
Conservation status	Critically Endangered
Global RedList Population Estimate	250–999. Decreasing.
Regional names	উলুম'ৰা (Assam), ডহর (Bangla), ខ្សឹប ឬ ទ្រមាក់អណ្តើក (Cambodian), चरस (Hindi), खरमुजुर (Nepali)
Size	*H. b. bengalensis*: ♀ 68 cm, 1,700–2,250 g; ♂ 64 cm, 1,250–1,700 g *H. b. blandini:* ♀ 1,000-1,200 g, ♂ 1,100-1,600 g
Subspecies	*H. b. bengalensis:* patchily along border of S Nepal with India & into lowland NE India; formerly Bangladesh *H. b. blandini:* Cambodia; formerly Vietnam
Habitat	Flat, moist, open grasslands with scattered shrubs, preferring short, grazed, or recently burnt grass. Retreats to taller vegetation in heat. Visits undisturbed fields. During wet season in Cambodia, upland dipterocarp forest. Heterogeneity in vegetation height required for successful breeding. Recent studies by BNHS and BirdLife International using satellite telemetry suggests, BF has adapted and using sugarcane fields.
Movement	*H. b. bengalensis*: Dispersive, with ♂s moving short distances from breeding territories in summer. All birds seemingly absent from breeding grasslands from Sep–Jan/Feb. *H. b. blandini:* Moves into upland dry forest during Tonle Sap flooding. However, exact timing of movements are subject to flooding regimes and other environmental factors.
Breeding	Mar–Jun(Jul). Nest is a scrape in thick grass cover. Eggs 1–2; incubation period c25–28 days.

Content partners: BirdLife INTERNATIONAL CornellLab

Country	Population Size	Population trend	National Red List status	Regional Red List status	National Protection Status	Presence in Country	Months of presence	Key sites	Key Threats
Cambodia (*H. b. blandini*)	165 displaying males (2025), 140 displaying males (2024), 176 displaying males (2023), 147 displaying males (2022)	Steep decline, Only stable in PA's and nearby project-supported farmland	Listed as „rare" species by Ministry of Agriculture, Forestry & Fisheries	CR	Protected	Breeding and non-breeding	Year-round. Migrates locally to escape flooding during the wet season	Tonle Sap Floodplain Grasslands; Stung/Chi Kreng/Kampong Svay; Baray and Chung-doung; Ang Tropeang Thmor; Veal Srongae; Stung Sen/ Santuk/Baray; N Santuk; Boeung Prek Lapouv	C: Habitat loss and degradation (Conversion to rice fields, Agricultural intensification, Overgrazing and nest trampling by domestic buffalo); Collision (Overhead cabling) M: Poaching; Agricultural intensification (Chemical application)
India (*H. b. bengalensis*)	~250 to 300 males	Steep decline	CR	CR	Schedule I of Wildlife (Protection) Amendment Act, 2022	Breeding	Year-round	Assam: Manas NP; Koklabari farms; Kaziranga; Orang NP; Nizamghat; Amarpur; Sadiya Plains; Barnadi WS; Laokhowa WS; Burhachapori WS; Majuli; Nameri NP; Pabitora WS; Sonai-Rupai WS; Subansiri; Chirang Reserve Forest; Maguri and Motapung Beels; Ripu Reserve Forest Arunachal Pradesh: D'Ering Memorial WS; Dibang Reserve Forest and adjacent areas; Chapories of Lohit Reserve Uttar Pradesh: Dibru-Saikhowa NP; Dudhwa NP; Pilibhit Tiger Reserve; Katerniaghat WS; Girijapur Barrage; Kishanpur WS; Lagga - Bagga Reserve Forest IBA West Bengal: Gorumara NP; Jaldapara WS; Mahananda WS	C: Habitat degradation (Overgrazing in non-protected areas, Invasive alien plant species, incl. *Chromolaena odorata, Mikania micrantha* and *Lantana camara*) H: Habitat loss and fragmentation (Conversion of scrublands, Transportation networks, Dam construction upstream; Unsustainable fire regimes); Agricultural intensification (Mechanization); Anthropogenic disturbance; Lack of awareness; Legal obstacles (Lack of grasslands policy); Climate change (Heavy rainfall during breeding season) M: Poaching; Anthropogenically increased predation (Dogs, Jackals, Corvids); Natural predation (Monitor lizards; Mongoose) L: Habitat loss (Conversion of grasslands) U: Illegal trade (Live and dead birds); Collision (Overhead cabling, Fences, Traffic); Habitat loss and fragmentation (Conversion of cereal steppes, Energy & Transportation infrastructure); Agricultural intensification (Chemical application, Irrigation, Monocultures); Genetic threats (Genetic fragmentation and inbreeding); Climate change

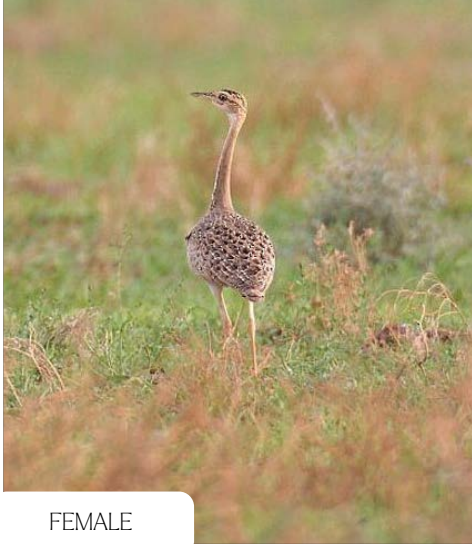
Country	Population Size	Population trend	National Red List status	Regional Red List status	National Protection Status	Presence in Country	Months of presence	Key sites	Key Threats
Nepal (*H. b. bengalensis*)	<100 ind.	Declining	CR	N/A	Strictly protected	Breeding	Year-round	Koshi Tappu WS; Koshi Barrage; Sukla Phanta NP; Chitwan NP; Bardia NP (incl. Buffer Zones of all NPs)	C: Habitat loss and degradation (Overgrazing) H: Invasive alien plant species L: Poaching
Viet Nam (*H. b. blandini*)	~1-10 ind. (last recorded in 1994)	Declining, possibly extinct	N/A	N/A	Unknown	Unknown	Unknown, possibly extinct	Tram Chim NP; Ha Tien; historically in Plain of Reeds in the Mekong Delta & Tay Ninh Province; Tam Nông District	C: Habitat loss and degradation (Conversion to rice fields) H: Disturbance (Electro-fishing)

LESSER FLORICAN *(Sypheotides indicus)*



Political boundaries indicated in this map are those of the United Nations.

Year-round **Breeding** **Non-Breeding**



FEMALE

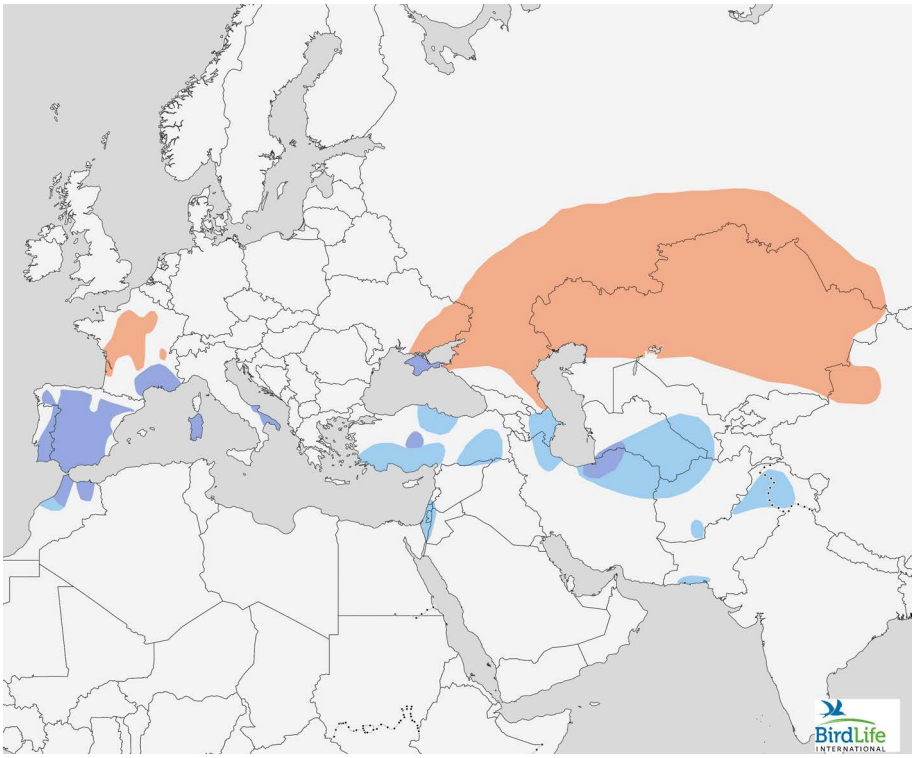
MALE

Conservation status	Critically Endangered
Global RedList Population Estimate	356–1,228 (best estimate: 730). Decreasing.

Regional names	Khadamora (Gujarati), **खरमोर** (Hindi), Kharmore (India), Navilakki (Kannada), Tanamōra (Marathi), ਤਣਿਮੋਰ (Punjabi), **सानो खरमुजुर** (Nepal)
Size	♀ 51 cm; ♂ 46 cm, 450 g
Subspecies	Monotypic
Habitat	Flat open grasslands, even patches smaller than 1 ha. Scrubland & crop fields, esp. soybean & groundnut. Protected fodder grasslands (vidis, rakhaals) are important habitat. Mosaic of grasslands & traditional croplands is ideal.
Movement	Departs breeding region Oct–Nov, apparently mostly dispersing SE, returning Apr–May. Commonly nomadic.
Breeding	Jul–Sep, with exact timing depending on SW monsoon. Nest on bare ground in patch of grass or crops. Clutch size 3–5 eggs.

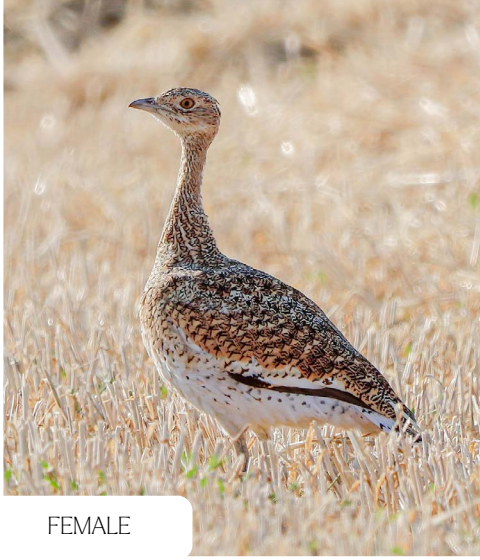
Country	Population Size	Population trend	National Red List status	Regional Red List status	National Protection Status	Presence in Country	Months of presence	Key sites	Key Threats
India	< 300 ind. in the wild	Steep decline	CR	CR	Protected (Schedule I of Wildlife Protection, Amendment Act, 2022)	Breeding	Year-round	Abdasa and Mandvi talukas; Naliya Grassland Area; Kutch Bustard Sanctuary; Konathiya Grassland Area; Godhra-Bayath Grasslands; Jakhau and Daradvandh Coastal Grassland Area; Banni Grassland; Beyt (islands) with grasslands near Kala Dungar and Vighakot; Bhal region of Bhavnagar; Blackbuck NP; Velavadar; Forest Vidis of Saurashtra; Liliya-Krakach and Amreli Grasslands; Rampura Grassland-Dahod; Grassland Vidis near Chotila; Little Rann of Kutch; Chhari Dhand; Gir NP & WS Lateritic plateau areas in Ratnagiri; Tadoba NP; Ozar; Gangapur Dam and grasslands; Jawaharlal Nehru Bustard Sanctuary and adjoining grassland; Deccan; Open natural ecosystems of the districts of Yavatmal, Pune, Nashik, Akola, Solapur, Kolhapur, Buldhana, Washim, Chandrapur; Hesaraghatta Lak; Ajmer-kekri landscape; Gawana Arain; Mangaliyawas; Ramsar; Goyal; Ratakot; Badar; Sonkhaliya Closed Area Telangana and Andhra; Rollapadu WS and nearby areas; Kanha NP; Sailana Kharmor Sanctuary; Sardarpur WS	C: Collisions (Overhead cabling, (Net) Fences); Habitat loss, degradation and fragmentation (Afforestation with exotic tree species, Conversion of grasslands, shrublands and cereal steppes, Overgrazing, Unsustainable fire regimes, Invasive alien plant species incl. *Prosopis juliflora,* Transportation networks, Energy infrastructure); Agricultural intensification (Chemical application, Irrigation, Monocultures, Mechanization); Anthropogenically subsidized predation (Dogs, Foxes); Legal obstacles (Lack of grassland policy) H: Unsustainable hunting; Poaching; Anthropogenic disturbance; Climate change M: Illegal trade (Live birds), Natural predation (Monitor lizards, Mongoose); Lack of awareness L: Illegal trade (dead birds), Collisions (Automobile, Trains), Anthropogenically subsidized predation (Corvids)
Nepal	< 10 ind.	Declining	CR	N/A	Strictly protected (Enforcement weak)	Breeding	Summer months	Koshi Tappu WR; Suklaphanta NP; Chitwan NP; Bardia NP (incl. Buffer Zones of all NPs)	C: Habitat loss, degradation and fragmentation (Overgrazing) H: Invasive alien plant species (e.g., *Mikania micrantha*) L: Poaching
Pakistan	Unknown (1 - 10 ind., unconfirmed)	Unknown	N/A	N/A	Protected	Rare vagrant	Unknown	S Sindh; Lasbela in Balochistan; Border areas of district Kasur in Punjab	Unknown

LITTLE BUSTARD *(Tetrax tetrax)*

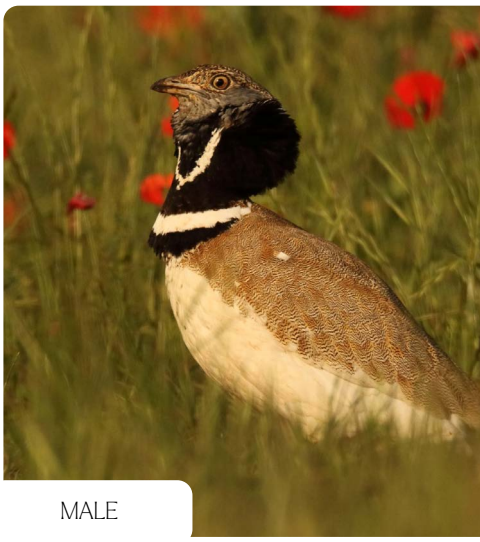


Political boundaries indicated in this map are those of the United Nations.

Year-round **Breeding** **Non-Breeding**



FEMALE



MALE

Conservation status	Near Threatened
Global RedList Population Estimate	100,000-499,999 individuals. Decreasing.

Regional names	الحبارى الصغيرة (Arabic), Bəzgək (Azeri), Outarde canepetière (French), Gallina prataiola (Italian), Sisão (Portuguese), Безгелдек (Kazakh), زنگوله بال (Persian), Sisón común (Spanish), Sârcaci (Romanian), Стрепет (Russian), Mezgeldek (Turkish), Хохітва (Ukrainian), Bizg'aldoq (Uzbek)
Size	♀ 40–43 cm, 680–945 g; ♂ 43–45 cm, 794–975 g
Subspecies	Monotypic
Habitat	Steppe-like landscapes, including short-grass plains, pastureland, fallow areas & legume crops, with vegetation over 20 cm high. It favors areas with diverse plant species & abundant arthropods. Vegetation heterogeneity is key to providing suitable habitat for reproduction.
Movement	Sedentary or dispersive in Iberia, Italy & S France. Migratory in W France, E Europe & Asia. Post-breeding movements may be observed in summer. Migrates at night.
Breeding	Feb–Jun. Nest is a shallow scrape usually in dense short-grass cover. Clutch size 2–6 eggs, incubation 20–22 days. Fledging period 25–30 days; young remain with ♀ into first autumn.

Content partners: BirdLife INTERNATIONAL CornellLab

Country	Population Size (individuals)	Population trend	National Red List status	Regional Red List status	National Protection Status	Presence in Country	Months of presence	Key sites	Key Threats
Afghanistan	Unknown	Unknown	N/A	N/A	Protected	Rare wintering, Breeding possible but unknown	Oct-Apr	Nangarhar	C: Poaching
Algeria	< 40 ind.	Unknown	N/A	N/A	Protected	Resident, Irregular wintering	Year-round	Macta Marsh and Lake Telamine (irregular breeding)	C: Habitat loss and degradation; Agricultural intensification (Chemical application) H: Poaching M: Disturbance L: Anthropogenically increased predation (Dogs)
Armenia	0 - 10 ind. (2025)	Unknown	VU	VU	Protected	Occasional migrant	Aug-Nov	Sardarapat; Vanand; Ararat Plain and adjacent border region	H: Poaching; Habitat loss (Urbanization, Land-use change); Agricultural intensification
Azerbaijan	65,650 - 175,296 ind. (2025)	Declining	NT	VU	Protected	Wintering	Oct-Mar	Shirvan NP; Kizilagach NP; Aghgol NP; Agjabadi; Korchay and surroundings; Jeyranchol; Ajinohur; Qobustan; Mughan Steppes; Sheki Upland; Lake Hajigabul	H: Poaching; Habitat loss and fragmentation (Conversion of grasslands, Energy infrastructure); Legal obstacles M: Illegal trade (live and dead); Collision; Habitat degradation (Overgrazing); Agricultural intensification (Chemical applications, Monocultures)
China	Up to 200 ind. on migration	Declining	VU	N/A	Protected (National first-class protected status)	Non-breeding	Sep-Oct	Kurustai Grassland; Yumin County	C: Habitat loss (Conversion of cereal steppes) M: Habitat fragmentation (Energy infrastructure)
France	2,397 - 2,508 males (2024)	Stable in last 8 years, Declining in last 16 years	EN	VU (Europe), EN (EU27+UK)	Protected	Breeding, Wintering	Year-round	Vienne; Deux-Sèvres; Charente; Charente-Maritime; Maine et Loire; Indre et Loire; Alpes de Haute-Provence; Bouche du Rhône; Var; Vaucluse; Aude;Gard; Hérault; Pyrénées-Orientales; Drôme; Rhônes	C: Agricultural intensification (Chemical application, Monocultures, Conversion of fallow land, Speed of mowing, Mechanization) H: Habitat loss and fragmentation (Urbanization, Transportation networks, Energy infrastructure) U: Climate change; Collision (Airplanes)
Georgia	10,000 - 15,000 ind., large annual fluctuations	Unknown	VU	VU	Protected	Wintering	Nov-Mar	Nugzar Zazanashvili Samukhi PA; Kotsakhura Emerald Network Site; Taribana Valley; Vashlovani PA; Shiraki Valley; Alazani Valley	C: Habitat loss and degradation (Conversion of cereal steppes to olive tree plantations); Agricultural intensification H: Habitat degradation (Overgrazing, Livestock) M: Anthropogenic disturbance; Poaching L: Legal obstacles (No active monitoring)

Country	Population Size (individuals)	Population trend	National Red List status	Regional Red List status	National Protection Status	Presence in Country	Months of presence	Key sites	Key Threats
Greece	15 - 500 ind. (2025)	Unknown	CR	VU (Europe), EN (EU27+UK)	Protected	Wintering	Oct-Feb	Evros Delta; Lakes Vistonis; Ismaris - lagoons Porto Lagos; Salines Ptelea; Xirolimni; Karatza; Kitros Saltpans; Kopaida Plain; Thessaly Plain	Loc: Poaching; Collision (Overhead cabling); Habitat loss (Conversion of grasslands and cereal steppes) U: Illegal trade (Dead birds); Collision (Fencing, Traffic, Other); Anthropogenically subsidized predation (Canids); Anthropogenic disturbance
Iran (Islamic Republic of)	0 - 10 breeding ind., 18,775 - 40,580 wintering ind. (2025)	Increasing	Not at risk of extinction, but its hunting is punishable by law	N/A	Protected	Wintering	Oct-Mar	Ardebil; Gilan; Mazandaran; Golestan; Khorasan-e-Razavi; Khorasan-e-Shomali; Miankaleh Peninsula and Gorgan Bay; Lake Bibishervan; Lake Eymar; Golestan	H: Poaching; Habitat loss and fragmentation; Legal obstacles
Iraq	10 - 100 ind. (2025)	Unknown (Noted now in small numbers after period of absence)	N/A	N/A	Protected	Rare vagrant, Rare wintering	Mar-May	Tanjero River; Erbil; Dukan Lake IBA	C: Poaching M: Habitat loss and degradation; Agricultural intensification
Italy (Sardinia)	~350 males (2023-2025)	Decreasing (Declined by 33% and 27% at Bolotana and Campeda plains in 14 years)	EN	VU (Europe), EN (EU27+UK)	Protected	Resident, Extinct on the mainland and Sicily	Year-round	Ozieri; Bolotana-Birori; C and N Campidano; Giave-Torralba-Bonorva; Olbia; Bultei; Plains of Campeda; Nula-Bitti; Assolo-Albagiara Formely breeding in C (Marche) and S Peninsula (Abruzzo, Molise); Apulia; Sicily; irregularly in the N (Po Plain); No breeding records since 1990s	H: Agricultural intensification (Mechanization) M: Collision (Overhead cabling, Fencing); Habitat loss and fragmentation (Energy infrastructure, Irrigation, Monocultures); Genetic fragmentation and inbreeding; Lack of awareness; Legal obstacles L: Poaching; Habitat loss, degradation and fragmentation (Conversion of cereal steppes, Overgrazing, Transportation networks); Agricultural intensification (Chemical application); Climate change Loc: Habitat loss and degradation (Conversion of grasslands, Unsustainable fire regimes, Invasive alien plant species); Anthropogenically subsidized predation (Dogs, Corvids, Foxes, Other) U: Anthropogenic disturbance (Photographers); Insect populations (Impacts of anti-locust pesticide campaigns conducted regularly since 2020)
Jordan	1 - 10 ind. (2025)	Unknown	N/A	N/A	Protected	Rare vagrant, Rare wintering	Oct-Dec	Burqu' Reserve	H: Poaching

Country	Population Size (individuals)	Population trend	National Red List status	Regional Red List status	National Protection Status	Presence in Country	Months of presence	Key sites	Key Threats
Kazakhstan	123,400 - 342,200 breeding ind. (2025)	Stable?	EN	N/A	Protected	Breeding, Migrant	Mar-Nov	Kostanai; Aktobe; W Kazakhstan	C: Land-use change M: Collision (Overhead cabling) L: Poaching
Kyrgyzstan	1,500 - 2,000 breeding ind. (2025)	Moderate increase	NT	N/A	Protected	Breeding	Mar-Nov	Chuy; Talas; Toktogul Reservoir; Suusamyr Valley; Tulek Valley	M: Agricultural intensification (Mechanization); Poaching L: Agricultural intensification (Chemical application, Monoculture) Loc: Habitat loss and degradation (Conversion of grasslands, Overgrazing); Anthropogenically subsidized predation (Corvids, Dogs)
Lebanon	5 - 50 ind.	Unknown	N/A	N/A	Protected	Rare migrant	Nov-Dec	N Beqaa Valley; Akkar Plain; N Coastal Plains; Lowland Plains	C: Poaching
Morocco	<20 ind.	Declining	N/A	N/A	Protected	Resident, Rare wintering	Year-round	Tleta Rissana; Araoua; Tendafel;Arba de Ayacha; Briech; Adarouch Plateau Extinct in Trifa and Maâmora forest since mid-80s	C: Agricultural intensification H: Anthropogenic disturbance L: Agricultural intensification (Chemical application) Loc: Anthropogenically subsidized predation (Dogs)
Pakistan	~1 - 10 ind.	Unknown	DD	N/A	Protected	Rare migrant, Rare wintering	Nov-Mar	Punjab; Sindh; Balochistan; Khyber Pakhtunkhwa	C: Poaching M: Habitat degradation (Overgrazing) U: Climate change
Portugal	8,900 breeding males (2016), 3,944 breeding males (2022)	Steep decline (Crash, 56% in 6 years)	CR	VU (Europe), EN (EU27+UK)	Protected	Resident	Year-round	Special PAs of Alentejo Region	C: Agricultural intensification (Irrigation); Habitat loss and degradation (Conversion of grasslands, Conversion of cereal crops to permanent pasutres for beef production with an accompanying increase in fodder (early cut) crops, Conversion from annual crops to perennial crops, pricipally in (post-) breeding habitat, Overgrazing); Collision (Overhead cabling) H: Climate change M: Habitat degradation (Energy infrastructure - solar panels leading to reduction of food resources); Poaching U: Predation

Country	Population Size (individuals)	Population trend	National Red List status	Regional Red List status	National Protection Status	Presence in Country	Months of presence	Key sites	Key Threats
Romania	0 - 23 ind.	Unknown	RE (Breeding), N/A (Migrant, Wintering)	VU (Europe), EN (EU27+UK)	Not protected	Migrant, Wintering	Nov-Mar	Saele Spit; Razelm-Sinoe Lagoon Area Black Sea Coastal Region, Dobrudja; Romanian Plain	H: Legal obstacles (Species is not listed as protected species); Habitat loss (Conversion of grasslands, Overgrazing) M: Anthropogenically subsidized predation (Dogs) Loc: Poaching due to misidentification
Russian Federation (European part)	39,850 - 51,750 breeding ind. (2025)	Declining	VU (Federal)	VU (Europe)	Protected	Breeding	Apr-Oct	Volga-Ural interfluve; Volga-Don interfluve; Saratov; Volgograd; Astrakhan Oblast's; Kalmykia; Stavropol krai; Chechnya; Dagestan; Orenburg; Chelyabinsk; Kurgan; Omsk Oblasts; Trans-Urals part of Bashkortostan	Loc: Poaching (Misidentification)
Russian Federation (Kalmykia)	9,000 ind., 100 - 200 wintering ind. (2025)	Declining (breeding), Increasing (wintering)	VU (Kalmyk Republic)	N/A	Protected	Breeding, Wintering	Apr-Aug, Dec-Feb	S and C Ergeny; Caspian Lowlands	M: Habitat loss and degradation (Conversion of grasslands, Overgrazing) Loc: Poaching; Collision (Overhead cabling) U: Agricultural intensification (Chemical application)
Russian Federation (Kurgan, Omsk and Altai Provinces)	150 - 320 breeding ind., 225 - 450 post-breeding ind., 500 - 1,000 pre-migratory congregations (2025)	Stable or slow increase	VU (Kurgan Oblast'); Category 5, 'Recovering' (Omsk Oblast'); EX (Altai Krai)	N/A	Protected	Breeding, Migrant	Apr-Oct	Zverinogolovsky; Zelinny; Kurtamyshsky; Pritobolny; Polovinsky Districts; Novovarshavsky; Okonesh-nikovsky; Pavlogradsky; Russian-Polyansky; Cherlaksky; Loktevsky; Uglovsky Districts	H: Poaching; Habitat degradation and fragmentation (Unsustainable fire regimes, Overgrazing, Infrastructure developments); Anthropogenically subsidized predation (Dogs, Foxes, Corvids)
Saudi Arabia	5 ind. (2025)	Unknown	N/A	N/A	Protected	Rare wintering	Oct-Jan	N Borders Region; Umluj	C: Poaching
Spain	39,744 - 86,930 ind. (2018)	Steep decline (Crash, 48% in 11 years)	EN	VU (Europe), EN (EU27+UK)	Strictly protected	Resident	Year-round	Castilla la Mancha; Extremadura; Andalusia; Castilla y León; Aragón; Catalan; Madrid; Valencia; Galicia; La Rioja; Murcia; Navarra	C: Habitat loss (Land-use change, Decrease of fallow land, field margins, Conversion to woody crops); Agricultural intensification (Chemical application, Changes in agricultural calendar, Irrigation) M: Habitat fragmentation (Energy infrastructure) L: Habitat degradation (Changes in grazing systems); Collision (Traffic); Predation Loc: Poaching U: Climate change; Anthropogenic disturbance

Country	Population Size (individuals)	Population trend	National Red List status	Regional Red List status	National Protection Status	Presence in Country	Months of presence	Key sites	Key Threats
Syrian Arab Republic	10 - 100 ind. (2025)	Declining	N/A	N/A	Protected	Rare wintering, Rare migrant, Formerly breeding (until 1960)	Oct-Dec	Al-Jazira; Wadi al-Azib; Tadmur Desert; Bahrat Homs; S Coastal Region	C: Poaching H: Habitat loss (Land-use change) M: Habitat degradation (Overgrazing)
Tajikistan	535 - 2,270 wintering ind. (2025)	Increasing	NT	N/A	Protected	Migrant, Wintering	Oct-Apr	Gissar Valley; Yavan Valley; Tigrovaya balka; Pyandzh Settlement surroundings; Khatlon Region	C: Lack of awareness H: Habitat loss (Monocultures); Legal obstacles M: Habitat loss (Conversion of grasslands); Habitat degradation (Overgrazing) Loc: Poaching
Türkiye	10 - 20 breeding ind., 250 - 400 migrating ind., 100 - 200 wintering ind. (2025)	Declining, with rare irruptions bringing more winter visitors	CR	VU (Europe)	Protected	Breeding, Migrant, Wintering	Year-round, Breeding May-Aug	Aliken IBA; Polatlı TİGEM; Acıgöl Basin & Dazkırı IBA; Tuz Gölü IBA; Muş Plain IBA; Göksu Delta IBA	C: Poaching H: Habitat loss (Land-use change); Agricultural intensification M: Habitat degradation (Overgrazing and overuse of water resources)
Turkmenistan	4,360 - 7,560 migrating ind., 5,440 - 9,470 wintering ind. (2025)	Increasing	N/A	N/A	Not protected	Migrant, Wintering	Unknown	Piedmont Plain of W; IBA Chokrak-Tutly; C and E Kopet-Dag; Zeit-Kelif IBA; Tallymerjen IBA	U: Agricultural intensification; Poaching
Ukraine	30 - 50 breeding ind., 70 - 80 wintering ind. (2014)	Declining	EN	VU	Strictly protected	Breeding, Migrant, Wintering	Year-round	Crimea (Migrates and winters in the steppe part); Kerch peninsula; Kherson and Zaporizhzhia Regions (Migrates and winters in S parts), Donetsk Regions (Migrates in S parts)	M: Habitat loss and degradation (Lack of management and overgrowth of pastures with high, desne gras, Overgrazing) Loc: Collision (Overhead cabling) U: Anthropogenic disturbance (Military activity); Poaching
Uzbekistan	2 - 10 breeding ind., 6,500 - 7,500 wintering ind.	Declining (Breeding), Increasing (Wintering)	VU	N/A	Protected	Breeding, Migrant, Wintering	Year-round	Dashtobod; Jizakh Province; S Uzbekistan	M: Poaching

Part 4. Threats

Out of 26 bustard species, 15 are at risk of extinction, and at least 18 have been identified as currently declining (IUCN, 2023). Anthropogenic threats are especially problematic for those species already at the highest risk (Thiollay, 2006; Packman et al., 2013; Collar et al., 2017; Mahood et al., 2019; Winkler et al., 2020; Alonso and Palacín, 2022; Douglas et al., 2023; Gómez-Catasús et al., 2025). The Bustard MsAP considers all potential threats to bustards. However, it distinguishes between threats that have a limited impact on population dynamics (affecting only individual populations) and those that cause a significant decline in the species. The document explains these local or limited threats, but it primarily focuses on the major non-natural threats that are actively reducing bustard populations. The sequence of threats presented here does not imply the seriousness of their impact, which varies both by region and species. It should be noted, however, that much of the available literature and threat assessment is focused on the four Palearctic species of bustards and therefore represents only a subset of the group's global diversity. This highlights the urgent need to develop research and monitoring efforts for less-studied species in Africa and Asia to ensure a truly comprehensive conservation response.

4.1 Agricultural intensification

The shift from traditional, extensively managed grasslands and cereal farmland to intensive agriculture has led to significant habitat loss. At the landscape level, natural grasslands and fallows have disappeared, and irrigation and woody crops have expanded. At the field level, intensive tilling, increased fertilizer, herbicide and pesticide use have reduced plant and insect diversity and abundance. These changes have decreased the availability of food and nesting sites, reducing the number of species which are able to utilize them. Additionally, modern harvesting machinery poses a serious but often overlooked threat, contributing to female and juvenile mortality as well as nest failures (Morales & Bretagnolle, 2021). Agricultural policies in Europe (Silva et al., 2022), regional farming support in Africa (Collar & Wacher, 2023) and growth strategies in Asia (Mahood et al., 2019) have incentivized farmers to abandon their extensively farmed land, resulting in habitat loss and degradation for many farmland birds, including bustards (Silva et al., 2023b).

Bustard habitats are characterized by expansive open landscapes that range from open shrubland and grasslands used for grazing and extensive cereal cultivation to savannah and semi-arid deserts (Collar, 1996; Winkler et al., 2020; Morales & Bretagnolle, 2022). For successful reproduction, bustards require habitats that allow concealment of nests and vulnerable young, but also visibility for male displays and vigilance against predators (Morales et al., 2008; Alonso et al., 2012a). Bustards thus thrive in dry open landscapes like deserts, plains and savannahs (Collar, 1989) as well as extensive farming systems that maintain diverse vegetation heights. Rotational practices involving cereal fields, legumes, and grazed fallow land create a dynamic

landscape, ensuring such variation (Silva et al., 2022). Fallow land and field margins play a crucial role in maintaining farmland diversity. In intensively farmed areas, fallows may be the only refuge where critical resources such as food and nesting sites remain available (Alonso et al., 2012b; Traba and Morales, 2019). Agricultural approaches which homogenize the landscape result in less suitable and less productive habitat for bustards (Aghainajafi-Zadeh et al., 2010; Martín et al., 2012; Silva et al., 2022).

4.1.1 Chemical application

Agricultural intensification degrades not only breeding habitats, but also the food supply (Bretagnolle & Inchausti, 2005). In addition to decreases in invertebrate diversity and abundance resulting from the plowing of grassland for planting, pesticides reduce the protein-rich arthropod food supply upon which bustards rely, particularly during the energy-demanding breeding season (Martín et al, 2007; Bretagnolle et al., 2011; Silva et al., 2022). The survival and growth of bustard chicks are especially dependent on the presence of arthropods (Martín et al., 2007; Alonso et al., 2009a; Bravo et al., 2012), with orthopterans and coleopterans seeming to be of particular importance (González del Portillo et al., 2025). The use of chemicals in agriculture can also result in unintentional poisoning. Rodenticides in particular have been implicated in mass bird casualties, including bustard species, at farmlands (Kovshar', 2022). Future rodent control actions should consider these negative side effects on non-target granivorous steppe and farmland species, particularly when they are globally threatened (Lemus et al., 2011).

4.1.2 Irrigation and/or fertilization

Irrigated farmland, which involves artificially supplying water to soil to support crop growth in areas where natural rainfall is insufficient, has expanded to over 300 million hectares worldwide in the last 50 years, with the use of fertilizers further intensifying these changes (Cabodevilla et al., 2022). The use of irrigation has significantly increased agricultural productivity and enabled the production of water-demanding crops in new areas. It has also resulted in the conversion of natural habitats (see section 4.3), and the intensification of pre-existing rain-fed agriculture. This may take the form of conversion to permanent crops (section 4.3.1.3) and the elimination of fallow land, drastically altering local ecosystems (Razdan & Mansoori, 1989; Spakovsky & Raab, 2020; Cabodevilla et al., 2022). Irrigation development has often been concentrated in areas with productive soils, which historically provided important post-breeding habitat for bustards due to better food availability during hot and dry periods. The transformation of these zones has reduced their suitability, increasing energy costs for bustards searching for alternative areas and potentially exposing them to higher collision risks with infrastructure (Little Bustard; Silva et al., 2023b). Threatened steppe birds like bustards, which depend on non-irrigated annual crops and permanent pastures (Guerrero-Casado et al., 2022), are negatively affected by irrigated and intensified agriculture, not only through habitat loss but also through increased pesticide use that reduces food availability and poses toxic risks to survival and reproduction (Silva et al., 2023b).

Flood irrigation, practiced particularly in arid regions, can also directly produce reproductive failure through the drowning of eggs and chicks (Naderi, 2017). Flooding for the purpose of cultivating dry-season rice has the effect of making habitat altogether unusable for bustards (Bengal Florican; Mahood et al., 2020b).

4.1.3 Loss of small-scale agriculture

Small-scale cultivation of cereal crops in rotation with cover crops and pastures for low-intensity livestock grazing creates a diverse patchwork of field types and vegetation heights. Bustard taxa including Great Bustards, Arabian Bustards, Little Bustards, Bengal Floricans, and African Houbara rely on these extensive habitats for portions, or the entirety, of their needs across their annual cycles (Medina, 1999; Collar et al., 2024). However, agricultural intensification increasingly converts extensive farming landscapes into monocultures (Bauer et al., 2005; Mahood et al.,

2019; Silva et al., 2022). In Europe, the growing global demand for beef and dairy contributes to this shift, as cereal fields are increasingly replaced by intensively managed permanent pastures or fodder crops. In Mediterranean Europe, the expansion of intensive woody crops (olives, vineyards, pistachio) is a main cause of habitat loss (Guerrero-Casado et al., 2022). This transformation reduces breeding and foraging habitat for species that rely on tall vegetation (Great Bustard, Little Bustard; Gameiro et al., 2024). The transition away from traditional agricultural systems leads to a decline in both the quality and availability of essential habitats throughout the year (Marques et al., 2020), reduced breeding success and increased mortality rates of nesting females in forage crops (Silva et al., 2004; Ibbett et al., 2019; Silva et al., 2023b; Gameiro et al., 2024).

Wintering areas of Great Bustards are characterized by larger areas of traditional dry farmland mosaic, consisting of small cereal fields interspersed with vineyards, olive groves and other minor crops such as legumes. Agriculture intensification severely threatens the conservation of these areas. Moreover, replacement of traditional vineyards with wire-supported vineyards, sometimes causes the death of birds through collision (Palacín et al., 2012). Great Bustards in southwest Europe significantly avoid trellis vineyards, especially at closer distances. An increase in the proportion of traditional vineyards converted to trellis vineyards greatly decrease the proportion of suitable habitat for the Great Bustard (Casas et al., 2020).

4.1.4 Mechanization

Intensive cultivation, which requires the use of agricultural machinery for plowing, mowing, chemical application, or harvest during the breeding season, can turn bustard habitats into ecological traps as nests, chicks and even adult females can be destroyed and killed by heavy machinery (Bretagnolle & Inchausti, 2005; Faria et al., 2016; Bretagnolle et al., 2018; Silva et al., 2023b). The use of machinery during the period of incubation and the hatching of small chicks is the most damaging to bustard populations. Beyond the direct destruction of nests and killing of chicks or adults, these operations can leave remaining nests more exposed to predators and harsh weather (Gameiro et al., 2024). However, the specific agricultural activities which cause this destruction will vary from area to area, due to natural differences in crop phenology and bird breeding periods across different climate zones, as well as different cultivation protocols. For example, in Iberian grasslands, hay harvest occurs when most birds are incubating eggs or raising unfledged chicks. This timing makes nests highly vulnerable to destruction, leading to total clutch or brood loss. While some individuals may attempt to re-nest, their chances of success are low due to the shortened breeding window and less favorable conditions (Faria et al., 2016). In contrast, in northern Mongolia, the plowing of fallow fields coincides with the peak of egg incubation and causes considerable losses to clutches (Kessler, 2015) and in northern Kyrgyzstan and the United Kingdom, the harvest of alfalfa coincides with the egg-laying period (Campeau & Kulagin, 2022; Waters, 2023).

4.2 Collisions

Collisions with linear structures are an important modern cause of bird mortality (Martin et al., 2012). As a result of collisions, birds may die immediately from the impact with wires or subsequent fall to the ground. Others die later from injuries sustained in the collision or from predation if injuries render them unable to fly (Prinsen et al., 2011).

Bustards are among the most commonly recorded victims of collisions (Raab et al., 2012, Martin and Shaw, 2010) due to their frontal field of vision. Even small head movements during flight, especially when looking downwards, can cause temporary blindness in the direction of flight, putting bustards at increased risk of collision (Martin & Shaw, 2010). The exposure of bustards to collisions is further increased by their tendency to fly regularly between food resources, often leading to localized congregations along these danger points (Jenkins et al., 2010). Power lines,

fences, roads and other man-made structures pose significant threats.

4.2.1 Overhead cabling

One of the most frequent causes of human-induced bustard mortality is collision with overhead cabling, including power lines, lines accompanying train tracks, and telephone lines (Bevanger, 1994; Jenkins et al., 2010; Raab et al., 2011; Shaw, 2013; Silva et al., 2014b; Marques et al., 2021; Alonso et al., 2024a). Human-induced mortality during migration may be an important factor shaping the migration patterns of bustards inhabiting anthropogenic landscapes (Palacín et al., 2017).

Bustards have a narrow binocular visual field (Martin & Shaw, 2010). The limited vertical coverage of their binocular vision suggests that bustards may not easily detect objects in their direction of flight, especially when looking down. Additionally, birds have greater difficulty detecting power lines under reduced light conditions. Bustards often fly at dusk or dawn; some studies have also revealed extensive flights at night (Combreau & AlBaidani, 2015; Alonso et al., 2020; Abril-Colón et al., 2022). Limited visibility due to weather conditions such as rain or fog further increases the likelihood of collisions (Martin, 2011; Bernotat et al., 2018).

The risk of collision depends on both the configuration of the power line and the bird species. The design of the power lines influences how well birds can perceive them. Bundled conductors are more visible to birds, reducing the risk of collisions. In contrast, single earth wires, which serve as lightning protection, are less conspicuous and pose a higher risk of collisions (Bernotat et al., 2018). Earth wires are more prevalent on high voltage (HV) power lines compared to low (LV) and medium voltage (MV) lines. Bustard power line collision rates tend to be higher on HV lines compared to LV and MV lines (Craig, 2024; Shaw et al., 2018). However, the total extent of LV and MV line networks is usually considerably greater than the extent of HV lines, and thus the cumulative impacts of collisions with LV and MV lines may roughly equal or, in some cases, surpass the impacts of collisions with HV lines within a region (Shaw et al., 2018). The number and orientation of phase conductors (energy transmitting lines) increases the likelihood of collisions; multiple phases arranged vertically create a broader 'curtain' for bustards to navigate through, compared to horizontally arranged phases that pose a risk at a single height above ground. While bird flight diverters (BFDs) are effective in significantly reducing collisions of other bird taxa with powerlines (Barrientos et al., 2011; 2012), studies have not yet identified a diverter which produces adequate reductions for bustard species (Silva et al., 2023b). Furthermore, some BFDs are not effective in the case of species that migrate at night (Abril-Colón et al., 2022; 2024; Alonso et al., 2024a). While further research is conducted on this topic, it is necessary to site powerlines with extreme care, avoiding or undergrounding powerlines in the vicinity of important habitat or perpendicular to flight pathways. Given that powerlines are still not effectively mitigated and can significantly impact populations affecting their demography at the national level (Marcelino et al., 2017; Palacín et al., 2017; Marques et al., 2020; Uddin et al., 2021; Alonso et al., 2024a), some nations and international funding agencies require that powerline companies implement compensatory measures (Silva et al., 2023a).

Collision with power lines is a decisive factor in the ongoing population decline of many bustard species (Jenkins et al., 2010; Silva et al., 2023a; Alonso et al., 2024a). With increasing energy generation and transmission infrastructure geographically focused on the sunny and windy habitats preferred by bustards (Bernardino et al., 2018), collision as a mortality factor continues to increase.

4.2.2 Fencing

Fences are often installed to define property lines, restrict livestock to designated grazing areas, and prevent other animals from entering. While they serve their intended purpose for livestock management, they also alter natural landscapes (Kauffman et al., 2019). When habitats become

fragmented by these structures, the risk of collisions increases (Silva et al., 2023a). Bustards and other steppe birds, for example, may struggle to detect these barriers, making collisions a potential risk. Although such collisions occur less frequently than collisions with power lines, they still contribute to bustard mortality caused by human activities (Marques et al., 2024).

4.2.3 Traffic

Many birds, including bustards, die because of collisions with fast-moving objects such as road vehicles, aircraft, and trains (Martin, 2011). In recent years, the number of roads in both natural and urban areas has increased dramatically to meet traffic demands, leading to a higher risk of road mortality for bustard species and other birds (Tejera et al., 2018). Collision risk is influenced by factors such as speed limits, traffic volume, and road margin characteristics. A study indicates that bird roadkills are more frequent on roads with high-speed limits, lower traffic density, and those located near human settlements (Tejera et al., 2018).

Additionally, research suggests that male bustards may be more susceptible to road accidents due to their high-risk behavior during courtship displays. In their efforts to attract females or chase away rivals, they may become less attentive to oncoming vehicles. Their aggressive behavior and the obstruction of their vision by elaborate display plumes further increase their vulnerability to collisions (Alonso et al., 2024a). While males may also be more vulnerable to traffic collisions due to their greater weight and thus reduced maneuverability.

4.2.4 Wind turbines

Wind energy is widely promoted as a clean and renewable alternative to fossil fuels, receiving strong public and political support. As a result, the global expansion of wind power has accelerated in recent years. However, wind farms can pose significant risks to flying wildlife, particularly through collisions. For birds such as bustards, collisions with blades, towers, and the guy wires used to stabilize these structures are a primary concern (Bretagnolle et al., 2025; Ralston-Paton, 2025). Though transmission lines within the wind park may be undergrounded, longer-distance, high-voltage powerlines supplying this energy to the grid are typically not, and thus also represent a collision threat to bustards (see 4.2.1).

4.3 Habitat loss, degradation and fragmentation

As many bustard species share their habitat with humans, habitat loss, degradation and fragmentation pose a particular threat to bustards (Alonso & Palacín, 2022; Silva et al., 2022). At the beginning of the 21st century, extensive habitat loss and human disturbance were recognized as the primary threats to the Great Bustard, Great Indian Bustard, Little Bustard, Bengal Florican and Lesser Florican (Collar et al., 2001). Since then, the situation has worsened, due to expanding infrastructure, including power lines, roads, wind farms, solar installations, industrial facilities, agriculture, urbanization, and mining activities. These developments continue to shrink suitable habitats, increase disruption, and contribute to local population declines and possible extinctions.

4.3.1 Conversion of suitable habitats

4.3.1.1 Conversion of grasslands

Grasslands cover approximately 26% of the world's land area, making them the second-largest terrestrial habitat after forests. They provide essential ecological functions and support biodiversity (Douglas et al., 2023). However, they are also the habitat at highest risk of conversion to other uses (Sayre et al., 2020). These transformations have led to significant biodiversity loss and negatively impacted ecosystem services and multifunctionality (Prangel et al., 2023). Ongoing threats such as agricultural expansion, overgrazing, land conversion, and infrastructure developments including energy and mineral extraction continue to drive grassland loss and degradation at a global scale, threatening grassland-dependent bird populations (Packman et al., 2013; Douglas et al., 2023). More recently,

afforestation, promoted as a carbon storage technique, has also converted rather than restored grassland ecosystems (Temperton et al., 2019).

Agricultural intensification has significantly altered grassland ecosystems through practices such as irrigation, drainage, reseeding, increased mowing frequency, higher grazing densities and chemical application, all of which have degraded habitat quality and led to increased losses of eggs, chicks and females due to crushing by machinery and livestock (Douglas et al., 2023; see also section 4.1.4). On the other hand, abandonment of traditional low-intensity uses of grassland habitats, such as the cessation of hay harvest, moderate grazing and firewood collection, can result in overgrowth of shrub vegetation which negatively impacts the supply of multiple important ecosystem services and ecosystem multifunctionality (Day et al., 2003; Prangel et al., 2023), and has negative impacts on grassland species including some bustards (Packman et al., 2013; Froustey et al., 2024). Similarly, abandonment of traditional methods of grassland management through small-scale fires can result in vegetative overgrowth and the loss of grassland patches important to bustards (Gray et al., 2007).

4.3.1.2 Conversion of scrublands

Shrubland can either represent a transitional stage in the process of habitat succession—moving from open landscapes toward woodland—or be a stable, long-term vegetation type. As the human footprint has expanded, natural shrublands have been considered unproductive for humans and converted to other uses. In some countries, government subsidies have encouraged the conversion of these semi-natural habitats into farmland, leading to the loss of scrub-rich marginal habitat (Day et al., 2003).

4.3.1.3 Conversion of cereal steppes

Dry cereal farmland, also known as cereal steppe, is an agricultural habitat and hosts important populations of bustards and other threatened steppe and farmland birds (Traba & Morales, 2019). Substantial cereal areas in Europe have been replaced mostly by permanent crops, such as olive groves, orchards, and vineyards, or by other non-grassy crops, which has resulted in habitat loss for bustards and other farmland species (Silva et al., 2023b). Economic incentives and policies have driven this significant expansion of woody crop production leading to heavy mechanization, increased irrigation, excessive fertilizer and pesticide use, and widespread landscape simplification (Peréz et al., 2023). Moreover, intensification is not confined to new plantations, as traditional woody crops have also undergone transformations through increased mechanization, agrochemical use, and the removal of natural vegetation (Guerrero-Casado et al., 2022). This conversion in agricultural practices has reduced the availability of essential trophic and spatial resources for bustards and other steppe birds (Guerrero-Casado et al., 2022; Peréz et al., 2023). In Portugal (also in parts of Spain such as northern Extremadura), cereal crops have been replaced by permanent pastures for livestock production, principally cattle (Silva et al., 2018, 2023; Gameiro et al., 2024). This has led to an increase of fodder crops that are cut during the nesting stage.

4.3.2 Lack of management

Insufficient or inappropriate management is a pervasive threat to bustard species across their range. In many cases, management efforts are either absent, poorly coordinated, or inadequately resourced, limiting their effectiveness and long-term impact (Collar et al., 2017). This problem presents itself both in terms of species-specific conservation programs, as well as strategies to manage the wider landscape. Protected area and landscape management is critical, as bustards are highly mobile and require large, interconnected areas to maintain key social and reproductive behaviors. Without proper landscape-level planning, essential habitat components such as lekking sites, breeding grounds, and non-breeding areas become isolated or degraded (Collar et al., 2017).

Bustards often occur in landscapes where conservation action is hindered by fragmented land ownership (Barati et al., 2015), unclear jurisdictional responsibilities, or weak institutional frameworks. This can make it difficult to implement coordinated management strategies, especially in areas outside protected zones where many bustards spend significant parts of their life cycle (Collar et al., 2017). Where protected areas do exist, they are frequently misaligned with the ecological needs of bustards. Some are too small to support viable populations, while others are poorly managed or lack community support due to restrictions on land use. Management plans often fail to address habitat requirements such as the maintenance of open grasslands, control of invasive vegetation, or regulation of land-use changes in surrounding areas (Collar et al., 2017). Restrictions can have significant economic implications, particularly for local land users. To ensure long-term support and compliance, the income shortfalls resulting from agri-environmental regulations should be fairly compensated (Lóránt et al., 2023).

4.3.3 Habitat degradation

Habitat degradation can occur in various ways, including excessive grazing, improper fire management, and the spread of invasive species.

4.3.3.1 Overgrazing

Overgrazing, defined as repeated grazing without sufficient plant recovery time, disrupts rangeland ecosystems and leads to long-term ecological degradation and to the loss of characteristic plant species. It affects soil health by increasing erosion, reducing water retention, compacting soil, and depleting nutrients—ultimately lowering forage quality and availability. It also alters vegetation structure, resulting in smaller vegetation swards (Silva et al., 2023b) and as palatable grasses are grazed out, unpalatable or invasive species replace them, commonly offering poor habitat and food resources (Ehlert et al., 2025).

Breeding bustards have very specific requirements for vegetation structure that provides both protection from threats and visibility for courtship. Grazing pressure is a key factor in their occurrence and breeding success, as it determines not only the vegetation structure that provides cover and food, but also the degree of disturbance (Ramos et al., 2021). Bustards, being ground-nesting birds, are particularly vulnerable to intensive grazing (Douglas et al., 2023), as nests are more likely to be trampled (Ramos et al., 2021) or exposed to predators of both the brooding female and her eggs and young (Collar et al., 2017). Bustard species heavily impacted by overgrazing include the African Houbara (Collar, 2022), Arabian Bustard (Shobrak & Rahmani, 1991), Great Indian Bustard (Rahmani, 2006), Nubian Bustard (Collar & Wacher, 2023). In Portugal, overgrazing during the past decade has led to habitat degradation or loss which is aggravated in drought years (Silva et al., 2023b).

4.3.3.2 Unsustainable fire regimes

While loss of natural or low-intensity fire regimes can result in the overgrowth of vegetation and loss of grassland habitat (4.3.1.1), increased fire frequency also poses a threat (Bhagwat et al., 2023). Frequent fires can alter plant communities, making them more susceptible to invasive species which may, in turn, further increase fire vulnerability (Douglas et al., 2023). Through shifting weather patterns, including unpredictable rainfall, extended droughts, and stronger winds, climate change is expected to worsen challenges to safely conduct the controlled burns used for fire management (Coetzee & Stoch, 2025).

For example, while burning the previous year's dry vegetation has been widely practiced in the Russian Federation to improve pasture quality, in recent decades increasing numbers of these fires have run out of control. In some regions, these burns can affect 20–80% of Great Bustard breeding habitat, resulting in an average annual loss in productivity of 5–40% (Collar et al., 2017).

4.3.3.3 Invasive plant species

Invasive alien plant species contribute to the deterioration of natural habitats by negatively affecting native plant communities. Their ability

to outcompete local vegetation, combined with their rapid reproduction and efficient spread, allows them to alter or even completely replace existing plant populations (Maceseanu & Fagaras, 2024). Invasive alien plant species such as *Prosopis juliflora* in grasslands are one cause of habitat loss for the Great Indian Bustard and Lesser Florican (Collar et al., 2017). Similarly, invasive alien plants such as *Chromolaena odorata, Eupatorium adenophorum, Lantana camara,* and *Mikania micrantha* are becoming increasingly problematic in Nepal's Chitwan National Park and Koshi Tappu Wildlife Reserve, which are key habitats for the Bengal Florican. These fast-growing weeds outcompete native grasses for water and nutrients and release allelopathic substances that inhibit vegetation growth, making habitat management particularly challenging for Bengal Florican conservation (DNPWC, 2024). In addition to habitat degradation, the proliferation of the non-native *Elaeagnus angustifolia* facilitates the establishment and persistence of Carrion Crows *(Corvus corone)* and predator species in Great Bustard areas (Lóránt, 2017; see section 4.5 for discussion of anthropogenically increased level of wild predators).

4. 3. 4 Habitat fragmentation

In the 21st century, increasing percentages of land area are occupied by anthropogenic land uses, including urban development and intensive agriculture (Palacín et al., 2012; Taubenböck et al., 2015). The expansion and development of transportation and energy networks further contribute to habitat loss and fragmentation, reducing the availability of suitable environments (Geary et al., 2022).

4. 3. 4. 1 Transportation networks

Transportation networks in both natural and urban areas have significantly expanded in recent years to meet growing transportation demands. This development has various ecological consequences, including habitat loss and fragmentation, pollution from toxic substances such as oils and waste, as well as noise and light pollution, which can alter the behavior and biology of many species (Tejera et al., 2018). Naturally wary, bustards tend to avoid roads, and dense road infrastructure can lead to a decrease in bustard habitat use as well as population declines (Torres et al., 2011; Schuster et al., 2012; Silva et al., 2022; 2023b).

4. 3. 4. 2 Energy infrastructure

The sunny, windy and undeveloped habitats preferred by bustards are also attractive to renewable energy developers (Collar et al., 2017). Energy infrastructure not only increases the collision risk of bustards but can also displace them from large blocks of habitat and areas immediately adjacent to the infrastructure, and act as barriers, fragmenting their ranges (Silva et al., 2010; Lorant & Vadasz, 2014; Santos et al., 2016; Visser et al., 2019; Silva et al., 2023a; Marques et al., 2025). Moreover, the conversion of natural habitats into wind and large-scale solar farms also necessitates the expansion of electricity grids, further exacerbating threats to bustard populations (see section 4.2.1). Because the impact of this infrastructure on habitats is permanent, planning of new energy infrastructure should take into account the home-range area and flight movements of bustards, both inside and outside protected areas. Large-scale mapping of endangered bustard species is thus essential for effective planning of energy infrastructure (Palacín et al., 2023).

4.4 Take

Overhunting has led to the eradication of bustard species from some regions (Collar & Wacher, 2023), and the extinction of at least one taxonomic unit, a subspecies of Arabian Bustard, Ardeotis arabs lynesi (Collar 2024). Unsustainable take not only has a negative impact on population status (Dolman et al., 2021) but hunting more broadly also affects the behavior and physiological condition of bustards since they become more vigilant and flee more frequently. This takes time away from other vital activities such as foraging and reproduction. Physiologically, elevated stress hormone levels disrupt natural hormone cycles and suppress immune function. The long-term impact of take activities can

thus indirectly affect the success of conservation efforts for their populations (Tarjuelo et al., 2015).

4.4.1 Illegal take

The illegal taking of birds by hunters, most commonly using firearms or falcons, but also by traps or poisons, is commonly also termed poaching. Poaching can be undertaken for livelihood, for commercial use, but also for sport, including by city- and town-based hunters accessing rural habitats by motor vehicle. In many bustard range states over the last 50 years, traditional hunting practices focusing on subsistence have given way to sport hunts undertaken for enjoyment, enhanced with innovations to increase kills. These include not only technological advances such as all-terrain vehicles, improved weaponry, thermal sensors, and modern communication systems, but also falcons hybridized for size and improved hunting performance (Dolman et al., 2021). Intensive hunting activities, particularly involving heavy off-road vehicles, not only decimate bustard populations but also damage vegetation, cause disturbance, and may target other wildlife species. The movement of these vehicles can also destroy agricultural fields and physical infrastructure like earth-filled dams that are used to store irrigation water or slow down runoff. Such habitat destruction further jeopardizes the survival of bustard species, and creates challenges for local people (Adler et al., 2021).

Over the past decades, illegal hunting of bustards has become internationalized as populations of bustards have been depleted in some countries and sport hunters seek these species, or other bustard species, abroad. The activities of foreign hunting parties now impact most bustard species distributed in Africa north of the equator, and in northern Eurasia. In some areas, hunting companies openly advertise their services online to foreign clientele, even when the activity is illegal (Collar & Kessler, 2021).

Poaching of bustards is also sometimes undertaken through deliberate poisoning. The intention is typically to collect the poisoned bustards to sell as 'wild meat' (Collar et al., 2017; Kessler & Batbayar, 2023). Bustards are sold in this manner in markets where wild animals are sought as delicacies or perceived as safer for consumption than animals produced through commercial farms. Presumably, this poisoning is often accomplished through the use of carbofuran. Among 55 Great Bustards admitted to a rehabilitation center in Cangzhou, Hebei province (PR China), between 2002 and 2009, 31% had been poisoned, either unintentionally through agricultural practices or deliberately by poachers aiming to sell the meat (Collar et al., 2017).

4.4.2 Unsustainable legal take

Falconry has been practiced for centuries as a sport and is considered to have deep cultural roots in the Arabian Peninsula (Combreau & AlBaidani, 2015). Over the past half-century, the houbara bustards have been considered the premier quarry for Arab falconers, and it is established practice to use live houbara to train falcons for the hunt. Through this live trade and hunting, the African and Asian Houbaras have by now been pursued in almost every part of their range, on migratory pathways and wintering grounds (Brochet et al., 2017; Dolman et al., 2021). In some areas, this activity is illegal. However, in others, there is no regulation, or there may be a limited number of paid permits available, or exceptions made for influential foreign guests.

For example, in Pakistan, Kazakhstan, Uzbekistan and other countries, hunting the Asian Houbara is for the most part officially prohibited, but a limited number of hunting concessions or permits are supplied to foreign dignitaries and/or wealthy clients. Although there may be official restrictions concerning the number of birds to be taken or other measures to ensure sustainable hunting, political and economic relations may complicate enforcement. As a result, the number of Houbara Bustards taken may far exceed sustainable annual yields (Burnside et al., 2016; Dolman et al., 2021b). A lack of availability of information regarding the scale of take hampers efforts to assess the cumulative impact and sus-

tainability of take across range countries.

4.4.3 Illegal trade

While some taken bustards are used by the hunter or poacher, others are traded for a variety of purposes.

4.4.3.1 Trade in live birds

Live bustards are traded for training falcons, to supplement stock in captive breeding facilities, and to a lesser extent, for display in private zoos (Lampen et al., 2005). Although Pakistan was once the primary source of wild houbara smuggled into the Arabian Peninsula, observations in the Islamic Republic of Iran suggest an expanding trade in that country (Dolman et al., 2021b, Fazaeli et al., 2024). A rise in the trafficking of multiple bustard species from eastern and southern Africa for use in falcon training was a major consideration in the listing of all members of the bustard family on Appendix II of CITES (Govt UK & N Ireland, 1987). Illegal trade of wild bustards often involves high mortality rates due to poor and overcrowded transport conditions, poor husbandry, malnutrition, and exposure to diseases. Disease outbreaks are common, as captured bustards are highly susceptible to infections due to stress and unsanitary conditions, usually suffering from multiple infections (Bailey et al., 2000). For these reasons, trade in live bustards not only demographically impacts their wild populations, but also poses significant disease risks to the falcons they are used to train (Schuster et al., 2025), the breeding stock they are intended to supplement, and again, the wild populations into which these captive-bred birds are released.

4.4.3.2 Trade in dead birds

The use of dead bustards and other large birds in traditional medicine represents an often overlooked but significant threat to wild populations (Williams et al., 2014). In parts of the world, particularly southern and western Africa, traditional medicine systems incorporate both physical healing and the treatment of spiritual or ancestral issues (Low 2009, Withing et al., 2011). Animal parts, including those of birds, are valued for their perceived supernatural or symbolic properties. Large-bodied, visually striking species such as bustards are especially vulnerable to such targeted harvesting (Williams et al., 2014). Despite its potential impact, the extent of this threat remains poorly documented, and further monitoring and regulatory action are needed to understand and mitigate its effects (Amir, 2006; Withing et al., 2011).

As large-bodied birds, bustards have also long been sold for meat in town or roadside markets (von Mollendorff, 1877; Radde, 1884), a practice which continues today (Gossé et al., 2022; Aticho et al., 2024; Ashoori et al., 2025; Farajli, 2025; Ostrowski, 2025). Although the source of these birds is typically hunting or poaching, in at least one location a specialized seasonal trade developed in the sale of dead bustards which had collided with telephone lines (Ivanov & Priklonskii, 1965).

Historically, there has also been international trade in feathers from multiple bustard species for use in the creation of flies for fly-fishing. Since 1987, international trade in all bustards has been restricted by the listing of Otididae on Appendix II of CITES. A limited permitted trade is conducted using Kori Bustard feathers gathered from US zoos (Hallager, 2007).

4.5 Mortality from anthropogenically increased predator species

Predation is a natural process that drives selection, regulates populations, and does not pose a problem or require human intervention in largely undisturbed ecosystems. However, humans have inadvertently increased predation rates on bustards in a number of ways. First, they have introduced domestic predators: feral, stray or free-ranging dogs and pigs. Second, they have facilitated the range expansion and population growth of adaptable wild predators such as corvids and foxes. Third, they have introduced non-native predators which cause damage to bustard populations, including raccoons, raccoon dogs, and American minks (Lóránt & Fejes,

2024). Even when predators are unsuccessful, their activities reduce bustard productivity as bustards are flushed or perform more vigilance behaviors, which require energy and reduce time spent on other vital activities (Tarjuelo et al., 2015; Mañosa et al., 2024).

4.5.1 Domestic animals

Free-ranging domestic animals, particularly dogs and cats, are an unquantified but evidently sometimes major source of danger for bustards (Collar et al., 2017; Jhala et al., 2020; Alonso et al., 2024a, Ucero et al., 2025). Dogs pose a direct threat to bustards and their nests by acting as predators and also cause disturbance by chasing larger herd animals which may also trample eggs and young (Patil & Chindarkar, 2012; Jhala et al., 2020).

4.5.2 Anthropogenically increased level of wild predators

Human activities have expanded the range and density of some wild predators of bustards. The range of Red Fox (Vulpes vulpes) has expanded, and their abundance increased, where anthropogenic food sources are available (e.g., through improper waste disposal; Main et al., 2019), and foxes were deliberately introduced to Australia (Woinarski et al., 2022). Foxes are active nest predators, and in some areas of Europe and Asia, Red Fox are the most common cause of reproductive failure for bustards, especially when the sensitive chick-rearing period overlaps with the time that young foxes leave their dens (Bankovics, 2005). Foxes may also attack adult bustards, particularly at night when bustards roost on the ground. Foxes were not present on the continent of Australia until European settlers introduced them in the late 19th century. As foxes spread, the "almost complete extinction" of populations of Australian Bustard followed (Froggatt, 1914; Abbott, 2011).

Corvid species including the Common Raven (Corvus corax), Hooded Crow (C. cornix), Rook (C. frugilegus), and Carrion Crow (C. corone) predate bustard eggs and recently-hatched chicks (Gewalt, 1959). As with foxes, the ranges of corvid species expand and their abundance increases where anthropogenic food sources are available. Humans also provide opportunities for corvid range expansions when they introduce water sources to arid habitats, and vertical structures for nesting in open landscapes (Manzer et al., 2005; Dixon et al., 2013). Such vertical structures can include pylons and powerlines, poles, buildings and trees, as in plantations or forest strips ("shelter belts") or edges surrounding agricultural fields (Andrén, 1973). These aerial perches and structures provide corvids not only with improved opportunities for nesting but also with observation decks from which to observe the behavior of female bustards and wait for the opportune moment to attack their eggs or chicks (Raab et al., 2009). As renewable power infrastructure expands across the ranges of bustard species, increases in predation from corvids can be expected unless management measures are undertaken.

4.6 Anthropogenic disturbance

As ground-nesting and ground-roosting birds, bustards are especially vulnerable to disturbance from human activity, including road traffic, tourism, military activities and resource extraction (Burnside et al., 2014; Collar, 2022). Even simply approaching these birds can cause them to flee suitable habitats (Kashkarov et al., 2023). Bustards may respond to disturbance by taking flight or hiding, or by devoting increasing amounts of time to vigilance behaviors, which may affect the birds' overall fitness. Harassment by birdwatchers or photographers, or even well-controlled but excessive birdwatching, may also affect normal behavior (Bankovics, 2005). Motorcyclists, dogs, helicopters and airplanes have also been identified as harmful to bustard abundance and habitat occupancy. In Spain, hunting caused an increase in the frequency of disturbance on weekends and holidays with respect to working days (Sastre et al., 2009). In cases of persistent disturbance, such as roads or trains, bustards may abandon otherwise suitable habitats (Schuster et al., 2012; Malo et al., 2017).

Anthropogenic disturbances, even when uniten-

tional—such as passing pedestrians, driving, or hunting—can significantly impact the breeding success of bustards (Vadász & Lóránt, 2014). The situation becomes particularly critical when a nesting female is startled and leaves her nest. In such cases, the abandoned eggs become more vulnerable to predation, particularly by watchful corvids. However, this is not direct nest predation but rather an indirect consequence of human interference. Similarly, human disturbance can increase mortality of adult bustards. Birds have been reported to flush in panic from human disturbance, only to hit powerlines and die (Abril-Colón et al., 2024). To avoid disturbances to birds, restrictions on human activities (access regulation to car traffic, helicopters, airplanes, and hunting) should be established, especially in the areas most frequently used by bustards (Sastre et al., 2009).

4.7 Genetic threats

Regional genetic variation is observed even in migratory species of bustards (Pitra et al., 2000). Human activities may interfere with natural processes of gene flow to the detriment of a species' survival. This can result from activities unrelated to the species' management, for example, a reduction or even cessation of gene flow between subpopulations may occur after human fragmentation of the species' habitat or construction of physical barriers (Alonso et al., 2009b; Pitra et al., 2011). Anthropogenic alteration of the genetic composition of free-living populations can also occur through captive breeding and intentional translocations of individuals for conservation purposes, or to replenish their stocks for hunting.

4.7.1 Genetic fragmentation and inbreeding

Fragmentation in the genetic structure of bustard populations can occur naturally due to geographical barriers and local adaptation. Over longer time frames, this may lead to the development of distinct subpopulations or even subspecies (Kessler et al., 2018). Human activities including habitat conversion and fragmentation, the construction of physical barriers, or extirpation of subpopulations which previously served as "steppingstones", can rapidly reduce the dispersal of individuals (Fuhlendorf et al., 2002; Horreo et al., 2013). When movement between populations is severely restricted, this loss of gene flow can result in inbreeding or demographic collapse, particularly when a subpopulation is already small (Horreo et al., 2022; Srinivas et al., 2022).

4.7.2 Translocations of inappropriate lineages

Translocations of bustards are undertaken for both conservation reintroductions and restocking of game species. The release of individuals without local genetic adaptations may not only risk the survival of the released birds, but also negatively impact the genetic composition of the local population by introducing maladaptive traits.

A well-recognized concern for bustards in this regard is migratory behavior. In Palearctic bustards, migration is observed to have a strong genetic component in terms of propensity (sedentary or migratory), direction and distance (Burnside et al., 2020). When Asian Houbara are released outside of their inherited migratory pathway, they fly in the direction and for the range of distance to which they are genetically predisposed, even attempting to cross formidable obstacles to do so (Burnside et al., 2020). Those birds which survive these inappropriate journeys and return to breed at their release site may introduce genes for these suboptimal migrations into the local population, compromising the survival and fitness of future generations. Other beneficial adaptations to local conditions, including immunologic or metabolic traits, are also under genetic control. Thus, translocations of bustards into a breeding site require individuals which are genetically closely suited to the destination (IUCN/SSC, 2013).

4.7.3 Genetic swamping and hybrid swarms

Large-scale releases of captive-bred houbaras of both species are undertaken in many parts

of the world to augment hunting stocks. These releases carry the highest risks when they are conducted in areas where wild populations of the species exist (Laikre et al., 2010). In addition to increased mortality in wild populations due to disease transfer from translocated individuals, competition for resources, and the attraction of predators to naive released individuals (Hess et al., 2005; Le Loc'h et al., 2016; Monnier-Corbel et al., 2022; Harris et al., 2023; Bidoudan et al., 2023), repeated transfers of large numbers of captive-bred birds present genetic risks that can weaken the ability of wild populations to survive and adapt to changing conditions in the long term (Ford et al., 2008; Collar, 2022). These risks include genetic swamping and introgression, characterized by the flow of genes from released strains into the gene pool of the wild population, which, over multiple generations, can create hybrid swarms which blur the boundaries between distinct lineages (Barilani et al., 2005; McFarlane et al., 2021). The repeated collection of eggs for replenishment of captive breeding stock from the same populations into which captive-bred individuals are released can amplify this effect. This can result in the loss of genetic variation and local adaptations accumulated in the wild population and hence in the lowered fitness of subsequent generations. In extreme cases, it may lead to the extinction of evolutionarily distinct subpopulations, and/or their replacement by captive-bred lineages (Rhymer & Simberloff, 1996; Potts et al., 2003).

Over the past thirty years, reproductive technologies have enabled the mass production of the houbara bustards (Saint Jalme et al., 1994). More recently, this approach has been extended to the Arabian Bustard and Great Indian Bustard (Carreira et al., 2022; "DNP unit welcomes", 2025). In contrast to the production of other game birds, most captive-bred bustards are produced by artificial insemination, which requires extensive taming. Their breeding stocks are typically held at high densities in enclosed facilities with environmental conditions aimed at increasing egg production. Breeding within artificial conditions inevitably results in the selection of certain traits that can be detrimental to birds in the wild (Attié et al., 2022). These changes can affect fertility, immune function, digestive morphology, temperament, and both innate and learned behaviours, including predator avoidance strategies (Frankham, 2008; Dolman et al., 2021a; Rabier et al., 2021). Further, captive conditions also exert selective pressures on the gut microbiome, including reductions in its alpha diversity and changes to its community structure (Lu et al., 2025). While some genetic compromises of the current mass production approach in terms of changes to female reproductive investment have been identified (e.g., Sorci et al., 2021), many others remain to be explored. The precautionary principle should be employed in the case of this uncertainty, given the potential for introgression of maladaptive genes into wild populations of bustards.

4.8 Climate change

4.8.1 Climate change

Temperature changes and shifts in precipitation patterns throughout this century are expected to impact bustards both directly and indirectly. Bustards are among the avian taxa most vulnerable to heatwaves (Payne et al., 2023; Ding et al., 2024). Higher temperatures are known to directly inhibit reproduction in houbara bustards (Saint Jalme et al., 1996; van Heezik et al., 2002; Alonso et al., 2024a). Observations suggest that Great Bustards in Mongolia and Bengal Floricans in Cambodia display less frequently on warmer days, indicating that rising temperatures may also have adverse demographic effects for these species (Collar et al., 2017). Under conditions of increased temperatures, the activity levels of some bustards are reduced (e.g., Great and Little Bustards; Alonso et al., 2016b; Collar et al., 2017; Gudka et al., 2019; Kashkarov et al., 2023). This limits the time available for breeding and foraging and may negatively impact individual fitness, population dynamics, and migratory behavior (Silva et al., 2015; Collar et al., 2017; Collar & Wacher, 2023). In central and southern Spain, male Great Bustards migrate northwards during high summer temperatures (Alonso et al., 2009c). The necessity of additional movements

in response to high temperatures and other severe weather events can increase the risk of collision with power lines (Palacín et al., 2017). Still, bustards have been found to use microclimate refugia (Ramos et al., 2023a), which can buffer elevated temperatures to some extent (Ramos et al., 2023b).

The Great Indian Bustard, Canarian Houbara Bustard and Lesser Florican are known to abandon breeding in dry conditions, which may be exacerbated under future climate conditions (Collar et al., 2017; Alonso et al., 2024b). Since 2000, prolonged dry conditions have led Great Bustards to abandon some areas of the eastern Mongolian steppes as well as parts of Transbaikalia in the Russian Federation (Collar et al., 2017). In Mongolia and northeastern China, severe winter weather events, such as prolonged snow cover, have become more common and are associated with endocrine stress responses in Great Bustards (Liu et al., 2018). In Mongolia and Siberia, extreme weather during the breeding season, including late snowstorms, is expected to increase reproductive failure (Kessler, 2015).

Climate change also impacts the habitats upon which bustards depend, thereby modifying their distribution ranges, breeding phenology, and migratory behaviors. The increasing frequency and intensity of droughts linked to climate change is likely to alter vegetation structure and degrade breeding habitats (Silva et al., 2023b). Since green plants form a large percentage of the diet of many adult bustards, they are particularly vulnerable to vegetation changes following the expected increase in aridity (Silva et al., 2014a). Melting glaciers and extreme weather events may disrupt the ecological processes that sustain the Brahmaputra grasslands, on which the Bengal Florican depends (Collar et al., 2017).
As regards phenology, declining rainfall, persistently high temperatures, and recurring drought periods will shorten the breeding season in some regions due to reduced food availability. Increased movements may be required of nomadic bustard species as weather patterns and resource availability become less predictable. Climate change also presents challenges to successful migration. Climate change and overgrazing are widening the Gobi Desert, a migratory obstacle for Great Bustards (Kessler et al., 2013).

Climate change will exacerbate human-induced threats such as overgrazing and wildfires, thereby increasing the risk of extinction (Collar et al., 2017). For example, as severe weather becomes more frequent and temperatures increase in Yemen, declines in agricultural productivity will increase human pressure on the landscape, challenging the survival of the last remaining populations of the Arabian Bustard in Asia (Collar et al., 2024).

Climate-only models suggest that much of the current habitat in Europe could become unsuitable for bustards by the end of this century (Kashkarov et al., 2023); however, models that also account for geographic constraints and land-use factors indicate only moderate changes in habitat suitability, particularly in southern Europe. As bustards typically exhibit strong site fidelity, conservation should prioritize current high-suitability populations and habitats with the potential to retain suitability under future climate scenarios (Estrada et al., 2016).

4.9 Awareness

4.9.1 Low public and stakeholder awareness

Low public awareness represents a significant barrier to effective bustard conservation. Despite their threatened status, bustards are not widely recognized or valued by the general public. Their secretive behavior contributes to their low visibility in public discourse compared to more charismatic bird species. As a result, there is limited societal pressure to implement or support conservation actions (Collar et al., 2017). Successful conservation depends on the involvement and support of local land users, particularly in agricultural areas. Ultimately, without coordinated and well-resourced awareness strategies, even the best-designed management plans are unlikely to be effective (Barati et al., 2015).

4.10 Legal obstacles

4.10.1 Missing or ineffective policies, laws and enforcement

A major obstacle to effective bustard conservation is the lack of clear bureaucratic responsibility and institutional coordination for sustainable land management in bustard habitats. In many regions, suitable habitats are classified under vague land categories such as "wasteland", which results in neglect, lack of protection, and no designated authority responsible for their conservation. This bureaucratic gap often leads to encroachment, particularly by agriculture, and contributes to the loss of critical breeding sites (Collar et al., 2017).

Ideally, a system of protected areas preserves and manages important habitats and provides conditions to reduce anthropogenic causes of mortality. However, adjacent areas where protected area regulations do not apply may serve as population sinks (Silva et al., 2014b; Hardouin et al., 2015). This leads to a situation in which conditions for bustards deteriorate as soon as they leave protected areas due to increased mortality factors.

Moreover, even within legally protected areas under international or national conservation frameworks, bustards are not necessarily safe from habitat loss. In several cases, parts of protected areas have been reduced in size or reclassified to allow infrastructure projects, including renewable energy developments. This reflects a critical gap in the effectiveness and enforcement of conservation policies (Santangeli et al., 2023).

However, in many areas of the world, the greater portion of bustard habitats lies entirely outside of protected areas. For example, in east Asia, less than 0.1% of GPS locations used by tagged Eastern Great Bustards fell within protected areas; further, one of the few sites logged within a protected area was the location at which the bird was killed (Kessler, 2015). In Spain, which now holds ca. 70% of the world total population of Great Bustards (Kessler, 2022), ca. 56% of Great Bustard home range areas lies outside of Special Protection Areas, thus being highly vulnerable to new energy infrastructure developments and other habitat changes (Palacín et al., 2023). Moreover, the Common Agricultural Policy of the European Union (EU CAP), conceived to increase agricultural production, has no restrictions even within these protected areas, which creates a conflict between current agricultural policy and legislation on biodiversity conservation. Declines among bustards and other farmland bird species in agricultural protected areas highlight ongoing challenges in achieving the objectives of the EU Biodiversity Strategy (Palacín & Alonso, 2018).

Part 5. Framework for Action

5.1 Objectives

This subchapter describes the major objectives further detailed in 5.2., each with the corresponding goals of the CMS Samarkand Strategic Plan for Migratory Species (2024-2032). Goal 1 will not be listed, as it corresponds with all of the objectives:

Goal 1. The conservation status of migratory species is improved.

Objective 1 – Promote bustard-friendly agricultural practices in bustard habitats

This objective aims to align agricultural practices with the conservation needs of bustards by reducing the impact of chemicals, preventing habitat degradation, and ensuring compatibility with breeding success. It promotes awareness and regulation of agrochemical use, supports the adoption of high nature value farming and traditional practices, and encourages bustard-sensitive land management during key stages in life. Collaboration, research, and incentives are emphasized to achieve sustainable and biodiversity-friendly agriculture for nature and people alike.

Corresponding CMS SPMS (2024-2032) Goal:
Goal 2. The habitats and ranges of migratory species are maintained and restored, supporting their connectivity.
Goal 3. Threats affecting migratory species are eliminated or significantly reduced.
Goal 4. Implementation of CMS is supported by adequate knowledge, capacity and resources.

Objective 2 – Reduce and prevent collisions

This objective focuses on minimizing and eliminating collision-related mortality of bustards caused by overhead power lines, fences, vehicles, and wind turbines. It promotes spatial planning based on sensitivity models, integration of bustard conservation into energy and infrastructure development, implementation of mitigation measures, and long-term monitoring. Legal and policy frameworks are strengthened to support collision prevention and ensure data transparency.

Corresponding CMS SPMS (2024-2032) Goal:
Goal 3. Threats affecting migratory species are eliminated or significantly reduced.

Objective 3 – Ensure availability of suitable habitats throughout the species' lifecycle

This objective aims to secure and maintain suitable habitats for bustards year-round by preventing habitat conversion, promoting adaptive management of grasslands and rangelands, and mitigating risks such as fire and invasive alien species. It also focuses on improving habitat

connectivity across key areas and migratory routes. Strategic planning, sustainable land-use practices, and targeted management interventions are central to achieving long-term habitat availability.
Corresponding CMS SPMS (2024-2032) Goal:
Goal 2. The habitats and ranges of migratory species are maintained and restored, supporting their connectivity.
Goal 3. Threats affecting migratory species are eliminated or significantly reduced.

Objective 4 – Reduce/halt illegal and unsustainable take

This objective aims to minimize and ultimately stop activities that threaten bustard populations through illegal and/or unsustainable take. It focuses on improving legislation and enforcement, enhancing monitoring and patrolling efforts, engaging with local and hunting communities, and strengthening institutional capacity. It also targets illegal trade by identifying trade routes, increasing awareness, and ensuring that offenders face legal consequences.

Corresponding CMS SPMS (2024-2032) Goal:
Goal 3. Threats affecting migratory species are eliminated or significantly reduced.
Goal 5. Implementation of CMS is supported by effective governance, including use of best available science and information, and collaborative work.

Objective 5 – Reduce predation by anthropogenically subsidized predators

This objective seeks to mitigate predation pressure on bustards from domestic and wild predators whose populations or behaviors are influenced by human activity. It promotes responsible pet ownership, regulatory measures, and community-based control of free-roaming animals. For wild predators, it emphasizes monitoring, evidence-based impact assessment, habitat management, and targeted control strategies, all aligned with international conservation guidelines.

Corresponding CMS SPMS (2024-2032) Goal:
Goal 3. Threats affecting migratory species are eliminated or significantly reduced.

Objective 6 – Reduce levels of disturbance caused by anthropogenic activities

This objective aims to minimize human-induced disturbance in critical bustard habitats by regulating recreational and agricultural activities, engaging local communities, and raising awareness. It promotes the use of protected areas and OECMs to limit disturbance and ensures that environmental assessments address potential impacts of infrastructure development on bustards.

Corresponding CMS SPMS (2024-2032) Goal:
Goal 3. Threats affecting migratory species are eliminated or significantly reduced.

Objective 7 – Prevent genetic threats to wild populations

This objective addresses genetic risks to bustard populations by regulating captive breeding and release efforts, maintaining transparency and expert oversight, and ensuring adherence to international standards for reintroduction and translocation. It also promotes spatial planning and habitat restoration to maintain gene flow, prevent inbreeding, and support long-term population viability.

Corresponding CMS SPMS (2024-2032) Goal:
Goal 4. Implementation of CMS is supported by adequate knowledge, capacity and resources.
Goal 5. Implementation of CMS is supported by effective governance, including use of best available science and information, and collaborative work.

Objective 8 – Mitigate the negative effects of climate change

This objective focuses on enhancing the resilience of bustard populations to climate change by securing suitable habitats under future scenarios and reducing mortality from extreme weather events. It promotes the use of predictive habitat modelling to inform conservation planning and calls for contingency measures to address climate-related threats at multiple governance levels.

Corresponding CMS SPMS (2024-2032) Goal:
Goal 2: Enhancing bustard resilience to climate change by securing future habitats and reducing climate-related mortality.
Goal 3. Threats affecting migratory species are eliminated or significantly reduced.

Objective 9 – Support conservation through cross-cutting actions that contribute to addressing knowledge gaps

This objective emphasizes the importance of robust, collaborative research and monitoring to fill critical knowledge gaps in bustard conservation. It supports standardized population assessments, movement and connectivity studies, and the estimation of collision-related mortality. It also promotes ecological research to inform evidence-based conservation strategies and enhance international cooperation.

Corresponding CMS SPMS (2024-2032) Goal:
Goal 5. Implementation of CMS is supported by effective governance, including use of best available science and information, and collaborative working.

Objective 10 – Intensify CEPA for bustard conservation

This objective focuses on strengthening Communication, Education, and Public Awareness (CEPA) to foster long-term support for bustard conservation. It promotes strategic outreach through digital and mass media, educational programming, and public engagement initiatives. It also emphasizes partnerships, cultural integration, and citizen involvement to cultivate a conservation-minded society and increase bustard visibility.

Corresponding CMS SPMS (2024-2032) Goal:
Goal 5. Implementation of CMS is supported by effective governance, including use of best available science and information, and collaborative working.

Table 3. Framework for Conservation Actions for Bustards
Note: The numbering of the Actions does not correspond with the numbering of the threats.

Actions	Category	Time frame (years)	Priority	Stakeholders
Objective 1: Promote bustard-friendly agricultural practices in bustard habitats				
Result 1.1. The negative impact of chemicals is reduced.				
1.1.1. Implement awareness campaigns, specifically covering negative impacts of agrochemicals and rodenticides on bustards, and impacts on human and livestock health.	Education & Awareness	1-12	High	National and local governments and authorities, NGOs
1.1.2. Collect, collate and share basic standardized information about poisoning incidents on national and international level.	Research & Monitoring	1-12	High	Governments, NGOs, CMS
1.1.3. Assess the extent of use of agrochemicals and rodenticides.	Research & Monitoring	1-12	High	Research institutes, Universities
1.1.4. Collaborate with relevant local, national and international agencies, such as FAO, to reduce the negative impacts of agrochemicals and rodenticides.	Governance & Policy	1-12	High	Governments, FAO, Pesticide regulation authorities
1.1.5. Provide information on the proper application of agrochemicals and rodenticides to prevent poisoning.	Education & Awareness	1-12	High	National and local authorities, NGOs
1.1.6. Establish poisoning reporting and response protocols specific to bustards.	Governance & Policy	1-3	High	National and local authorities, poison response units, NGOs
1.1.7. Train and support relevant agency staff to rapidly respond to poisoning incidents.	Direct Conservation Action	1-3	High	Governments, National and local authorities, NGOs
1.1.8. Promote biodiversity-friendly techniques, also to ensure food security.	Direct Conservation Action	1-12	High	Governments, NGOs, Landowners, Local communities
1.1.9. Revise and regularly update existing regulations on pesticide use.	Governance & Policy	1-12	High	National authorities, Governments

Actions	Category	Time frame (years)	Priority	Stakeholders
Result 1.2. Habitat loss and degradation caused by agricultural intensification is prevented.				
1.2.1. Develop bustard-friendly agri-environmental schemes with reference to CMS Great Bustard MoU guideline (Guideline for the different Agri-Environmental Schemes for the benefit of the Great Bustard (*Otis tarda*)).	Governance & Policy	1-3	High	Governments, National authorities, NGOs
1.2.2. Implement the agri-environmental schemes developed as per 1.2.1.	Direct Conservation Action	1-12	High	National and local governments and authorities, NGOs, Landowners, Local communities
1.2.3. Promote small-scale and high nature value (HNV) farming, including favorable crop rotation and low fertilization, no irrigation and the increasing of field margins between parcels to create/preserve biodiversity-rich mosaic landscapes.	Direct Conservation Action	1-12	High	National and local governments and authorities, NGOs, Landowners, Local communities
1.2.4. Support research on and implementation of bustard-friendly agricultural techniques benefitting farmers and livestock (e.g., incentives and livelihood).	Governance & Policy	1-12	High	Governments, NGOs
1.2.5. Raise awareness of the ecosystem-services of bustards and other natural values of bustard habitats, including pollinators.	Education & Awareness	1-12	High	Local authorities, Universities, Educators, NGOs
1.2.6. Promote adaptive traditional agricultural practices and sustainable community-driven approaches to conserve biodiversity of ecosystems in bustard habitats.	Direct Conservation Action	1-12	High	National and local governments, NGOs
Result 1.3. Agricultural practices are compatible with successful reproduction.				
1.3.1. Apply low level of mechanization at nesting sites and avoid or significantly lower the use of pesticides to prevent the loss of eggs and chicks.	Direct Conservation Action	1-12	High	Landowners, Local communities, OECM/Protected area managers
1.3.2. In bustard areas, avoid harvesting, hay cutting, plowing and other agricultural activities within the nesting and chick-rearing period of bustards.	Direct Conservation Action	1-12	High	Landowners, Local communities, OECM/Protected area managers

Actions	Category	Time frame (years)	Priority	Stakeholders
Objective 2. Reduce and prevent collisions				
Result 2.1. Collisions with overhead cables and fences are reduced and prevented.				
2.1.1. Develop national spatial models of collision sensitivity across the range of bustard distribution, in order to prioritize power line mitigation implementation.	Research & Monitoring	1-3	High	Universities, Research institutions, NGOs
2.1.2. Ensure that bustard sensitive areas, migratory routes and movement corridors are included in national energy development environmental assessment criteria and spatial plans.	Governance & Policy	1-12	High	Governments, National and local authorities, Energy developers
2.1.3. Avoid routing power lines through bustard sensitive areas and migratory routes.	Direct Conservation Action	1-12	High	National and local authorities, Energy developers, Governments
2.1.4. Bury or remove power line sections at or near critically important bustard sensitive sites, migratory routes and movement corridors.	Direct Conservation Action	1-12	High	National and local authorities, Energy developers, Governments
2.1.5. Test, through experimentally robust techniques, the effectiveness of bird flight diverters for different bustard species and regions.	Research & Monitoring	1-6	High	Energy companies, Research institutions, NGOs
2.1.6. Obtain approval of effective bird flight diverter types in utility work and utility product specifications.	Direct Conservation Action	1-6	High	National and local authorities, Energy developers, NGOs
2.1.7. Deploy effective and approved bird flight diverters at appropriate bustard sensitive areas and migratory routes.	Direct Conservation Action	1-12	High	Energy developers, National and local authorities
2.1.8. Conduct power line collision monitoring over a period > 1 yr.	Research & Monitoring	1-12	High	NGOs, Energy developers
2.1.9. Assess the demographic implications of the cumulative impact of collisions across the national powerline network.	Research & Monitoring	1-12	High	Energy developers, NGOs, Researchers

Actions	Category	Time frame (years)	Priority	Stakeholders
2.1.10. Based on the outcome of 2.1.9., identify and propose compensatory measures, prioritizing habitat management to support optimal breeding conditions for bustards.	Direct Conservation Action	1-12	High	Energy developers, NGOs, Local authorities
2.1.11. Adapt national legislation to prescribe environmental impact assessment and power line collision monitoring over a period > 1 yr.	Governance & Policy	1-3	High	Governments
2.1.12. Change fence-top strands from barbed to un-barbed in bustard sensitive areas.	Direct Conservation Action	1-12	High	Landowners, OECM/Protected area managers, Local communities
2.1.13. Minimize fencing other than specified in 5.2.6 in bustard sensitive areas.	Direct Conservation Action	1-12	High	Landowners, OECM/Protected area managers, Local communities, National and local authorities
2.1.14. Deploy fence markers to improve their visibility in bustard sensitive areas.	Direct Conservation Action	1-12	High	Landowners, OECM/Protected area managers, Local communities
2.1.15. Ensure that national legislation enforces power line collision mortality data transparency.	Governance & Policy	1-12	High	Governments, National and local authorities
2.1.16. Enhance government participation in relevant CMS Task Forces, such as ETF, and avail of the guidance and discussion in those.	Governance & Policy	1-12	High	Governments
Result 2.2. Bustard collisions with road vehicles and trains are reduced and prevented.				
2.2.1. Ensure that bustard sensitive areas, migratory routes, and movement corridors are integrated into national traffic development plans, environmental assessment criteria, and spatial planning frameworks.	Direct Conservation Action	1-12	High	Transport authorities, NGOs, National and local authorities
2.2.2. Avoid the construction of roads and railways through key bustard-sensitive areas.	Direct Conservation Action	1-12	High	Transport authorities, National and local authorities
2.2.3. Monitor collisions involving road vehicles and trains over a period > 1 yr.	Research & Monitoring	1-3	High	Environmental agencies, Research institutes, NGOs

Actions	Category	Time frame (years)	Priority	Stakeholders
2.2.4. Identify road and railway sections within key bustard areas that are critical for regular bustard movements, through targeted field surveys.	Research & Monitoring	3-6	High	Transport authorities, Research institutions, NGOs
2.2.5. Implement mitigation measures, such as reduced speed limits and warning signage, along critical sections identified as per 2.2.4, to prevent or reduce collisions with road vehicles and trains.	Direct Conservation Action	6-12	High	National and local governments and authorities
Result 2.3. Bustard collision with wind turbines is reduced and prevented.				
2.3.1. Develop spatial collision sensitivity models for key bustard areas, in order to prioritize wind turbine mitigation implementation.	Research & Monitoring	1-3	High	Research institutions, Universities, Energy developers, NGOs, Private sector
2.3.2. Ensure that bustard sensitive areas are included in national renewable energy development environmental assessment criteria and spatial plans.	Governance & Policy	1-12	High	Governments, National and local authorities, Energy developers
2.3.3. Avoid siting wind turbines within bustard sensitive areas, migratory routes and movement corridors according to observed and predicted spatial models.	Direct Conservation Action	1-12	High	National and local authorities, Energy developers, Governments
2.3.4. Ensure that national legislation enforces wind turbine collision mortality data transparency.	Governance & Policy	1-12	High	Governments, National and local authorities
2.3.5. Conduct pre- and post-construction wind turbine collision monitoring over a period > 1 yr.	Research & Monitoring	1-12	High	NGOs, National and local governments, Research institutions
2.3.6. Ensure that power lines associated with renewable energy developments are constructed in accordance with Result 2.1.	Direct Conservation Action	1-12	High	Governments, National and local authorities, Energy developers
Objective 3. Ensure availability of suitable habitats throughout the species' lifecycle				
Result 3.1. Conversion of suitable habitats is reduced/prevented.				
3.1.1. Identify key bustard areas and their habitats.	Research & Monitoring	1-3	High	Governments, OECM/Protected area managers, Research institutions, NGOs

Actions	Category	Time frame (years)	Priority	Stakeholders
3.1.2. Identify and designate priority intervention areas.	Direct Conservation Action	1-6	High	Governments, OECM/Protected area managers, Research institutions, NGOs
3.1.3. Protect key bustard areas from habitat conversion, through designation of international or national protected areas and OECMs, based on land-use planning and zoning.	Direct Conservation Action	1-6	High	Governments, OECM/Protected area managers, Research institutions, NGOs
3.1.4. Raise awareness among relevant stakeholders to develop and implement bustard habitat management plans to avoid conversion of suitable habitats.	Education & Awareness	1-12	High	NGOs, OECM/Protected area managers
3.1.5. Evaluate the effectiveness of agri-environmental actions on delivering suitable habitat for bustards.	Research & Monitoring	1-12	High	NGOs, Governments
3.1.6. Avoid afforestation in areas where it is detrimental to bustard populations.	Direct Conservation Action	1-12	High	OECM/Protected area managers, National and local authorities
3.1.7. Identify agricultural subsidies that are harmful for bustards and their habitats and develop measures to avoid/prevent them.	Governance & Policy	1-12	High	NGOs, Governments
3.1.8. Prevent 'slash and burn' agricultural activities in and around critical bustard habitats.	Direct Conservation Action	1-12	High	National and local authorities, local communities
3.1.9. Assess the presence and habitat use of bustards across individual agricultural fields throughout their annual life cycle.	Research & Monitoring	1-12	High	Research institutions, NGOs, Agricultural associations, Local farmers and communities
3.1.10. Review and update the network of critically important areas, including Important Bird Areas (IBAs), based on the latest knowledge of bustard distribution.	Direct Conservation Action	1-12	High	BirdLife International partners, OECM/Protected area managers, NGOs

Actions	Category	Time frame (years)	Priority	Stakeholders
Result 3.2. Adaptive management of grasslands/rangelands is implemented.				
3.2.1. Develop grazing regimes optimal for the ecological needs of different bustard species, aligned with national/regional regulations in bustard areas.	Direct Conservation Action	1-3	High	National and local governments and authorities, landowners, NGOs, OECM/Protected area managers
3.2.2. Apply the grazing regimes developed as per 3.2.1.	Direct Conservation Action	1-12	High	National and local governments and authorities, landowners, NGOs, OECM/Protected area managers, Local communities
3.2.3. Promote locally adapted livestock breeds in critical bustard habitats, particularly to avoid over- and undergrazing.	Direct Conservation Action	1-12	High	National and local governments and authorities, landowners, OECM/Protected area managers
3.2.4. Prescribe sustainable fire regimes where applicable to secure habitats for bustards.	Direct Conservation Action	1-12	High	National and local governments and authorities
3.2.5. Adapt mowing/cutting regime to bustards' lifecycle.	Direct Conservation Action	1-12	High	National and local governments and authorities, landowners, OECM/Protected area managers
3.2.6. Avoid intensification processes in grasslands serving as bustard habitats.	Direct Conservation Action	1-12	High	National and local governments and authorities, landowners, OECM/Protected area managers
Result 3.3. Accidental fire events are prevented/reduced.				
3.3.1. Promote biodiversity-friendly fire breaks to prevent both unintentional and lightning-induced natural fires from spreading in fire-adapted ecosystems.	Direct Conservation Action	1-12	High	National and local governments and authorities, landowners, OECM/Protected area managers
3.3.2. Raise awareness in nomadic pastoral communities about the risks of unsupervised fire used for cooking in fire-adapted savannah ecosystems.	Education & Awareness	1-6	High	NGOs, Local communities, Local governments

Actions	Category	Time frame (years)	Priority	Stakeholders
3.3.3. Improve trail/track maintenance to reduce the risk of unintentional fire caused by exhaust pipes of cars.	Direct Conservation Action	1-12	High	Local governments, Private sector, Landowners, Local communities
3.3.4. Include preventive and emergency measures for accidental fire events in management plans for protected areas and OECMs.	Governance & Policy	1-12	High	National and local governments, OECM/Protected area managers, NGOs
3.3.5. Develop maps of fire-prone habitats within the distribution area of bustards.	Research & Monitoring	1-3	High	Research institutions, NGOs
Result 3.4. Negative impacts of invasive alien species (IAS) are reduced.				
3.4.1. Identify IAS and develop distribution models in critical bustard habitats.	Research & Monitoring	1-3	High	Research institutions, Universities, NGOs
3.4.2. Develop national long-term strategies and management plans and include the key bustard areas in the existing ones to reduce IAS in key bustard areas.	Governance & Policy	1-6	High	Governments, NGOs
3.4.3. Implement the actions included in the plan to prevent and/or reduce the introduction and spread of IAS.	Direct Conservation Action	1-12	High	National and local governments, OECM/Protected area managers, NGOs, Landowners
Result 3.5. Connectivity of habitats is improved.				
3.5.1. Prevent/mitigate habitat fragmentation in key habitats and along flyways.	Direct Conservation Action	1-12	High	National and local governments, OECM/Protected area managers, NGOs
3.5.2. Improve knowledge of movement pattern.	Research & Monitoring	1-12	High	Research institutes, NGOs, OECM/Protected area managers
3.5.3. Improve habitats based on knowledge on evidence-based spatial habitat restoration.	Direct Conservation Action	1-12	High	OECM/Protected area managers, NGOs

Actions	Category	Time frame (years)	Priority	Stakeholders
3.5.4. Prevent human-induced barriers along migratory routes and movement corridors.	Direct Conservation Action	1-12	High	National and local governments, OECM/Protected area managers, NGOs
3.5.5. Include bustard ecological requirements in and seek synergies with existing and proposed connectivity projects.	Direct Conservation Action	1-12	High	National and local governments, OECM/Protected area managers, NGOs, Universities
Objective 4. Reduce/halt illegal and unsustainable take				
Result 4.1. Illegal take is reduced.				
4.1.1. Ensure that legislation is relevant, effectively implemented and enforced.	Governance & Policy	1-12	High	Governments
4.1.2. Develop patrolling system in sensitive bustard areas and time periods.	Direct Conservation Action	1-12	High	OECM/Protected Area Management Authorities, Communities
4.1.3. Promote awareness-raising campaigns in relevant communities, including hunters.	Education & Awareness	1-12	High	Governments, NGOs, OECM/Protected Area Management Authorities
4.1.4. Enhance government participation in relevant CMS Task Forces, such as MIKT, ITTEA and SWAITBT, and avail of the guidance and discussion in those.	Governance & Policy	1-12	High	Governments
4.1.5. Enhance monitoring of illegal take by deploying and integrating innovative technologies to improve detection and reporting.	Research & Monitoring	1-12	High	Research institutions, OECM/Protected area managers
Result 4.2. Unsustainable hunting is reduced/halted.				
4.2.1. Promote dialogues with hunting communities about the ecological importance of the species and develop sustainable hunting practices.	Direct Conservation Action	1-6	High	NGOs, OECM/Protected Area Management Authorities, hunting communities

Actions	Category	Time frame (years)	Priority	Stakeholders
4.2.2. Enforce the hunting quotas specified in relevant legislations.	Governance & Policy	1-12	High	Governments, National and local authorities
4.2.3. Develop a robust adaptive harvest management modelling framework on flyway scale based on demographic and hunting data.	Research & Monitoring	1-3	High	Universities, Research institutions, NGOs, Governments
4.2.4. Based on the framework in 4.2.3, propose national hunting quota for huntable species.	Governance & Policy	4-6	High	Governments, NGOs
Result 4.3. Illegal trade is reduced/halted.				
4.3.1. Identify channels, including social media, and actors involved in illegal trade and places of sale and take measures against their activities.	Direct Conservation Action	1-12	High	Governments, National and local authorities, TRAFFIC
4.3.2. Raise awareness along the trade chain to reduce demand.	Education & Awareness	1-12	High	Governments, National and local authorities, NGOs, Local communities
4.3.3. Provide publicly accessible channels for reporting illegal wildlife trade.	Direct Conservation Action	1-3	High	National and local authorities, NGOs, CITES
4.3.4. Review effectiveness of existing legislation regarding illegal trade.	Governance & Policy	1-6	High	Governments, National and local authorities
4.3.5. Ensure that existing legislation is relevant, effectively implemented and enforced.	Research & Monitoring	1-12	High	Governments, National authorities, NGOs
4.3.6. Review effectiveness and relevance of the provisions of CITES and other MEAs concerning wildlife trade.	Governance & Policy	1-12	High	Secretariats and Parties to CITES, CMS, and the Bern Convention
Result 4.4. Perpetrators of illegal activities are subject to appropriate legal sanctions.				
4.4.1. Ensure that legislation is in place and effectively enforced to adequately sanction perpetrators of illegal activities.	Governance & Policy	1-12	High	Governments, National authorities

Actions	Category	Time frame (years)	Priority	Stakeholders
Objective 5. Reduce predation by anthropogenically subsidized predators				
Result 5.1. Risk of predation by domestic animals is reduced.				
5.1.1. Implement community awareness programs to educate pet owners about the impact of free-roaming dogs and other animals on wildlife and to encourage responsible pet ownership practices.	Education & Awareness	1-12	High	NGOs, Local communities, Local governments
5.1.2. Designate specific zones where pets (dogs and other animals) are not allowed, especially during breeding seasons.	Direct Conservation Action	1-6	High	Local governments, OECM/Protected area managers, Local communities
5.1.3. Create and enforce regulations to keep domestic animals out of critical bustard habitats.	Governance & Policy	1-12	High	National and local governments and authorities
5.1.4. Promote community-led initiatives to control populations of stray dogs and other pets and involve local communities in monitoring and reporting sightings of these animals.	Direct Conservation Action	1-12	High	National and local governments and authorities
Result 5.2. Predation by anthropogenically increased wild predators is reduced.				
5.2.1. Implement relevant CMS Great Bustard MoU guidelines and develop new species-specific guidelines.	Governance & Policy	1-12	High	GB MoU Signatories, Bustard MsAP Range States
5.2.2. Conduct regular monitoring, including the use of camera traps and other technologies, in bustard habitats to detect and manage the presence of predators.	Research & Monitoring	1-12	High	NGOs, Research institutions, OECM/Protected area managers, Collaborating hunting associations
5.2.3. Identify key predators and assess their impact on bustard populations, particularly on breeding failure and adult mortality.	Research & Monitoring	1-3	High	NGOs, Research institutions, OECM/Protected area managers, Collaborating hunting associations

Actions	Category	Time frame (years)	Priority	Stakeholders
5.2.4. Develop and evaluate predator control strategies in collaboration with relevant stakeholders.	Direct Conservation Action	1-6	High	OECM/Protected area managers, Collaborating hunting associations, NGOs
5.2.5. Reduce factors that attract predators and scavengers in key bustard areas, including vertical constructions in open landscapes, and the removal or management of vegetation in cases where it provides cover or advantage for predators.	Direct Conservation Action	1-12	High	OECM/Protected area managers, Landowners, Collaborating hunting associations, Infrastructure planners
5.2.6. Create fenced bustard enclosures where feasible and appropriate.	Direct Conservation Action	1-12	Medium	OECM/Protected area managers, Collaborating hunting associations, NGOs
Objective 6. Reduce levels of disturbance caused by anthropogenic activities				
Result 6.1. Disturbance caused by anthropogenic activities is reduced.				
6.1.1. Regulate recreational activities in critical bustard habitats.	Direct Conservation Action	1-12	High	National and local governments, OECM/Protected area managers, NGOs
6.1.2. Work with herders and local communities to manage livestock grazing and farming activities in critical habitats.	Direct Conservation Action	1-12	High	National and local governments, OECM/Protected area managers, NGOs
6.1.3. Raise awareness of local communities, tourists, and stakeholders on the impact of human disturbance on bustards.	Education & Awareness	1-12	High	National and local governments, OECM/Protected area managers, NGOs, Local communities
6.1.4. Establish protected areas and designate OECMs to limit human disturbance.	Direct Conservation Action	1-12	High	National and local governments
6.1.5. Ensure that disturbance impacts are considered in ESIAs/EIAs for infrastructure development in or near bustard sensitive areas.	Governance & Policy	1-12	High	Governments, national and local authorities

Actions	Category	Time frame (years)	Priority	Stakeholders
Objective 7. Prevent genetic threats to wild populations				
Result 7.1. Gene flow is maintained, and inbreeding is prevented.				
7.1.1. Develop spatial conservation planning strategy, including increasing protected area coverage of key bustard habitats based on historical and current distribution.	Governance & Policy	1-6	High	National governments and authorities, OECM/Protected area managers, NGOs
7.1.2. Restore and protect the habitats of critical corridors and stepping-stones increasing population connectivity.	Direct Conservation Action	1-12	High	National and local governments, OECM/Protected area managers, NGOs
Result 7.2. IUCN guidelines for reintroduction and conservation translocations are followed.				
7.2.1. Ensure capacity development and facilitate training of relevant authorities.	Direct Conservation Action	1-12	High	Governments, National and local authorities
7.2.2. Implement management plans that follow IUCN guidelines.	Governance & Policy	1-12	High	National governments and authorities
7.2.3. Align national policy to IUCN guidelines.	Governance & Policy	1-3	High	National governments and authorities
Result 7.3. Genetic swamping and hybrid swarms are prevented.				
7.3.1. Establish science-based thresholds for the number and duration of releases of captive bred birds.	Governance & Policy	1-3	High	Governments, CITES authorities, Research institutions
7.3.2. Regulate the number of captive breeding programmes.	Governance & Policy	1-12	High	Governments, CITES authorities, Captive breeding centers
7.3.3. Maintain pedigree data from captive breeding centers and give the right of access to international expert groups for advice and external review.	Governance & Policy	1-12	High	Governments, CITES authorities

Actions	Category	Time frame (years)	Priority	Stakeholders
Objective 8. Mitigate the negative effects of climate change				
Result 8.1. Suitable habitats are available under predicted climate scenarios.				
8.1.1. Develop habitat suitability models under future climate scenarios and identify climate refugia.	Research & Monitoring	1-3	High	Research institutions, Universities, Climate modeling centers
8.1.2. Assess the role of microrefugia and identify effective management strategies to enhance reproductive outcomes.	Research & Monitoring	3-6	High	Research institutions, NGOs, OECM/Protected area managers
8.1.3. Include model outputs into protected area network planning to protect and manage suitable habitats under changing climate conditions.	Direct Conservation Action	6-12	High	National and local governments and authorities, OECM/Protected area managers
Result 8.2. Mortality from severe weather events is reduced.				
8.2.1. Assess impacts of severe weather events on reproductive success and adult mortality.	Research & Monitoring	1-6	Medium	Research institutions, Universities
8.2.2. Develop contingency plans for extreme climatic events, such as wildfires, flooding and extreme weather conditions, on national/regional/international level.	Direct Conservation Action	1-12	Medium	Governments, national authorities and research institutions
Objective 9. Support conservation through cross-cutting actions that contribute to addressing knowledge gaps				
Result 9.1. Bustard population and demographic parameters are estimated.				
9.1.1. Execute systematic monitoring programs and standardized data collection methodologies on population estimates, range, abundance and trends to ensure comparable and high-quality data across countries and time periods.	Research & Monitoring	1-12	High	NGOs, OECM/Protected area managers
9.1.2. Research bustard breeding performance, adult and fledgling survival rates, and other parameters required for population viability analysis.	Research & Monitoring	1-12	Medium	Research institutes

Actions	Category	Time frame (years)	Priority	Stakeholders
9.1.3. Foster regional and international collaboration by facilitating partnerships between countries with strong monitoring programmes and those with limited data to encourage knowledge-sharing and technical support.	Direct Conservation Action	1-12	High	NGOs, Governments, CMS
Result 9.2. Bustard movements and population connectivity are described and analyzed.				
9.2.1. Collect movement data from suitable samples of bustards within regional populations by means of tracking studies (e.g., GPS loggers, multi-sensor devices).	Research & Monitoring	1-12	High	Research institutions, NGOs, OECM/Protected area managers
9.2.2. Model general bustard population movements from observational data, e.g., citizen science observations and counts.	Research & Monitoring	1-12	High	Research institutions, NGOs
9.2.3. Assess connectivity between isolated bustard populations through genetic and/or stable isotope techniques.	Research & Monitoring	1-12	High	Research institutions, Universities
Result 9.3. Bustard overhead cabling and wind turbine collision mortality rates are estimated throughout bustard sensitive areas.				
9.3.1. Record and monitor bustard overhead cabling and wind turbine collisions according to recommended protocols, including CMS ETF protocols, adjusting for survey biases.	Research & Monitoring	1-6	High	NGOs, utilities
9.3.2. Collate and disseminate bustard overhead cabling and wind turbine collision mortality data from published and unpublished sources, including peer-reviewed publications, internal reports for utilities, environmental impact studies, and other 'grey literature' sources.	Research & Monitoring	1-6	High	NGOs, research institutions
9.3.3. Periodically analyze, review and disseminate data as per 9.3.1. and 9.3.2. to develop, improve and implement mitigation measures.	Research & Monitoring	1-12	High	NGOs, research institutions
Result 9.4. Knowledge and understanding of bustard ecology are improved.				
9.4.1. Collect existing data and promote research on species distribution models, habitat use, resource mapping, diet analysis, and genetics for taxonomy.	Research & Monitoring	1-12	Medium	Research institutes

Actions	Category	Time frame (years)	Priority	Stakeholders
Objective 10. Intensify CEPA for bustard conservation				
Result 10.1. Communication is intensified.				
10.1.1. Enhance information exchange through social media channels and websites.	Education & Awareness	1-12	Medium	CMS, CMS Parties, NGOs
10.1.2. Launch mass media campaigns to reach out to a wider audience.	Education & Awareness	1-6	Medium	CMS, CMS Parties, NGOs
10.1.3. Utilize CMS communication channels and events, such as World Migratory Bird Day.	Education & Awareness	1-12	Medium	CMS Parties, NGOs
Result 10.2. Education is strengthened.				
10.2.1. Develop and disseminate educational materials (posters, brochures, documentary).	Education & Awareness	1-12	High	NGOs, National Park communication staff
10.2.2. Develop and conduct school and university outreach programmes, such as talks, nature programmes and competitions.	Education & Awareness	1-12	Medium	NGOs, Educators, Universities
10.2.3. Organize workshops and conferences on bustards and their conservation and include bustard-related topics in agendas of other events, if relevant.	Education & Awareness	1-12	High	Universities, governmental organizations, NGOs
10.2.4. Develop a toolkit for bustard conservation education purposes.	Education & Awareness	1-3	Medium	NGOs, Educators
10.2.5. Engage and train young ambassadors in conservation as per the toolkit.	Education & Awareness	1-12	Medium	NGOs, Educators, Youth groups
10.3. Public awareness is raised.				
10.3.1. Designate dedicated bustard day events, e.g., for the International Bustard Awareness Day.	Education & Awareness	1-12	Medium	NGOs, Educators, Schools, National Park staff
10.3.2. Engage influencers and local religious and cultural leaders to support conservation messages.	Education & Awareness	1-12	Medium	NGOs, Local communities

Actions	Category	Time frame (years)	Priority	Stakeholders
10.3.3. Design and place information boards and signages in bustard habitats.	Education & Awareness	1-12	Medium	NGOs, OECM/Protected area managers, Local governments
10.3.4. Promote citizen science programmes involving locals, schools, and photographers to encourage data collection and reporting.	Education & Awareness	1-12	High	National and local governments, Universities, NGOs
10.3.5. Incorporate bustards and their conservation into local community events and art.	Education & Awareness	1-12	Medium	Local governments and communities, NGOs
10.3.6. Seek cross-linkages and partnership between groups working on or involved with conservation (e.g., youth groups, educational and research organizations, local and global NGOs), in collaboration with local, national and international conservation partners.	Education & Awareness	1-12	High	Local and global NGOs, educational and research organizations, youth groups, conservation experts

5.2 Priorities by Range State

Critically Endangered bustard species, such as the Great Indian Bustard, Lesser and Bengal Floricans, as well as species experiencing steep rates of decline such as the Great Bustard across its range, Little Bustard in the Iberian Peninsula, Karoo and Ludwig's Bustards, African Houbara in the Canary Islands, and others as detailed in the Appendices require urgent attention. In these cases, priority actions must be implemented without delay to halt further decline and prevent extinction. This requires targeted measures, adequate resources and strong coordination among Range States, to protect the remaining populations and secure their habitats, and address the most immediate threats.

This subchapter summarizes the relevance and urgency of each result identified in Table 3 for all Range States.

Table 4. Summary of Range States and Results to be Achieved

This table cross-references each Range State with the results presented in the previous table, indicating the priority level for achieving each result in that country. This overview provides a quick reference for targeting conservation efforts, facilitating coordination between stakeholders, and guiding the allocation of resources at national and regional levels.

Legend:

Critical | High | Medium | Low | Unknown | Not relevant

Objective	1			2			3					4				5		6	7			8		9				10		
Result / Country	1.1	1.2	1.3	2.1	2.2	2.3	3.1	3.2	3.3	3.4	3.5	4.1	4.2	4.3	4.4	5.1	5.2	6.1	7.1	7.2	7.3	8.1	8.2	9.1	9.2	9.3	9.4	10.1	10.2	10.3
Afghanistan																														
Albania																														
Algeria																														
Angola																														
Armenia																														
Australia																														
Austria																														
Azerbaijan																														
Bahrain																														
Benin																														
Botswana																														
Bulgaria																														
Burkina Faso																														

Legend:

Critical	High	Medium	Low	Unknown	Not relevant

Objective	1			2			3					4				5		6	7			8		9				10		
Result / Country	1.1	1.2	1.3	2.1	2.2	2.3	3.1	3.2	3.3	3.4	3.5	4.1	4.2	4.3	4.4	5.1	5.2	6.1	7.1	7.2	7.3	8.1	8.2	9.1	9.2	9.3	9.4	10.1	10.2	10.3
Burundi																														
Cambodia																														
Cameroon																														
Central African Republic																														
Chad																														
China, People's Republic of																														
Congo																														
Côte d'Ivoire																														
Croatia																														
Czechia																														
Democratic People's Republic of Korea																														
Democratic Republic of the Congo																														
Djibouti																														
Egypt																														
Eritrea																														
Eswatini																														
Ethiopia																														
France																														
Gabon																														
Gambia																														
Georgia																														
Germany																														

Legend:

Critical	High	Medium	Low	Unknown	Not relevant

Objective	1			2			3					4				5		6	7			8		9				10		
Result / Country	1.1	1.2	1.3	2.1	2.2	2.3	3.1	3.2	3.3	3.4	3.5	4.1	4.2	4.3	4.4	5.1	5.2	6.1	7.1	7.2	7.3	8.1	8.2	9.1	9.2	9.3	9.4	10.1	10.2	10.3
Ghana																														
Greece																														
Guinea																														
Guinea-Bissau																														
Hungary																														
India																														
Indonesia																														
Iran (Islamic Republic of)																														
Iraq																														
Israel																														
Italy																														
Jordan																														
Kazakhstan																														
Kenya																														
Kuwait																														
Kyrgyzstan																														
Lebanon																														
Lesotho																														
Libya																														
Malawi																														
Mali																														
Mauritania																														
Mongolia																														
Morocco																														
Mozambique																														

Legend:

Critical	High	Medium	Low	Unknown	Not relevant

Objective	1			2			3					4				5		6	7			8		9				10		
Result / Country	1.1	1.2	1.3	2.1	2.2	2.3	3.1	3.2	3.3	3.4	3.5	4.1	4.2	4.3	4.4	5.1	5.2	6.1	7.1	7.2	7.3	8.1	8.2	9.1	9.2	9.3	9.4	10.1	10.2	10.3
Namibia																														
Nepal																														
Niger																														
Nigeria																														
North Macedonia																														
Oman																														
Pakistan																														
Palestine																														
Papua New Guinea																														
Portugal																														
Qatar																														
Republic of Korea																														
Republic of Moldova																														
Romania																														
Russian Federation																														
Rwanda																														
Saudi Arabia																														
Senegal																														
Serbia																														
Sierra Leone																														
Slovakia																														
Somalia																														
South Africa																														

Legend:

Critical	High	Medium	Low	Unknown	Not relevant

Objective	1			2			3					4				5		6	7			8		9				10		
Result / Country	1.1	1.2	1.3	2.1	2.2	2.3	3.1	3.2	3.3	3.4	3.5	4.1	4.2	4.3	4.4	5.1	5.2	6.1	7.1	7.2	7.3	8.1	8.2	9.1	9.2	9.3	9.4	10.1	10.2	10.3
South Sudan																														
Spain																														
Sudan																														
Syrian Arab Republic																														
Tajikistan																														
Tanzania																														
Togo																														
Tunisia																														
Türkiye																														
Turkmenistan																														
Uganda																														
Ukraine																														
United Arab Emirates																														
United Kingdom																														
Uzbekistan																														
Viet Nam																														
Yemen																														
Zambia																														
Zimbabwe																														

Part 6. Coordination and Implementation

6.1 Structure of BWB

Coordination Unit

The governance of BWB is overseen by a Coordination Unit (CU). At the time of writing, the CU consists of four founding members of BWB.

Steering Committee

The Steering Committee (SC) collaborates with individuals, Range States, and stakeholders. Further, the SC facilitates the challenging task of developing the Bustard MsAP, promote research, monitoring, training, and awareness initiatives, and ensure the effective implementation and enforcement of the actions outlined in the Bustard MsAP. Additionally, they help explore funding opportunities for bustard conservation efforts globally. The SC comprises the following members:

- Coordination Unit
- Lead Coordinator for Africa
- Lead Coordinator for Asia
- Lead Coordinator for Australia
- Lead Coordinator for Europe
- Representative of AEMLAP

International Bustard Working Group (IBWG)

Working Group members include the Steering Committee of BWB, Regional Coordinators and individual experts from governments, organizations, research institutes and Range States. The IBWG is overseen by the Coordination Unit. Given that the scope of Bustard MsAP includes four continents, the aim is for an inclusive International Bustard Working Group. Representation is particularly sought from countries that host core remaining populations of one or more bustard species, and those with specialist knowledge and expertise that is considered necessary for the development of the Bustard MsAP. The IBWG communicates predominantly electronically, but members may also be invited to participate in Action Planning Workshops. Membership may be granted by invitation from the Coordination Unit.

The International Bustard Working Group is formed by the following members:

<u>Bustards Without Borders</u>

- Steering Committee

<u>Asia</u>

- Regional Coordinator South Asia
- Regional Coordinator Southwest Asia
- Regional Coordinator Central and East Asia

<u>Europe</u>

- Regional Coordinator Europe

<u>Africa</u>

- Regional Coordinator Southern Africa
- Regional Coordinator Eastern Africa
- Regional Coordinator Western Africa
- Regional Coordinator Northern Africa

<u>Australia</u>

- Regional Coordinator Australia

- Representative from BirdLife International
- Representative from CMS Secretariat, Avian Species Team
- Representative of CMS Scientific Council
- Other key experts and NGO partners invited by the CU

6.2 Periodic reviews

Mid-term Progress Review

A Mid-term Progress Review is planned for 2031 (one year ahead of CMS COP17), marking the halfway point of the Bustard MsAP's implementation period. The Coordination Unit will lead the information-gathering process through Regional Coordinators and other established networks. This assessment will evaluate progress toward existing objectives while also informing decision-making and adapting actions in response to evolving circumstances and emerging threats.

Final Progress Review

A Final Progress Review on the implementation of the Bustard MsAP is scheduled for 2037 (one year ahead of CMS COP19), to be prepared by the Coordination Unit. This review will evaluate both the implementation process and the overall impact on the populations of all 26 species across their respective ranges. Range States will be encouraged to submit reports covering progress throughout the entire MsAP period to support the final assessment.

Process for Changes to the Plan

An emergency review may be conducted if a significant change in the species' status occurs before the next scheduled assessment, ensuring a timely response to emerging threats or conservation needs.

6.3 Resource mobilization

Resource mobilization and fundraising are critical to both the coordination and effective implementation of the Bustard MsAP. Without adequate financial support, it is not possible to carry out targeted conservation actions, monitor progress, or sustain the collaborative efforts required across countries and sectors. The costs of coordination include operational costs, office and travel costs. Securing resources also ensures that national and regional stakeholders have the capacity to address key threats and contribute to the objectives laid down in the MsAP. Long-term success depends on sustained investment from a wide range of sources, including governments, NGOs, international donors, and the private sector.

Fundraising opportunities for action plans under CMS:

- Fundraising for the CMS POW implementation: after its adoption by the COP, the MsAP becomes part of the POW
- Migratory Species Champion Programme – encourages long-term financial contributions to CMS initiatives. Champions can be governments, organizations, private sector and individuals
- Grant applications – Secretariat informs stakeholders of funding opportunities and supports grant applications that contribute, e.g., to the implementation of any plan by developing proposals or providing letters of endorsement
- Global Environment Facility (GEF) - the Eighth Replenishment of its Trust Fund (GEF-8, 2022-2026) offers multiple entry points for CMS implementation. Countries could utilize their star allocations in support of the action plan implementation.

6.4 Communication

Effective communication is essential for the conservation of bustard species, many of which remain little known to the public and even to some decision-makers. The threats they face – ranging from habitat loss and collisions to unsustainable hunting and climate change – are similarly underappreciated. Raising awareness about these issues is vital not only to build broad support for conservation efforts but also to ensure the successful implementation of the Bustard MsAP. Clear, targeted communication also plays a key role in mobilizing stakeholders and securing the financial resources needed to protect these vulnerable species.

Public information exchange takes place through the following channels and platforms:

- BWB website (www.bustardswithoutborders.org)
- CMS website (www.cms.int)
- Social media
  - BWB Facebook and Instagram
  - CMS channels (LinkedIn, Instagram, Facebook, X, Bluesky)
- Campaigns
  - International Bustard Awareness Day: BWB initiative, included in the actions to take (Part 5)
  - CMS World Migratory Bird Day: yearly over 300 events around the world and social media engagement nearing 500 million users
- Utilizing CMS's respected image and 'voice' in international media with regular media launch of reports and conservation initiatives through press releases to an extensive list of top-tier media journalists.

References

Abbott, I. 2011. The importation, release, establishment, spread, and early impact on prey animals of the red fox *Vulpes vulpes* in Victoria and adjoining parts of south-eastern Australia. *Australian Zoologist* 35(3): 463–531.

Abdulhasan, N., Abdulrahman, S., Al-Sheikhly, O.F., Ararat, K., Bachmann, A., Obeidi, L.A., Raza, H.A., Salim, M.A. 2017. *Key Biodiversity Areas of Iraq*. Tablet House Publishing, Sulaimani, Iraq.

Abdusalyamov, I.A. 1973. [*Fauna of the Tajik SSR. Volume 9, Part 1.*] Donish, Dushanbe, Tajikistan. [In Russian]

Abril-Colón, I., Alonso, J.C., Palacín, C., Álvarez Martínez, J.M., Ucero, A. 2022. Short-distance nocturnal migration in an island endemic bustard. *Ibis* 164(4): 1145–1159.

Abril-Colón, I., Palacin, C., Ucero, A., Alonso, J.C. 2024. The COVID19 confinement revealed negative anthropogenic effects of unsustainable tourism on endangered birds. *Biological Conservation* 296: 110707.

Adly, A. 2024. Wild hunting season begins with a call to abide by regulations. Gulf Times, September 1. Ministry of Environment and Climate Change, Qatar. Retrieved 22 May 2025 from https://www.gulf-times.com/article/689762/qatar/wild-hunting-season-begins-with-a-call-to-abide-by-regulations.

African Bird Atlas Project. 2025. Species List. https://www.birdmap.africa/coverage.

Aghababyan, K. 2025. A historical overview of Little Bustard *Tetrax tetrax* records in Armenia suggests a need for improved monitoring and conservation measures. *Sandgrouse* 47: 80–86.

Aghainajafi-Zadeh, S., Hemami, M.R., Karami, M., Dolman, P.M. 2010: Wintering habitat use by houbara bustard (*Chlamydotis macqueenii*) in steppes of Harat, central Iran. *Journal of Arid Environments* 74: 912–917.

Aghainajafi-Zadeh, S., Hemami, M.R., Naderi, G., Heydari, F. 2012. Estimation of Houbara Bustard, *Chlamydotis macqueenii*, population density in the central Iranian steppes. *Zoology in the Middle East* 56: 3-8.

Aghasyan, A., Kalashyan, M. (eds). 2010. *The Red Book of Animals of the Republic of Armenia*. Ministry of Nature Protection of the Republic of Armenia, Yerevan, Armenia.

Aidek, A., Ararat, K.M., Awad, S., Azar, S., Itani, F., Khoury F., Ramadan-Jaradi, G. 2025. The Little Bustard *Tetrax tetrax* in Iraq, Syria, Lebanon and Jordan. *Sandgrouse* 47: 38–47.

Aidek, A., Murdouch, D., Khoury, F., Haraldsson, T. 2025. An Annotated Checklist of the Birds of Syria. Species Diversity, Subspecies, Distribution, and Conservation Status. *Jordan Journal of Natural History*. [In press]

Al-Kharisu, Y.H., Al-Wahedi, M., Al-Shamsi, A. 2011. Arabian Bustard Conservation in Yemen: Public Awareness Perspective. *Wildlife Middle East* 6(1): 2.

Al-Rammahi, H.M., Mohammad, M.K. 2022. Birds of conservation concern at Al-Najaf desert, southern desert of Iraq. *Bulletin of Iraqi Natural History Museum* 17: 67–87.

Alonso, H., Correia, R.A., Marques, A.T., Palmeirim, J.M., Moreira, F., Silva, J.P. 2020. Male post-breeding movements and stopover habitat selection of an endangered short-distance migrant, the Little Bustard *Tetrax tetrax*. *Ibis* 162(2): 279–292.

Alonso, J.C., Morales, M.B., Alonso, J.A. 2000. Partial migration, and lek and nesting area fidelity in female Great Bustards. *Condor* 102: 127–136.

Alonso, J.C., Palacín, C., Martín, C.A., Mouati, N., Arhzaf, Z.L., Azizi, D. 2005. The Great Bustard *Otis tarda* in Morocco: a re-evaluation of its status. *Ardeola* 52(1): 79–90.

Alonso, J.C., Magaña, M., Alonso, J.A., Palacín, C., Martín, C.A., Martín, B. 2009a. The most extreme sexual size dimorphism among birds: Allometry, selection, and early juvenile development in the Great Bustard (*Otis tarda*). *The Auk* 126(3): 657–665.

Alonso, J.C., Martín, C.A., Alonso, J.A., Lieckfeldt, D., Magaña, M., Palacín, C., Pitra, C. 2009b. Genetic diversity of the great bustard in Iberia and Morocco: risks from current population fragmentation. *Conservation Genetics* 10: 379–390.

Alonso, J.C., Palacín, C., Alonso, J.A., Martín, C.A. 2009c. Post-breeding migration in male great bustards: low tolerance of the heaviest Palaearctic bird to summer heat. *Behavioral Ecology and Sociobiology* 63: 1705–1715.

Alonso, J.C., Álvarez-Martínez, J.M., Palacín, C. 2012a. Leks in ground-displaying birds: hotspots or safe places? *Behavioral Ecology* 23: 491–501.

Alonso, J.C., Magaña, M., Álvarez-Martínez, J.M. 2012b. Male display areas in exploded leks: the importance of food resources for male mating success. *Behavioral Ecology* 23: 1296–1307.

Alonso, J.C., Palacín, C., Onrubia, A., Aboulouafae, R., Amezian, M., El Idrissi Essougrati, A., El Khamlichi, R., Noaman, M. 2016a. Alarming decline and range reduction of the highly threatened Great Bustard *Otis tarda* in Morocco. *Ostrich* 87(3): 277–280.

Alonso, J.C., Salgado, I., Palacín, C. 2016b. Thermal tolerance may cause sexual segregation in sexually dimorphic species living in hot environments. *Behavioral Ecology* 27: 717–724.

Alonso, J.C., Palacín, C. 2022. Alarming decline of the Great Bustard *Otis tarda* world population over the last two decades. *Bird Conservation International* 32: 523–530.

Alonso, J.C., Abril-Colón, I., Palacín, C., Ucero, A., Álvarez-Martínez, J.M. 2022. Maximizing sexual signal transmission: use of multiple display sites by male houbara bustards. *Behavioral Ecology and Sociobiology* 76: 123.

Alonso, J.C., Abril-Colón, I., Ucero, A., Palacín, C. 2024a: Anthropogenic mortality threatens the survival of Canarian houbara bustards. *Scientific Reports* 14(1): 2056.

Alonso J.C., Abril-Colón, I., Ucero, A., Palacín, C. 2024b. Precipitation and female experience are major determinants of the breeding performance of Canarian houbara bustards. *Wildlife Biology* 2024: e01345.

AlSheikhly, O.F., Fazaa N.A., AlFalahi J.A., Haba M.K., AlBarazengy, A.N. 2020. The illegal hunting and trapping: serious threats to the fate of the Asian Houbara *Chlamydotis macqueenii* in Iraq. *Aalborg Academy Journal of Pure Sciences* 1: 1–13.

Ambros, M., Balla, M., Bohuš, M., Ceľuch, M., Cvachová, A., Čaboun, V., Danko, Š., Darolová, A., David, S., Demko, M., Dítě, D., Dražil, T., Feráková, V., Fulín, M., Galvánek, D., Gavlas, V., Gojdičová, E., Hodálová, I., Horsák, M., Hrivnák, R., Chavko, J., Janák, M., Jarolímek, I., Kaňuch, P., Karaska, D., Kautman, J., Kmeťová, Z., Korňan, J., Koščo, J., Krištín, A., Kropil, R., Kubandová, M., Kubínska, A., Kulfan, J., Lasák, R., Lehotská, B., Lengyel, J., Longauer, R., Maderič, B., Majzlan, O., Marhold, K., Matis, Š., Mereďa ml., P., Novotný, J., Oťahelová, H., Pačenovský, S., Polák, P., Rajtar, R., Rizman, I., Rybanič, R., Saniga, M., Sárossy, M., Schwarz, M., Slobodník, V., Stanová, V., Svetlík, J., Šebeň, V., Šeffer, J., Šmelko, Š., Šteffek, J., Trnka, A., Trnka, R., Valachovič, M., Vavrová, Ľ., Vladovič, J. 2005. [*Favourable conservation status of habitats and species of European importance. Manual for management programmes for NATURA 2000 sites*]. State Nature Conservancy of the Slovak Republic, Banská Bystrica, Slovakia. pp. 734. [In Slovak]

Amir, O.G. 2006. *Wildlife trade in Somalia*. Report to the IUCN SSC Antelope Specialist Group. Mogadishu, Somalia.

Andrén, H. 1973. Corvid density and nest predation in relation to forest fragmentation: A landscape perspective. *Ecology* 73(3): 794–804.

Andryushchenko, Y. 2020. Threats for wintering Great Bustards in southern Ukraine. Presented at the Fourth Meeting of Signatories (MOS4) of the Memorandum of Understanding on the Conservation and Management of the Middle-European Population of the Great Bustard. 12-15 March 2018. Bad Belzig, Germany. UNEP/CMS/GB/MOS4. https://www.cms.int/en/meeting/fourth-meeting-signatories-mos4-memorandum-understanding-conservation-and-management-middle.

Antonchikov, A. 2011. [Little Bustard: Current Situation and Conservation Prospects]. [*Steppe Bulletin*] 31: 32–38. [In Russian]

Antonchikov, A.N. 2013. [Which Strategy Will Save the Great Bustard?] [*Steppe Bulletin*] 37: 51–52. [In Russian]

Ash, J., Atkins, J. *Birds of Ethiopia and Eritrea. An Atlas of Distribution*. 2009. Christopher Helm, London, UK. pp. 138–141.

Ash, J.S., Miskell, J.E. 1998. *Birds of Somalia*. Pica Press, Sussex, UK.

Ashoori, A., Tayefeh, F.H., Campeau, L.P. 2025. Iran's Little Bustards *Tetrax tetrax* show the first signs of a renewed decline: an updated status, 2016–2024. *Sandgrouse* 47: 102–110.

Aticho, A., Beyene, A., Zelelew, S.A., Puok, C., Gosler, A.G., Stenseth, N.C., Chala, D. 2024. Birds as sacred 'children of god', beholders of spirit and symbols of twinhood: Human–bird interaction among the Nuer in western Ethiopia. *People and Nature* 6: 2418–2430.

Attié, C., Munoz, A., Chevasson, O., Bretagnolle, V. 2022. Captive breeding, handling and care, and the impact of releases on wild populations. *In*: Bretagnolle, V., Traba, J., Morales, M.B. (eds). *Little Bustard: Ecology and Conservation.* Springer Nature, Switzerland. pp. 193–223.

Azafzaf, H., Sande, E., Evans, S.W., Smart, M., Collar, N.J. 2005. International Action Plan for Houbara Bustard *Chlamydotis undulata undulata*. BirdLife International, Nairobi, Kenya.

Azar, J.F., Chalah, T., Rautureau, P., Lawrence, M., Hingrat, Y. 2018. Breeding success and juvenile survival in a reintroduced captive-bred population of Asian houbara bustards in the United Arab Emirates. *Endangered Species Research* 35: 59–70.

Bacon, L. 2017. [Study of the reproductive parameters and dynamics of a reinforced population of North African houbara bustards (*Chlamydotis undulata undulata*) in Morocco]. Masters of Science thesis, Muséum National d'Histoire Naturelle, Aix-Marseille University, Marseille, France. [In French]

Bacon, L., Robert, A., Hingrat, Y. 2019. Long-lasting breeding performance differences between wild-born and released females in a reinforced North African houbara bustard *Chlamydotis undulata undulata* population: a matter of release strategy. *Biodiversity and Conservation* 28: 553–570.

Bailey, T., Silvanose, C.D., Naldo, J., Combreau, O., Launay, F. Wernery, U., Kinne, J., Gough, R., Manvell, R. 2000. Health considerations of the rehabilitation of illegally traded houbara bustards *Chlamydotis undulata macqueenii* in the Middle East. *Oryx* 34(4): 325–334.

Bailey, T. 2008. *Diseases and Medical Management of Houbara Bustards and Other Otididae*. National Avian Research Center, Abu Dhabi, UAE.

Baker, L., Baker, N. 1985–2024. Tanzania Bird Atlas. http://tanzaniabirdatlas.net/nmaps.html.

Bankovics, A. 2005. A general overview of the threats of Hungarian Great Bustards (*Otis tarda*). *Aquila* 112: 135–142.

Barati, A., Abdulkarimi, R., Alonso, J.C. 2015. Recent status and population decline of the Great Bustard *Otis tarda* in Iran. *Bird Conservation International* 25(3): 377–384.

Barilani, M., Deregnaucourt, S., Gallego, S., Galli, L., Mucci, N., Piombo, R., Puigcerver, M., Rimondi, S., Rodríguez-Teijeiro, J.D., Spanò, S., Randi, E. 2005. Detecting hybridization in wild (*Coturnix c. coturnix*) and domesticated (*Coturnix c. japonica*) quail populations. *Biological Conservation* 126: 445–455.

Barrientos, R., Alonso, J.C., Ponce, C., Palacín, C. 2011. Meta-Analysis of the effectiveness of marked wire in reducing avian collisions with power lines. *Conservation Biology* 25: 893–903.

Barrientos, R., Ponce, C., Palacín, C., Martín, C.A., Martín, B., Alonso, J.C. 2012. Wire marking results in a small but

significant reduction in avian mortality: a BACI designed study. *PLOS ONE* 7(3): e32569.

Bauer, H.G., Bezzel, E., Fiedler, W. 2005. [*The Compendium of the Birds of Central Europe. All about Biology, Threats, and Conservation*]. AULA Verlag Wiebelsheim, Hunsrück, Germany. [In German]

Baumgart, W., Kasparek, M., Stephan, B. 1995. [*The birds of Syria: an overview*]. Kasparek, Heidelberg, Germany. [In German]

Beehler, B.M., Pratt, T.K. 2016. *Birds of New Guinea: distribution, taxonomy, and systematics*. Princeton University Press, Princeton, USA.

Belhemra, M., Naloufi, A., Berredjouh, D., Doubbakh, S., Harzall, H., Farhi, Y., Boukamza, M. 2006. [Houbara in Algeria: conservation perspectives] [International Conference on Desertification and Sustainable Development, 10-12 June]. CRSTRA, Biskra, Algeria. [In French]

Berg, H.M., Schedl, B., Teufelbauer, N. 2023. [Little Bustard, *Tetrax tetrax*]. *In:* Teufelbauer, N., Seaman, B., Hohenegger, J.A., Nemeth, E., Karner-Ranner, E., Probst, R., Berger, A., Lugerbauer, L., Berg, H. M.,Laßnig-Wlad, C. (eds). [*Atlas of Breeding Birds of Austria 2013–2018*]. pp. 578. BirdLife Österreich, Vienna, Austria. [In German]

Bergier, P., Thévenot, M., Qninba, A., Houllier, J.R. 2017. [*Birds of the Atlantic Sahara of Morocco*.] French Ornithological Study Society, Paris, France. [In French]

Bergier, P., Thévenot, M., Qninba, A., Houllier, J. R. 2022. [*Birds of Morocco*]. French Ornithological Study Society, Paris, France. [In French]

Bernotat, D., Rogahn, S., Rickert, C., Follner, K., Schönhofer, C. 2018. [Guidelines. Species and Habitat Protection Assessment for Overhead Line Projects]. German Federal Agency for Nature Conservation Document 512, Bonn, Germany. [In German]

Berredjouh, D. 2021. [Bioecological parameters linked to fluctuations in Houbara Bustard populations in the Besbes, Ouled Djalel and Ras El Miaad regions (Biskra province)]. Doctoral dissertation in Biology, University of Batna-2, Algeria. [In French]

Bevanger, K. 1994. Bird interactions with utility structures: collision and electrocution, causes and mitigating measures. *Ibis* 136: 412–425.

Bhagwat, T., Kuemmerle, T., Soofi, M., Donald, P.F., Hölzel, N., Salemgareev, A., Stirnemann, I., Urazaliyev, R., Baumann, M., Kamp, J. 2023. A novel, post-Soviet fire disturbance regime drives bird diversity and abundance on the Eurasian steppe. *Global Change Biology* 30: e17026.

Bidoudan, Y., Mouahid, M., Fassi Fihri, O., Bollo, E., Arbani, O., Ducatez, M., Banni, B., Tligui, N., Fellahi, S. 2023. First Report of Low Pathogenic Avian Influenza Subtype H9N2 in African Houbara Bustards (*Chlamydotis undulata undulata*) and Gamebirds in Morocco: Clinico-Pathological Findings, Molecular Characterization, and Associated Coinfections. *Viruses* 15: 2374.

Billerman, S.M., Keeney, B.K., Kirwan, G.M., Medrano, F., Sly N.D., Smith, M.G. 2025. Birds of the World. Cornell Laboratory of Ornithology, Ithaca, NY, USA.

Bird, J.P., Martin, R., Akçakaya, H.R., Gilroy, J., Burfield, I.J., Garnett, S.T., Symes, A., Taylor, J., Şekercioğlu, Ç.H., Butchart, S.H.M. 2020. Generation lengths of the world's birds and their implications for extinction risk. *Conservation Biology* 34: 1252–1261.

Birding Romania. 2025. Little Bustard observations in Romania. https://rombird.ro/ro/obl/index?mfaj=117.

BirdLife Australia. 2023. Australian Bustard. [Text before updates sourced from: Marchant, S. et al (eds). 1990-2006. Handbook of Australian, New Zealand and Antarctic Birds. Volumes 1 to 7.] Birdlife Australia, Collingwood, Australia. https://hanzab.birdlife.org.au/species/australian-bustard/.

BirdLife International. 2014. Review of the global conservation status of the Asian Houbara Bustard *Chlamydotis macqueenii.* Report to the Convention on Migratory Species Office, Abu Dhabi. BirdLife International, Cambridge, UK. CMS Document: UNEP/CMS/COP11/Inf.17.

BirdLife International. 2021. *European Red List of Birds.* Publications Office of the European Union, Luxembourg.

BirdLife International. 2025. Site factsheets. https://datazone.birdlife.org/.

Boland, C.R.J., Burwell, B.O. 2020. Ranking and mapping the high conservation priority bird species of Saudi Arabia. *Avian Conservation and Ecology* 15(2): 18.

Borchert, M., Watzke, H. 2017. [The Great Bustard Conservation Project in the Fiener Bruch]. *Der Falke* 10: 34–37. [In German]

Borchert, M., Köhler, R., Watzke, H. 2025. [Stabilization and Increase of the Great Bustard Population in Saxony-Anhalt – Stabilization of the Subpopulation in the EU-SPA Fiener Bruch and Pilot Project for the Establishment of a Subpopulation in the EU-SPA Zerbster Land. Final Report]. Förderverein Großtrappenschutz eV., Nennhausen, Germany. [In German]

Boyla, K.A., Sınav, L., Dizdaroğlu, D.E. 2019. [*Türkiye Breeding Bird Atlas*]. WWF-Türkiye, Istanbul, Türkiye. [In Turkish]

Bragin, E.A. 2019. [Little Bustard *Tetrax tetrax* and Great Bustard *Otis tarda* in Kostanai oblast': population dynamics in the XX–XXI centuries]. *Russian Journal of Ornithology* 28(1757): 1705–1714. [In Russian]

Bravo, C., Ponce, C., Palacín, C., Alonso, J. C. 2012. Diet of young Great Bustards *Otis tarda* in Spain: sexual and seasonal differences. *Bird Study* 59: 243–251. Bretagnolle, V., Inchausti, P. 2005. Modelling population reinforcement at a large spatial scale as a conservation strategy for the declining little bustard (*Tetrax tetrax*) in agricultural habitats. *Animal Conservation* 8: 59–68.

Bretagnolle, V., Gauffre, B., Meiss, H., Badenhausser, I. 2011. The role of grassland areas within arable cropping systems for the conservation of biodiversity at the regional level. *In:* Lemaire, G., Hodgson, J., Chabbi, A. (eds). *Grassland productivity and ecosystem services*. CABI, Germany. pp. 251–260.

Bretagnolle, V., Denonfouc, L., Villers, A. 2018. Are farming and birds irreconcilable? A 21-year study of bustard nesting ecology in intensive agroecosystems. *Biological Conversation* 228: 27–35.

Bretagnolle, V., Traba J., Morales, M.B. 2022. *Little Bustard: Ecology and Conservation*. Wildlife Research Monographs 5, Springer Nature, Switzerland.

Bretagnolle, V., Merot, A., Martineau, A., Dedeban, E., Chargé, R., Debenest, E. 2025. Wind turbine threats to bustards: spatially explicit risk modelling from empirical data. *Biological Conservation* 310: 111391.

Brochet, A.L., Van Den Bossche, W., Jones, V.R., Arnardottir, H., Damoc, D., Demko, M., Driessens, G., Flensted, K., Gerber, M., Ghasabyan, M., Gradinarov, D., Hansen, J., Horváth, M., Karlonas, M., Krogulec, J., Kuzmenko, T., Lachman, L., Lehtiniemi, T., Lorgé, P., Lötberg, U., Lusby, J., Ottens, G., Paquet, J.Y., Rukhaia, A., Schmidt, M., Shimmings, P., Stipnieks, A., Sultanov, E., Vermouzek, Z., Vintchevski, A., Volke, V., Willi, G., Butchart, S.H.M. 2017. Illegal killing and taking of birds in Europe outside the Mediterranean: assessing the scope and scale of a complex issue. *Bird Conservation International* 29: 10–40.

Brochet, A.L., Jbour, S., Sheldon, R.D., Porter, R., Jones, V.R., Al Fazari, W., Al Saghier, O., Alkhuzai, S., Al-Obeidi, L.A., Angwin, R., Ararat, K., Pope, M., Shobrak, M.Y., Willson, M.S., Sadeghi Zadegan, S., Butchart, S.H.M. 2019. A preliminary assessment of the scope and scale of illegal killing and taking of wild birds in the Arabian peninsula, Iran and Iraq. *Sandgrouse* 41: 154–175.

Brooke, R.K. 1984. South African red data book, birds. South African National Scientific Programs Report 97. Foundation for Research Development, Pretoria, South Africa.

Brown, C.J., Bridgeford, P.A., Braine, S.G., Paxton, M., Versfeld, W. 2015. Breeding data on the birds of Namibia. *Ornithological Observations* 6: 92–196.

Budagashvili, N. 2025. Challenges and opportunities for the conservation of large, but fluctuating flocks of Little Bustards *Tetrax tetrax* in eastern Georgia. *Sandgrouse* 47: 73–79.

Burfield, I.J., Westrip, J., Sheldon, R.D., Hermes, C., Wheatley, H., Smith, D., Harding, K.A. Allen, D.J., Alshamsi, O. 2021. *UAE National Red List of Birds*. Ministry of Climate Change and Environment, Dubai, UAE.

Burnside, R.J., Végvári, Z., James, R., Konyhás, S., Kovács, G., Székely, T. 2014. Human disturbance and conspecifics influence display sites selection by Great Bustards *Otis tarda. Bird Conservation International* 24: 32–44.

Burnside, R.J., Collar, N.J., Koshkin, M.A., Dolman, P.M. 2015. Avian powerline mortalities, including Asian Houbara *Chlamydotis macqueenii*, on the Central Asian flyway in Uzbekistan. *Sandgrouse* 37: 161–168.

Burnside, R.J., Collar, N.J., Scotland, K.M., Dolman, P.M. 2016. Survival rates of captive-bred Asian Houbara *Chlamydotis macqueenii* in a hunted migratory population. *Ibis* 158: 353–361.

Burnside, R.J., Collar, N.J., Dolman, P.M. 2017. Comparative migration strategies of wild adult, wild juvenile and captive bred Asian Houbara *Chlamydotis macqueenii*. *Ibis* 159, 374–389.

Burnside R.J., Collar N.J., Dolman P.M. 2018. Dataset on the numbers and proportion of mortality attributable to hunting, trapping, and powerlines in wild and captive-bred migratory Asian houbara *Chlamydotis macqueenii*. *Data in Brief* 21: 1848–1852.

Burnside R.J., Buchan C., Salliss D., Collar N.J., Dolman, P.M. 2020. Releases of Asian houbara must respect genetic and geographic origin to preserve inherited migration behaviour: evidence from a translocation experiment. *Royal Society Open Science* 7: 200250.

Burnside, R.J., Salliss, D., Collar, N.J., Dolman, P.M. 2021. Birds use individually consistent temperature cues to time their migration departure. *Proceedings of the National Academy of Sciences* 118: e2026378118.

Cabodevilla, X., Wright, A.D., Villanua, D., Arroyo, B., Zipkin, E.F. 2022. The implementation of irrigation leads to declines in farmland birds. *Agriculture, Ecosystems and Environment* 323: 107701.

Campbell, O., Kessler, M. 2025. Wild vagrants and intentional releases? Records of Little Bustard *Tetrax tetrax* in the Arabian Peninsula. *Sandgrouse* 47: 52–58.

Campeau, L.P., Kulagin, S.V. 2022. The return of breeding little bustards in the Tulek Valley IBA, Kyrgyzstan. *Sandgrouse* 44: 360–371.

Campeau, L.B., Isayenko, P., Kulagin, S.V. 2025. From the field to the map: quantifying the recovery of the Little Bustard *Tetrax tetrax* in Kyrgyzstan. *Sandgrouse* 47: 122–132.

Campeau, L.P., Kessler, M. 2025. Differential migration of Little Bustard *Tetrax tetrax* at the fringes of its eastern range. *Sandgrouse* 47: 167–173.

Carreira, J.T., Lesobre L., Boullenger, S., Chalah, T., Lacroix, F., Hingrat, Y. 2022. Assisted Reproduction Techniques to Improve Reproduction in a Non-Model Species: The Case of the Arabian Bustard (*Ardeotis arabs*) Conservation Breeding Program. *Animals* 12: 851.

Carswell, M., Pomeroy, D., Reynolds, J., Tushabe, H. 2005. *The Bird Atlas of Uganda*. British Ornithologists Club and British Ornithologists' Union, UK.

Casas, F., Gurarie, E., Fagan, W. F., Mainali, K., Santiago, R., Hervás, I., Palacín, C., Moreno, E., Viñuela, J. 2020. Are trellis vineyards avoided? Examining how vineyard types affect the distribution of great bustards. *Agriculture, Ecosystems & Environment* 289: 106734.

Chammem, M., Selmi, S., Khorchani, T., Nouira, S. 2012. Using a capture-recapture approach for modelling the detectability and distribution of Houbara bustard in southern Tunisia. *Bird Conservation International* 22: 288–298.

Chammem, M., Jarray, M., Khorchani, T. 2018. Spatial distribution of male display sites in a North African population of Houbara Bustard *Chlamydotis undulata undulata*. *Ostrich*: 89: 355–362.

Chedad, A., Bouzid A., Bendjoudi, D., Guezoul, O. 2023. Avifauna of M'Zab region (Ghardaïa, Algerian Sahara): Checklist and overview of the current status. *Zoology and Ecology* 33(1): 22–35.

Cheikh, I., Abdelwahab C., Mansouri, A., Cheikh, A. 2024. Reappearance of the little bustard *Tetrax Tetrax* in Algeria after more than 30 years of extinction. *Zoology and Ecology* 34(2): 22–128.

Cherkaoui, S.I., Qninba, A., El Agbani, M.A., Ibn Tattou, M., Radi, M. 2021. Rapid extirpation of a newly discovered population of Little Bustard *Tetrax tetrax* in Central Plateau (Morocco): lessons for conservation. *Bulletin de l'Institut Scientifique* 42: 15–22.

CITES. 2023. Appendices I, II and III. https://cites.org/eng/app/appendices.php.

Clarke, J. 1983: The Houbara Bustard in Jordan. *Sandgrouse* 4: 111–113.

Coates, B.J. 1985. *The birds of Papua New Guinea. Vol. 1: Non-passerines*. Liberty Press, Brisbane, Australia.

Coetzee, H.H., Stoch, E. 2025. Shrinking windows: the impact of changing weather patterns on firebreak preparation in grassland ecosystems. Presented at the 60th Annual Congress of the Grassland Society of Southern Africa: Risk Governance, Resilience Building and Humanitarian Programming in a Changing World. 21-25 July 2025. KwaZulu Natal, South Africa.

Collar, N.J. 1983. The bustards and their conservation. *In:* Goriup, P.D., Vardhan, H. *Bustards in Decline.* Tourism and Wildlife Society of India, Jaipur, India. pp. 244–257.

Collar, N.J. 1996. Family Otididae (bustards). *In*: del Hoyo, J., Elliott, A., Sargatal, J. (eds). *Handbook of Birds of the World. Vol. 3: Hoatzin to Auks*. Lynx Edicions, Barcelona, Spain. pp. 240–273.

Collar, N.J. 2019. The Kori Bustard *Ardeotis kori* on the Liben Plain, Ethiopia. *Bulletin of the African Bird Club* 26: 186–192.

Collar, N.J., 2021. What can save the Lesser Florican *Sypheotides indicus*? *Birding ASIA* 35: 11–20.

Collar, N.J. 2022. No hiding place for the African Houbara *Chlamydotis undulata*? *Bulletin of the African Bird Club* 29(2): 195–206.

Collar, N.J. 2024a. How distinctive is Cambodia's Bengal Florican *Houbaropsis bengalensis blandini*? *Birding ASIA* 41: 27–32.

Collar, N.J. 2024b. The African Houbara *Chlamydotis undulata* in Mauritania. *Bulletin of the African Bird Club* 31: 77–79.

Collar, N.J. 2024c. The Arabian Bustard in Morocco: a post-mortem examination. *Bulletin of the African Bird Club* 32(2): 194–204.

Collar, N.J., Kessler, M. 2021. Hunting of Little Bustards *Tetrax tetrax* in Azerbaijan: the global conservation perspective. *Sandgrouse* 43: 281–285.

Collar, N.J., Wacher, T. 2023. The conservation status of the Nubian Bustard *Nubotis nuba*: a review and prognosis. *Bird Conservation International* 33: e76.

Collar, N.J., Wacher, T. 2025. A conservation status review of the Arabian Bustard *Ardeotis arabs*. *Endangered Species Research* 57: 341-364.

Collar, N.J., Andreev, A.V., Chan, S., Crosby, M.J., Subramanya, S., Tobias, J.A. 2001. *Threatened Birds of Asia: The BirdLife International Red Data Book*. BirdLife International, Cambridge, United Kingdom.

Collar, N.J., Baral, H.S., Batbayar, N., Bhardwaj, G.S., Brahma, N., Burnside, R.J., Choudhury, A.U., Combreau, O., Dolman, P.M., Donald, P.F., Dutta, S., Gadhavi, D., Gore, K., Goroshko, O.A., Jathar, G.A., Jha, R.R.S., Jhala, Y.V., Koshkin, M.A., Lahkar, B.P., Liu, G., Mahood, S.P., Morales, M.B., Narwade, S.S., Natsagdorj, T., Nefedov, A.A., Silva, J.P., Thakuri, J.J., Wang, M., Zhang, Y., Kessler, A.E. 2017. Averting the extinction of bustards in Asia. *Forktail* 33: 1–26.

Collar, N.J., Jennings, M.C., Judas, J., Kessler, M., Porter, R., Shobrak, M. 2024. The Arabian Bustard *Ardeotis arabs* in Arabia: past, present and prospects. *Sandgrouse* 46: 154–174.

Combreau, O., Saleh al Baidani, M. 2015. *A Natural History of the Asian Houbara Bustard*. International Fund for Houbara Conservation, Abu Dhabi, UAE.

Combreau, O., Launay, F., Lawrence, M. 2001. An assessment of annual mortality rates in adult-sized migrant houbara bustards (*Chlamydotis undulata macqueenii*). *Animal Conservation* 4: 133-141.

Combreau, O., Qiao, J., Lawrence, M., Gao, X., Yao, J., Yang, W., Launay, F. 2002. Breeding success in a Houbara Bustard *Chlamydotis [undulata] macqueenii* population on the eastern fringe of the Jungar Basin, People's Republic of China. *Ibis* 144: E45-E56.

Combreau, O., Riou, S., Judas, J., Lawrence, M., Launay, F. 2011. Migratory pathways and connectivity in Asian Houbara Bustards: evidence from 15 years of satellite tracking. *PLoS ONE* 6(6): e20570.

Combreau, O., Kessler, M., AlWoseamer, S., AlKulaib, A., Burnside, R.J. 2025. The importance of royal reserves in

rebuilding long migrant wintering Asian Houbara populations in Saudi Arabia. *Journal for Nature Conservation* 87: 127004.

Cornwallis L., Porter, R.F., Clarke, J.E. 1982. Spring observations of the birds of North Yemen. *OSME Bulletin* 4: 1–36.

Cramp, S., Perrins, C.M. 1977. *Handbook of the Birds of Europe, the Middle East and North Africa: The Birds of the Western Palearctic.* Oxford University Press, Oxford, UK.

Crego R.D., Hernandez-Yanez, H., Rabeil, R., Hingrat, Y., Leimgruber, P., Stabach J.A. 2023. Non-systematic surveys reveal increases in areas occupied by endangered and data-deficient Nubian Bustard. *Global Ecology and Conservation* 47: e02682.

Da'an, S.A., Omotoriogun, T.C., Onoja, J.D., Tende, T., Ottosson, U. 2010. Increased abundance of Savile's Bustard *Lophotis savilei* in east-central Nigeria. *Malimbus* 32: 103-104

Dale, J. 1990. The kori bustard in central Zimbabwe. *Honeyguide* 36: 123–128.

Danko, Š., Darolová, A., Krištín A. 2002. [*Bird Distribution in Slovakia*]. Veda, Bratislava, Slovakia. [In Slovak]

Davletbakov, A.T., Ostashchenko, A.N. 2010. [On the breeding of Little Bustard and Paradise Flycatcher on the territory of Kyrgyzstan]. *Selevinia* 2010: 187. [In Russian]

Day, J., Symes, N., Robertson, P. 2003. The Scrub Management Handbook: Guidance on the management of scrub on nature conservation sites. The Forum for the Application of Conservation Techniques, UK. https://publications.naturalengland.org.uk/publication/72031. de Colsa, J.M., Garcés, F., Schuster, C., Carrascal, L.M. 2022. [Houbara Bustard: No good news after almost thirty years of censuses]. *Quercus* 431: 12–19. [In Spanish]

de Colsa, J.M., Carrascal, L.M. 2024. [Update of the census data of the Canary Island Bustard populations (*Chlamydotis undulata fuertaventurae*) in Lanzarote, Fuerteventura and La Graciosa]. Final report. GREFA, GESPlan, Government of the Canary Islands, Madrid, Spain. [In Spanish]

Dean, W.R.J. 2000. The Birds of Angola. British Ornithologists' Union 2000. The Natural Histroy Museum, Tring, UK.

del Hoyo, J., Elliott, A., Sargatal, J. 1996. *Handbook of the Birds of the World. Vol. 3. Hoatzin to Auks.* Lynx Editions, Barcelona, Spain.

Demey, R. 2003. Recent reports. *Bulletin of the African Bird Club* 10: 55–63.

Dereliev, S., Zehtindjiev, P., Georgiev, D. 2004. National Report Republic of Bulgaria. Memorandum of Understanding on the Conservation and Management of the Middle-European Population of the Great Bustard (*Otis tarda*).CMS Document: CMS/GB/2/Inf.4.8.

Ding, C., Newbold, T., Ameca, E.I. 2024. Assessing the global vulnerability of dryland birds to heatwaves. G*lobal Change Biology* 30: e17136.

Dixon, A., Purev-Ochir, G., Galtbalt, B., Batbayar, N. 2013. The use of power lines by breeding raptors and corvids in Mongolia: nest-site characteristics and management using artificial nests. *Journal of Raptor Research* 47(3): 282–291.

DNP unit welcomes two more GIB chicks. 2025, May 3. *The Times of India*. https://timesofindia.indiatimes.com/city/jaipur/dnp-unit-welcomes-two-more-gib-chicks/articleshow/120833417.cms.

DNPWC. 2024. Bengal Florican Conservation Action Plan for Nepal 2024-2033. Department of National Parks and Wildlife Conservation, Kathmandu, Nepal.

DNPWC. 2025. Bird species fact sheets. Department of National Parks and Wildlife Conservation, Kathmandu, Nepal. https://dnpwc.gov.np/en/aves/.

Dolman, P.M., Collar, N.J., Burnside, R.J. 2018. Captive breeding cannot sustain migratory Asian houbara *Chlamydotis macqueenii* without hunting controls. *Biological Conservation* 228: 357–366.

Dolman, P.M., Burnside, R., Scotland, K., Collar, N. 2021a. Captive breeding and the conservation of the threatened houbara bustards. *Endangered Species Research* 46: 161–173.

Dolman, P.M., Scotland, K.M., Burnside, R.J., Collar, N.J. 2021b. Sustainable hunting and the conservation of the threatened houbara bustards. *Journal of Nature Conservation* 61: 126000.

Donald, P.F., Fernando, E., Brown, L., Busana, M., Butchart, S.H.M., Chng, S., de la Colina, A., Machado Ferreira, J., Jain, A., Jones, V.R., Lapido, R., Malsch, K., McDougall, A., Muccio, C., Nguyen, D., Outhwaite, W., Petrovan, S.O., Stafford, C., Sutherland, W.J., Tallowin, O., Safford, R. 2024. Assessing the global prevalence of wild birds in trade. *Conservation Biology* 38: e14350.

Douglas, D.J.T., Waldinger, J., Buckmire, Z., Gibb, K., Medina, J.P., Sutcliffe, L., Beckmann, C., Collar, N.J., Jansen, R., Kamp, J., Little, I., Sheldon, R., Yanosky, A., Koper, N. 2023. A global review identifies agriculture as the main threat to declining grassland birds. *Ibis* 165: 1107–1128.

Dowsett, R.J., Aspinwall, D.R., Dowsett-Lemaire, F. 2008. *The Birds of Zambia*. Tauraco Press and Aves a.s.b.l. Liège, Belgium. pp. 174–177.

Dowsett-Lemaire, F., Dowsett, R.J. 2006. *The Birds of Malawi*. Tauraco Press and Aves a.s.b.l. Liège, Belgium. pp. 184–187.

Draffan, R.D.W., Garnett, S.T., & Malone, G.J. 1983. Birds of the Torres Strait: an annotated list and biogeographical analysis. *Emu* 83: 207-234.

Dutta, S., Bipin, C.M., Bhardwaj, G.S., Anoop, K.R., Jhala, Y.V. 2015. Status of Great Indian Bustard and Associated Wildlife in Thar. Wildlife Institute of India, Dehradun, and Rajasthan Forest Department, Jaipur, India.

Dutta, S., Jhala, Y.V., Rahmani, A.R., Thorat, O., Kulkarni, M.D., Bhattacharjee, A., Dave, C., Ramesh, K., Nair, T., Jayapal, R., Narwade, S., Bargali, H., Sankaran, R., Shekhawat, R.S., Vaidyanathan, S., Prasad, S., Narain, S., Patil, P.R. and Choudhury, B.C. 2018. Status of the Lesser Florican *Sypheotides indicus* and implications for its conservation. *Journal of the Bombay Natural History Society* 115(1): 1–12.

Eames, J.C. 1996. Distribution, habitat and status of the Bengal Florican *Houbaropsis bengalensis* in Indochina (Vietnam and Cambodia). *Forktail* 11: 87–92

Efimenko, N. 2009. [Dushakerekdag, Kurtusuv-Khovudan & Gurykhovudan IBAs] *In*: Rustamov, Je.A., Ujelsh, D.R., Brombakhaer, M. (eds). [*Important Bird Areas of Turkmenistan*]. Ministry of Nature Protection, Ashgabat, Turkmenistan. pp. 112–114, 117–119, 121–122. [In Russian]

Ehlert, K., Menendez, H., Bachler, J. 2025. The Lasting Effects of Overgrazing on Rangeland Ecosystems. South Dakota State University, Brookings, USA. https://extension.sdstate.edu/lasting-effects-overgrazing-rangeland-ecosystems.

Eriksen, J., Victor, R. 2013. *Oman Bird List, Edition 7*. Sultan Qaboos University, Muscat, Oman.

Estrada, A., Delgado, M.P., Arroyo, B., Traba, J., Morales, M.B. 2016. Forecasting large-scale habitat suitability of European bustards under climate change: the role of environmental and geographic variables. *PLoS One* 11(3): e0149810.

Evangelista, P.H. 2017. Rapid Assessment of Somaliland's Mammals and Critical Habitats. Status Report for the Ministry of Environment and Rural Development, Somaliland. Fort Collins, USA.

Farajli, Z. 2022. The loss of wintering Great Bustards *Otis tarda tarda* from the steppes of Azerbaijan. *Sandgrouse* 44(1): 101–106.

Farajli, Z. 2025. Assessing the wintering population and conservation challenges of the Little Bustard *Tetrax tetrax* in Azerbaijan. *Sandgrouse* 47: 87–101.

Faria, N., Morales, M.B., Rabaça, J.E. 2016. Exploring nest destruction and bird mortality in mown Mediterranean dry grasslands: an increasing threat to grassland bird conservation. *Wildlife Reserve* 62: 663–671

Fazaeli, M., Derakhshani M., Mashadi, A. 2024. A legal analysis of the domestic and international protetions for the Houbara Bustard against illegal hunting and trade. *International Law Review* 41(74): 83–104.

Fedosov, V.N. 2019. [The Current State of Little Bustard Populations in Orenburg Oblast' and Other Parts of Its Range]. *Strepet* 17(1), 4–66. [In Russian]

Fedosov, V.N., Fedosov, A.V., Antonchikov, A.N. 2017. [Surveys of the Little Bustard in Orenburg Oblast' and

Prospects for Its Protection]. [*Steppe Bulletin*] 49: 55–58. [In Russian]

Fedosov, V.N., Malovichko, L.V. 2018. [Modern Distribution of the Little Bustard in Stavropol']. [*Russian Ornithological Journal*] 27(1706): 5991–5998. [In Russian]

Ford, J.S., Myers, R.A. 2008. A global assessment of salmon aquaculture impacts on wild salmonids. *PLoS Biology* 6: e33.

Frankham, R. 2008. Genetic adaptation to captivity in species conservation programs. *Molecular Ecology* 17(1): 325-33.

Froggatt, W.W. 1914. The destruction of bird life in Australia. *The Australian Zoologist* 1: 75–79.

Froustey, N., Guyot, M., Crétet, M., Aulagnier, S., Pelozuelo, L., Ricci, J.C. 2024. Impact of habitat management of small game species on bird communities in French Mediterranean scrublands. Animal Biodiversity and Conservation 47(1): 75–88.

Fuhlendorf, S.D., Woodward, A.J.W., Leslie Jr, D.M., Shackford, J.S. 2002. Multi-scale effects of habitat loss and fragmentation on lesser prairie-chicken populations of the US Southern Great Plains. *Landscape Ecology* 17: 617–628.

Gallagher, M., Woodcock, M.W. 1980. *Birds of Oman.* Quartet Books, London, UK.

Gameiro, J., Marques, A.T., Venâncio, L., Valerio, F., Pacheco, C., Guedes, A., Pereira, J., Ribeiro, L., Moreira, F., Beja, P., Arroyo, B., Silva, J.P. 2024. Evidence of a twofold ecological trap driven by agricultural change causing a priority farmland bird population crash. *Conservation Science and Practice* 6(10): e13168.

Ganea, I., Zubcov, N. 1989. [*Rare and disappearing bird species of Moldova*]. Ştiinţa, Chişinău, Moldova. pp. 99–102. [In Romanian]

Gao, X., Yang, W., Qiao, J., Yao, J. Xu, K. 2008. [Distribution and status of bustards in China]. F*rontiers of Biology in China* 3(4): 385–391. [In Chinese]

García de la Morena, E.L., de Juana, E., Martínez, C., Morales, M.B., Suárez, F. 2004. [Little Bustard*trax tetrax*]. *In:* Madroño, A., González, C., Atienza, J.C. (eds). [*Red Book of the Birds of Spain*]. DGCONA/SEO BirdLife, Madrid, Spain. pp. 202–207. [In Spanish]

García de la Morena, E., Bota, G., Mañosa, S., Morales, M.B. 2018. [The Little Bustard in Spain. II National Census (2016)]. SEO/BirdLife, Madrid, Spain. [In Spanish]

García de la Morena, E.L., Bota, G., Traba, J., Mañosa, S., Morales, M.B. 2020. Scientific basis for the elaboration of the National Conservation Strategy for the Little Bustard (*Tetrax tetrax*). Biodiversity Foundation, Ministry for Ecological Transition, Madrid, Spain.

Garnett, S., Szabo, J., Dutson, G., 2011. *The Action Plan for Australian Birds 2010.* CSIRO, Clayton, Australia.

Geary, M., Cooper, J.R., Collar, N.J. 2022. Anthropogenic influences on habitat use by African houbaras *Chlamydotis undulata* on Lanzarote, Canary Islands. *Journal for Nature Conservation* 68: 126231.

Gewalt, W. 1959. [*Great Bustard.*] Die neue Brehm-Bücherei, Wittenberg Lutherstadt, Germany. [In German]

Gidron O., Shochat, E., Gur, E., Ovadia, O. 2025. Characterization of male courtship home ranges and short-distance migration corridor in a remnant MacQueen's Bustard population. *Global Ecology and Conservation* 58: e03449.

Gómez-Catasús, J., Benítez-López, A., Díaz, M., González, D., Pérez-Granados, C., Alonso, J.C., Arroyo, B., Abril-Colón, I., Barrero, A., Barrientos, R., Bolonio, L., Bota, G., Brambilla, M., Brotons, L., Bustillo-de la Rosa, D., Cabodevilla, X., Carrascal, L.M., Carricondo, A., Casas, F., Catry, I., Crispim-Mendes, T., Erciyas-Yavuz, K., Galván, I., Gameiro, J., García, J.T., Giralt, D., Illera, J.C., Leiva, A., López-Iborra, G.M., Mañosa, S., Marques, A.T., Martín, C.A., Medrano-Vizcaíno, P., Morales, M.B., Moreira, F., Mougeot, F., Nikolov, B., Olea, P.P., Onrubia, A., Oñate-Casado, J., Palacín, C., Pearce-Higgins, J.W., Petrusková, T., Reverter, M., Revilla-Martín, N., Rigal, S., Sáez-Gómez, P., Šálek, M., Salgado, I., Santangeli, A., Sanz-Pérez, A., Seoane, J., Serrano, D., Silva, J.P., Tarjuelo, R., Traba, J., Tryjanowski, P., Ucero, A., Václav, R., Valera, F., Vögeli, M., Başkent, E.Z., Zurdo, J., Bravo, C. 2025. Alarming conservation status of Western European steppe birds and their habitats: an expert-based review of current threats, traits and knowledge gaps. *Biological Conservation* 311: 111414.

González del Portillo, D., Cabodevilla, X., Arroyo, B., Morales, M.B. 2025. Summer diet preferences of a declining steppe bird as revealed by DNA metabarcoding. *Journal of Ornithology* 166(2): 589–602.

Goodman, S.M., Meininger P.L. 1989. *The Birds of Egypt*. Oxford University Press, Oxford, UK.

Goriup, P.D., Parr, D. 1985. Results of the ICBP bustard survey of Turkey, 1981. *Bustard Studies* 2: 77–97.

Gossé, K.J., Gonedelé-Bi, S., Justy, F., Chaber, A.L., Kramoko, B., Gaubert, P. 2022. DNA-typing surveillance of the bushmeat in Côte d'Ivoire: a multi-faceted tool for wildlife trade management in West Africa. *Conservation Genetics* 23: 1073–1088.

Government of the United Kingdom of Great Britain & Northern Ireland. 1987. COP6, Proposal 28. Inclusion of Otididae *spp*. in Appendix II. Convention on International Trade in Endangered Species, Ottawa, Canada.

Gray T.N.E., Chamnan, H., Borey, R., Collar, N.J., Dolman, P.M. 2007. Habitat preferences of a globally threatened bustard provide support for community-based conservation in Cambodia. *Biological Conservation* 138(3/4): 341–350.

Gray, T.N.E., Chamnan, H., Collar, N.J., Dolman, P.M. 2009. Sex-specific habitat use by a lekking bustard: conservation implications for the critically endangered Bengal Florican in an intensifying agroecosystem. *The Auk* 126: 112–122.

Gubin, B.M. 2008. Numbers and seasonal distribution of Asian houbara *(Chlamydotis undulata macqueenii)* in Mangystau district (Kazakhstan). *In:* Spitsina, V. V. (ed.). Bustards of the Palearctic: breeding and conservation, Moscow, Russia. pp. 108–129. [In Russian]

Gubin, B.M. 2010. [Little Bustard]. *In*: [*Red Book of Kazakhstan. Animals. Vol. 1.*] 3rd edition. Almaty, Kazakhstan. pp. 164–165. [In Russian]

Gubin, B.M. 2015. [Little Bustard]. *In:* [*Birds of Deserts of Kazakhs*tan. Vol. 1.] Kolor, Almaty, Kazakhstan. [In Russian]

Gubin, B.M. 2020. [Little Bustard]. *In:* [*Birds of Deserts of Kazakhstan. Vol. 3.*] SpringR, Almaty, Kazakhstan. [In Russian]

Gudka, M., Santos C. D., Dolman, P.M., Abad-Gómez, J., Silva J.P. 2019. Feeling the heat: Elevated temperature affects male display activity of a lekking grassland bird. *PLoS One* 14(9): e0221999.

Guerrero-Casado, J., Rivas, C.A., Tortosa, F. 2022. The expansion of olive groves is reducing habitat suitability for the Great Bustard *Otis tarda* and the Little Bustard *Tetrax tetrax* in Southern Spain: could Important Bird Areas (IBAs) reduce this expansion? *Bird Conservation International* 32: 544–558.

Gúgh, J., Trnka, A., Karaska, D., Ridzoň, J. 2015. [*Principles for the conservation of European Important Bird Species and their habitats*]. State Nature Conservancy of the Slovak Republic, Banská Bystrica, Slovakia. [In Slovak]

Guilherme, J.L., Burnside, R.J., Collar, N.J., Dolman, P.M. 2018. Consistent nest-site selection across habitats increases fitness in Asian Houbara. *The Auk* 135(2): 192–205.

Hallager, S. 2007. The tie between bustards and fly-fishing. *AZA Connect* 2: 5.

Handrinos, G., Akriotis, T. 1997. *The Birds of Greece*. Helm, London, United Kingdom. pp. 336.

Hardouin, L.A., Hingrat, Y., Nevoux, M., Robert, A., Lacroix, F. 2015. Survival and movement of translocated houbara bustards in a mixed conservation area. *Animal Conservation* 18: 461–470.

Harris, S.M., Robinson, O.J., Hingrat, Y., Le Nuz, E., Ruiz-Gutierrez, V. 2023. Understanding the demography of a reinforced population: Long-term survival of captive-bred and wild-born houbara bustards in Morocco. *Biological Conservation* 284: 110185.

Heim de Balsac, H., Mayaud, N. 1962. [*Birds of Northwest Africa: Distribution, geography, ecology, migration, breeding*]. Lechevalier, Paris, France. [In French]

Hess, M.F., Silvy, N.J., Griffin, C.P., Lopez, R.R., Davis, D.S. 2005. Differences in flight characteristics of pen-reared and wild Prairie-Chickens. *Journal of Wildlife Management* 69: 650–654.

Horreo, J.L., Palacín, C.A., Alonso, J.C., Milá, B. 2013. A link between historical population decline in the threatened great bustard and human expansion in Iberia: evidence from genetic and demographic data. *Biological Journal of the Linnean Society* 110: 518–527.

Horreo, J.L., Ucero A., Palacín, C.A., López-Solano, A., Abril-Colón, I., Alonso, J.C. 2022. Human decimation caused bottleneck effect, genetic drift, and inbreeding in the Canarian houbara bustard. *Journal of Wildlife Management* 87(2): e22342.

Ibbett, H., Chansetha, L., Ponlork, P., Det, S., Chamnan, H., Mahood, S.P., Milner-Gulland, E.J. 2019. Conserving a globally threatened species in a semi-natural, agrarian landscape. *Oryx* 53(1): 181–191.

IFHC. 2017. International Fund for Houbara Conservation Annual Report 2016–2017. IFHC, Abu Dhabi, UAE.

IFHC. 2018. International Fund for Houbara Conservation Annual Report 2017–2018. IFHC, Abu Dhabi, UAE.

IFHC. 2019. International Fund for Houbara Conservation Annual Report 2018–2019. IFHC, Abu Dhabi, UAE.

Inskipp, C., Baral, H.S., Phuyal, S., Bhatt, T.R., Khatiwada, M., Inskipp, T., Khatiwada, A., Gurung, S., Singh, P. B., Murray, L., Poudyal, L., Amin, R. 2016. The Status of Nepal's Birds: The National Red List Series. Zoological Society of London, London, UK.

Isenmann P., Moali, A. 2000. [*Birds of Algeria*]. Paris Société d'études Ornithologiques de France, Paris, France. [In French]

Isenmann, P., Gaultier, T., ElHili, A., Azafzaf, H., Dlensi, H., Smart, M. 2005. [*Birds of Tunisia*] French Ornithological Study Society, Paris, France. [In French]

Isenmann, P., Benmergui, M., Browne, P., Ba, A.D., Diagana, C.H., Diawara, Y., El Adidine ould Sidaty, Z. 2010. [*Birds of Mauritania*] French Ornithological Study Society, Paris, France. [In French]

Isenmann, P., Hering, J., Brehme, S., Essghaier, M., Etayeb, K., Bourass, E., Azafzaf, H. 2016. [*Birds of Libya*] French Ornithological Study Society, Paris, France. [In French]

IUCN, SSC. 2013. Guidelines for Reintroductions and Other Conservation Translocations (Version 1.0). IUCN Species Survival Commission, Gland, Switzerland.

IUCN, HCEFLCD. 2016. Conservation strategy and action plan for the Great Bustard (*Otis tarda*) in Morocco 2016–2025. IUCN/HCEFLCD, Malaga, Spain.

IUCN. 2022. Protecting the Critically Endangered Bengal Florican in Cambodia. https://iucn.org/story/202208/protecting-critically-endangered-bengal-florican-cambodia.

IUCN. 2023. IUCN Red List of Threatened Species. IUCN Red List Threat. Species Version 2023-1. https://www.iucnredlist.org/en.

Ivanov, F.V., Priklonskii, S.G. 1965. [Little Bustard in the USSR and measures for its conservation on the wintering grounds]. [*Ornithology*] 7: 130–133. [In Russian]

Ivanov, A.I. 1969. [*Birds of the Pamir-Alai*]. Nauka, Leningrad, USSR. [In Russian]

Javed, S., García-Rawlins, A.M., Rodríguez, J.P., Sakkir, S., Dhaheri, S.S. 2020. *The Abu Dhabi Red List of Species: An assessment of the conservation status of mammals, birds, reptiles, invertebrates and plants in Abu Dhabi Emirate*. Environment Agency -Abu Dhabi, Provita and IUCN Species Survival Commission, Abu Dhabi, UAE.

Jenkins, A.R., Smallie, J.J., Diamond, M. 2010. Avian collisions with power lines: a global review of causes and mitigation with a South African perspective. *Bird Conservation International* 20: 263–278.

Jennings, M.C. 2010. Atlas of Breeding Birds of Arabia. *Fauna of Arabia* 25: 274–279.

Jha, R.R., Thakuri, J.J., Rahmani, A.R., Dhakal, M., Khongsai, N., Pradhan, N.M.B., Shinde, N., Chauhan, B.K., Talegaonkar, R.K., Barber, I.P. 2018. Distribution, movements, and survival of the critically endangered Bengal Florican *Houbaropsis bengalensis* in India and Nepal. *Journal of Ornithology* 159: 851–866.

Jhala, Y.V., Dutta, S., Bhardwaj, G.S., Karkarya, T., Bipin, C.M. 2020. Conserving Great Indian Bustard Landscapes through scientific understanding and participatory planning. Final Technical Report Submitted to

Rajasthan State Pollution Control Board. Wildlife Institute of India, Dehradun, India.

Jiang, Z., Jiang, J., Wang, Y., Zhang, E., Zhang, Y., Li, L., Xie, F., Cai, B., Cao, L., Zheng, G., Dong, L., Zhang, Z., Ding, P., Luo, Z., et al. 2016. [Red List of China's Vertebrates]. *Biodiversity Science* 24(5): 500–551. [In Chinese]

Judas, J., Combreau, O., Lawrence, M., Saleh, M., Launay, F., Gao, X.Y. 2006. Migration and range use of Asian Houbara Bustard *Chlamydotis macqueenii* breeding in the Gobi Desert, China, revealed by satellite tracking. *Ibis* 148: 343–351.

Judas, J., Lawrence, M., Combreau, O. 2009. High mortality of Asian Houbara *Chlamydotis macqueenii* in Iran. *Falco* 33: 14–15.

Karaska, D., Trnka, A., Krištín, A., Ridzoň J. 2015. [*Special protection areas in Slovakia*]. State Nature Conservancy of the Slovak Republic, Banská Bystrica, Slovakia. [In Slovak]

Karataş, M.M., Özelmas, Ü., Erkara, İ.P. 2021. Counting Results of Great Bustard (*Otis tarda,* Linnaeus, 1758) between 2013-2020 in Eskişehir, Kütahya, and Afyonkarahisar Provinces. *Commagene Journal of Biology* 5(1): 39-50.

Kashkarov, R.D., Mitropolskaya, Y.O., Ten, A.G. 2022. The historical and current status of the Great Bustard *Otis tarda tarda* in Uzbekistan, a key winter refuge. *Sandgrouse* 44(1): 26–34.

Kashkarov, R.D., Ten, A., Mitropolskaya, Yu.O., Soldatov, V. 2023. Changes In the modern range of the Great Bustard *Otis tarda i*n Uzbekistan under the influence of agricultural transformation of landscapes and climate. V. 2023. *Geography, Environment, Sustainability* 16: 140–149.

Kasparek, M. 1989. Status and distribution of the Great Bustard and the Little Bustard in Turkey. *Bustard Studies* 4: 80–113.

Kataevskiy, V.N. 2006. [Little Bustard]. *In:* Shukurov, E.J., Kasybekov, E. [*The Red Data Book of Kyrgyzstan*]. Kyrgyzpoligraphkombinat, Bishkek, Kyrgyzstan. [In Russian]

Kauffman, K., Elmore, D., Goodman, L. 2019. Minimizing Impacts to Wildlife from Livestock Infrastructure. NREM-908. Oklahoma Cooperative Extension Service, Oklahoma State University, Stillwater, USA.

Kessler, A. 2015. Asian Great Bustards: from Conservation Biology to Sustainable Grassland Development. Dissertation for PhD Biology, Arizona State University, Tempe, USA.

Kessler, A.E., Smith, A.T. 2014. The status of the Great Bustard (*Otis tarda tarda*) in Central Asia: from the Caspian Sea to the Altai. *Aquila* 121: 115–132.

Kessler, A.E., Santos, M.A., Flatz, R., Batbayar, N., Natsagdorj, T., Batsuuri, D., Bidashko, F.G., Galbadrakh, N., Goroshko, O.A., Khrokov, V.V, Unenbat, T., Vagner, I.I., Wang, M.Y., Smith, C.I. 2018. Mitochondrial divergence between Western and Eastern Great Bustards: implications for conservation and species status. *Journal of Heredity* 109: 641–652.

Kessler, M. 2022. Status of the Western Great Bustard *Otis tarda tarda* in Asia and its significance to an updated estimate of the global population of Great Bustards. *Sandgrouse* 44: 6–13.

Kessler, M., Bidashko, F.G. 2022. The historically abundant Great Bustard *Otis tarda tarda* is almost extirpated from western Kazakhstan. *Sandgrouse* 44(1): 35–39.

Kessler, M., Batbayar, N. 2023. Revised Action Plan for the Great Bustard in Asia. CMS Technical Series Publication No. 48. CMS, Bonn, Germany.

Kessler, M., Burnside, J., Pyle, P., Collar, N.J., Kirwan, G.M. 2024. Species account: Asian Houbara (*Chlamydotis macqueenii*). *In:* Kirwan, G.M., Sly, N.D., Keeney, B.K. (eds). *Birds of the World.* Cornell Lab of Ornithology, Ithaca, USA. https://birdsoftheworld.org/bow/species/macbus1.

Kessler, M., Pyle, P., Collar, N., Kirwan, G.M. 2024. African Houbara (*Chlamydotis undulata*), version 2.0. I *In:* Kirwan, G.M., Sly, N.D., Keeney, B.K. (eds). *Birds of the World.* Cornell Lab of Ornithology, Ithaca, USA. https://birdsoftheworld.org/bow/species/houbus1.

Khan, A.A., Khaliq, I., Choudhry, M.J.I., Farooq, A., Hussain, N. 2008. Status, threats and conservation of the

Great Indian Bustard *Ardeotis nigriceps* (Vigors) in Pakistan. *Current Science* 95(8): 1079–1082.

Khan, A, Khan, N.U.H., Uddin, S., Karam, A. 2025. Status of the Little Bustard *Tetrax tetrax* in Pakistan based on historical and recent sighting records. *Sandgrouse* 47: 160–167.

Kılıç, D., Eken, G. 2004. [T*ürkiye's Important Bird Areas 2004 Update*]. Doğa Derneği, Ankara, Türkiye. [In Turkish]

Kirwan, G., Demirci, B., Welch, H., Boyla, K., Özen, M., Castell, P., Marlow, T. 2008. *The Birds of Turkey*. A&C Black, London, UK.

Köhler, R. 2019. [Feasibility Study on the Reintroduction of the Great Bustard in the Zerbster Land]. Förderverein Großtrappenschutz e. V., Nennhausen, Germany. [In German]

Köhler, R., Borchert, M., Watzke, H. 2023. [Reintroduction of the Great Bustard *Otis tarda in the Zerbster Land – Course of the First Release] Apus* 28: 27–38. [In German]

Kornev, S.V., Gavlyuk, E.V. 2019. [Little Bustard.] *In:* [*Red Data Book of Orenburg Oblast': Rare and Endangered Species of Animals, Plants, and Fungi*]. Mir, Voronezh, Russia. pp. 149–150. [In Russian]

Koshkin, M. 2011. Habitat preferences of steppe breeding birds in Central Kazakhstan, in relation to different forms of land use. Masters thesis, University of East Anglia, UK.

Koshkin, M.A., Collar, N.J., Dolman, P.M. 2014. Do sheep affect distribution and habitat of Asian Houbara *Chlamydotis macqueenii*? *Journal of Arid Environments* 103: 53–62.

Koshkin, M.A., Burnside, R.J., Collar, N.J., Guilherme, J.L., Showler, D.A., Dolman, P.M. 2016. Effects of habitat and land-use on breeding-season density of male Asian Houbara *Chlamydotis macqueenii*. *Journal of Ornithology*. 157(3): 811–823.

Koshkin, M.A., Burnside, R.J., Packman, C.E., Collar, N.J., Dolman, P.M. 2016. Effects of habitat and livestock on nesting success of the declining Asian houbara *Chlamydotis macqueenii*. *European Journal of Wildlife Research* 62: 447–459.

Koshkin, M., Timoshenko, A., Salemgareev, A. 2022. The diminished status of the Great Bustard *Otis tarda tarda* in central Kazakhstan. *Sandgrouse* 44(1): 40–43.

Koshkin, M.A., Urazaliyev, R., Gubin, B.M. 2025. Populations of Little Bustards *Tetrax tetrax* in Kazakhstan have rebounded following a period of agricultural abandonment. *Sandgrouse* 47: 111–121.

Kovshar, A.F. 2022. [Mass mortality of cranes, bustards, and other birds from rodenticides: review and commentary.] *Selevinia* 2022: 199–204.

Kralj, J., Barišić, S., Ćiković, D., Tutiš, V. 2014. Status and mortality factors of the Great Bustard (*Otis tarda*) in Croatia during the 20th century. *Aquila* 121: 173–178.

Kreuzberg-Mukhina, E.A. 2003. [Contemporary status of bustard species in Uzbekistan] *In:* Khrustov, A.V. (ed.). [*Bustards of Russia and Adjacent Territories. Volume 2.*] Saratov University Press, Saratov, Russia. pp. 64–75. [In Russian]

Kreuzberg-Mukhina, E.A., Lanovenko, E.N. 2003. [On the wintering of the Little Bustard in Uzbekistan.] *Strepet* 1: 5–9. [In Russian]

Kreuzberg-Mukhina, E.A., Lanovenko, E.N., Shernazarov, E.Sh., Filatov, A.K., Ten, A. 2003. [Expansion of the wintering range of Little Bustard in Uzbekistan.] *Strepet* 2: 90–91. [In Russian]

Kulagin, S.V. 2022. Status of the Great Bustard *Otis tarda tarda* in Kyrgyzstan. *Sandgrouse* 44(1): 83–85.

Kuzovenko, A.E., Lebedeva, G.P. 2018. [Little Bustard.] *In:* [*Red Data Book of Samara Oblast'. Vol. 2, Animals.*] Nayanova Samara Regional State Academy, Samara, Russia. pp. 256. [In Russian]

Laikre, L., Schwartz, M.K., Waples, R.S., Ryman, N., GeM Working Group. 2010. Compromising genetic diversity in the wild: Unmonitored large-scale release of plants and animals. *Trends in Ecology and Evolution* 25: 520–529.

Lampen, F., Bailey, T.A., Combreau, O. 2005. Medical rehabilitation and quarantine of illegally traded Macqueen's Bustard (*Chlamydotis macqueenii*) in the United Arab Emirates. *Journal of Avian Medicine and Surgery* 19(1): 35–45.

Lanovenko, E.N., Filatova, E.A. 2019. [Little Bustard - *Tetrax tetrax* (Linnaeus, 1758)]. *In:* Azimov, J.A. (ed.). [*Red Book of the Republic of Uzbekistan*]. Chinor ENK, Tashkent, Uzbekistan. [In Uzbek and Russian]

Lavee, D. 1988. Why is the Houbara *Chlamydotis undulata macqueenii* still an endangered species in Israel? *Biological Conservation* 45(1): 47–54.

Le Cuziat, J., Lacroix, F., Roche, P., Vidal, E., Médail, F. 2005. Landscape and human influences on the distribution of the endangered North African houbara bustard *Chlamydotis undulata undulata* in Eastern Morocco. *Animal Conservation* 8: 143–152.

Le Loc'h, G., Paul, M.C., Camus-Bouclainville, C., Bertagnoli, S. 2016. Outbreaks of pox disease due to Canarypox-like and Fowlpox-like viruses in large-scale Houbara Bustard captive-breeding programmes, in Morocco and the United Arab Emirates. *Transboundary and Emerging Diseases* 63(6): e187–e196.

Lemus, J. A., Bravo, C., Garcia-Montijano, M., Palacin, C., Ponce, C., Magana, M., Alonso, J. C. 2011. Side effects of rodent control on non-target species: Rodenticides increase parasite and pathogen burden in great bustards. *Science of the Total Environment* 409: 4729–4734.

Lesobre, L. 2024. Genetic Determinants of Migration in the Asian Houbara Bustard. Poster presented 11-14 March 2024, Genetics of Migration Symposium, Max Planck Institute for Evolutionary Biology, Plön, Germany.

LIFE Great Bustard. 2025. Final Report covering the project activities from 11/07/2016 to 31/10/2024. Vienna, Austria.

Litzbarski, H., Borchert, M., Watzke, H. 2022. [30 Years of the Great Bustard Conservation Association]. *Otis* 29: 57–75. [In German]

Lichtenberg, E.M., Hallager, S. 2008. A description of commonly observed behaviors for the kori bustard (*Ardeotis kori*). *Journal of Ethology* 26(1): 17–34.

Liu, G., Hu, X., Shafer, A.B.A., Gong, M., Han, M., Yu, C., Zhou, J., Bai, J., Meng, D., Yu, G., Dang, D. 2017. Genetic structure and population history of wintering Asian Great Bustard (*Otis tarda dybowskii*) in China: implications for conservation. *Journal of Ornithology* 158: 761–772.

Liu, G., Hu, X., Kessler A.E., Gong, M., Wang, Y., Li, H., Dong, Y., Yang, Y., Li, L. 2018. Snow cover and snowfall impact corticosterone and immunoglobulin a levels in a threatened steppe bird. *General and Comparative Endocrinology* 261: 174–178.

López-Jiménez, N., García de la Morena, E., Bota, G., Mañosa, S., Morales, M.B., Traba, J. 2021. [Little Bustard (T*etrax tetrax*)]. *In:* López-Jiménez, N. (ed.). [*Red Book of the Birds of Spain*]. SEO/BirdLife. Madrid, Spain. pp. 125–136.

Lóránt, M. 2017. [What still keeps the Hungarian steppe alive]. *GEO* (Hungarian edition) 2017/5: 54-67. [In Hungarian]

Lóránt, M., Vadász, C. 2014. The effect of above-ground medium voltage power lines on displaying site selection of the Great Bustard (*Otis tarda*) in Central Hungary. *Ornis Hungarica* 22(2): 42–49.

Lóránt, M., Fejes, É. 2024. Guideline on Predator Control Strategies for the Conservation of the Great Bustard (*Otis tarda*). UN Document: UNEP/CMS/GB/MOS5/Doc.7.2.

Lóránt, M., Tóth, P., Fejes, É., Raab, R., Langgemach, T., Ridzoň, J. 2023. Guideline for the different Agri-Environmental Schemes for the benefit of the Great Bustard (*Otis tarda*). UN Document: UNEP/CMS/GB/MOS5/7.3.

Low, C. 2009. Birds in the life of KhoeSan; With Particular Reference to Healing and Ostriches. *Alternation* 16(2): 64–90.

Lu, Z., Wang, Z., Jia, H., Meng, D., Wu, D. 2025. Captivity reduces diversity and shifts composition of the Great Bustard (*Otis tarda dybowskii*) microbiome. *Ecology and Evolution* 15: e70836.

Maceseanu, D.M., Fagaras, M. 2024. Quantitative data regarding invasive plant species from habitats of European interest in the Pesceana River Basin, Vâlcea County. *Current Trends in Natural Science* 13(26): 117-140.

Magaña, M., Alonso, J.C., Martín, C.A., Bautista, L.M., Martín, B. 2010. Nest-site selection by Great Bustards *Otis tarda* suggests a trade-off between concealment and visibility. *Ibis* 152: 77–89.

Mahood, S.P., Jha, R.R.S., Rahmani, A.R., Thakuri, J.J., Chamnan, H., Bhargava, R., Lahkar, B.P., Brahma, N., Narwade, S.S., Pandey, N., Gore, K., Gadhvi, D., Virak, S., Garnett, S.T. 2019. A systematic expert-based assessment of progress and priorities for conservation of the Bengal Florican *Houbaropsis bengalensis*. *Conservation Science and Practice* 1: e121.

Mahood, S.P., Hong, C., Virak, S., Sum, P., Garnett, S.T. 2020a. Catastrophic ongoing decline in Cambodia's Bengal Florican *Houbaropsis bengalensis* population. *Bird Conservation International* 30(2): 308–322.

Mahood S.P., Poole, C.M., Watson, J.E.M., Richard, A., Shama, S., Garnett S.T. 2020b. Agricultural intensification is causing rapid habitat change in the Tonle Sap Floodplain, Cambodia. *Wetlands Ecology and Management* 28: 713–726.

Main, M.T., Davis, R.A., Blake, D., Mills, H., Doherty, T.S. 2020. Human impact overrides bioclimatic drivers of red fox home range size globally. *Diversity and Distributions* 26(9): 1083-1092.

Malo J.E., García de la Morena, E.L., Hervás, I., Mata, C., Herranz, J. 2017. Cross-scale changes in bird behavior around a high speed railway: from landscape occupation to infrastructure use and collision risk. *In:* Borda-de-Água, L., Barrientos, R., Beja, P., Pereira, H.M. (eds). *Railway Ecology.* Springer Open, Cham, Switzerland. pp. 117–133.

Manzer, D.L., Hannon, S.J. 2005. Relating grouse nest success and corvid density to habitat: a multi-scale approach. *Journal of Wildlife Management* 69(1): 110–123.

Mañosa, S., Julia, M., Oliva, F., Guillem, R., Moreno-Zárate, L., Giralt, D., Bota, G. 2024. Potential effects of avian predators on the behaviour of the Little Bustard *Tetrax tetrax* during the display season in a cereal pseudo steppe. *Revista Catalana d'Ornitologia* 39: 10-20.

Marcelino, J., Moreira, F., Mañosa, S., Cuscó, F., Morales, M.B., García De La Morena, E.L., Bota, G., Palmeirim, J.M., Silva, J.P. 2018. Tracking data of the Little Bustard *Tetrax tetrax* in Iberia shows high anthropogenic mortality. *Bird Conservation International* 28: 509–520.

Marcondes, R.S., Douvas, N. 2024. Social mating systems in birds: resource-defense polygamy—but not lekking—is a macroevolutionarily unstable trait. *Evolution* 78(12): 1980–1990.

Marques, A.T., Moreira, F., Alcazar, R., Delgado, A., Godinho, C., Sampaio, H., Rocha, P., Sequeira, N., Palmeirim, J.M., Silva, J.P. 2020. Changes in grassland management and linear infrastructures associated to the decline of an endangered bird population. *Scientific Reports* 10: 15150.

Marques, A.T., Martins, R.C., Silva, J.P., Palmeirim, J.M., Moreira, F. 2021. Power line routing and configuration as major drivers of collision risk in two bustard species. *Oryx* 55: 442–451.

Marques, A.T., Pacheco, C., Mougeot, F., Silva, J.P. 2024. GPS tracking reveals the timing of collisions with powerlines and fences of three threatened steppe bird species. *Bird Conservation International* 34: e22.

Martín, B., Alonso, J.C., Martín, C.A., Palacín, C., Magaña, M., Alonso, J. 2012. Influence of spatial heterogeneity and temporal variability in habitat selection: A case study on a great bustard metapopulation. *Ecological Modelling* 228: 39–48.

Martín, C.A, Alonso, J.C., Alonso, J.A., Palacín, C., Magaña, M., Martín, B. 2007. Sex-biased juvenile survival in a bird with extreme size dimorphism, the Great Bustard *Otis tarda. Journal of Avian Biology* 38(3): 335–346.

Martin, G.R. 2011. Understanding bird collisions with man-made objects: a sensory ecology approach. *Ibis* 153: 239-254.

Martin, G.R., Shaw, J.M. 2010. Bird collisions with power lines: Failing to see the way ahead? *Biological Conservation* 143: 2695–2702.

Mayrose, A., Vine, G., Labinger, Z., Steinitz, O., Hatzofe, O., Haviv, E., Perlman, Y., Alon, D., Leader, N. 2017. *The Red Book of Birds in Israel.* The Society for the Protection of Nature and the Nature and Parks Authority,

Tel Aviv, Israel.

McFarlane, S.E., Senn, H.V., Smith, S.L., Pemberton, J.M. 2021. Locus-specific introgression in young hybrid swarms: Drift may dominate selection. *Molecular Ecology* 30: 2104–2115.

Medina, F.M. 1999. Foraging use of cultivated fields by the Houbara Bustard *Chlamydotis undulata fuertaventurae*. Rothschild and Hartert, 1894 on Fuerteventura (Canary Islands). *Bird Conservation International* 9(4): 373–86.

Meinertzhagen, R. 1954. *Birds of Arabia*. Oliver and Boyd, London, UK.

Meliane, M.K., Saidi, A., Petretto, M., Nasri-Ammar, K., Taghouti, E., Guidara, H., Boufaroua M., Woodfine, T., Gilbert, T. 2023. African houbara (*Chlamydotis undulata undulata*) confirmed in Sidi Toui National Park, Tunisia. *African Journal of Ecology* 61(2): 482–484.

Ministry of Agriculture, Hungary. 2023. National Report on the Implementation of the Great Bustard MOU and Action Plan in Hungary (2018-2022). CMS Document: CMS/GB/MOS5/Inf.7.6

Ministry of Environment, Albania. 2004. National Report on Great Bustard – *Otis tarda.* CMS document: CMS/GB.1/Inf.4.2.

Ministry of Environment and Physical Planning, Macedonia. 2004. National Report on the Implementation of the Great Bustard MOU and Action Plan in Macedonia (2001-2004) CMS document: CMS/GB.1/Inf.4.8.

Ministry of Environment, Water and Forests. 2022. Red List of bird species in Romania. Monitorul Oficial R.A., Bucharest, Romania. [In Romanian].

MITECO. 2022. [Conservation Strategy for endangered birds linked to agro-steppe environments in Spain]. Ministry for Ecological Transition and Demographic Challenge, Madrid, Spain. [In Spanish]

Monnier-Corbel, A., Monnet, A.C., Bacon, L., Benito, B.M., Robert, A., Hingrat, Y. 2022. Density-dependence of reproductive success in a Houbara bustard population. *Global Ecology and Conservation* 35: e02071.

Morales, M.B., Jiguet, F., Arroyo, B. 2001. Exploded leks: what bustards can teach us. *Ardeola* 48(1): 85–98.

Morales, M.B., Alonso J.C., Alonso, J.A. 2002. Annual productivity and individual female reproductive success in a Great Bustard *Otis tarda* population. *Ibis* 144: 293–300.

Morales, M.B., Bretagnolle, V., Arroyo, B. 2005. Viability of the endangered little bustard *Tetrax tetrax* population of western France. *Biodiversity Conservation* 14: 3135–3150.

Morales, M.B., Traba, J., Carriles, E., Delgado, M.P., De La Morena, E.G. 2008. Sexual differences in microhabitat selection of breeding little bustards *Tetrax tetrax*: ecological segregation based on vegetation structure. *Acta Oecologica*, 34(3): 345–353.

Morales, M.B., Bretagnolle, V. 2022. An update on the conservation status of the Little Bustard *Tetrax tetrax*: global and local population estimates, trends, and threats. *Bird Conservation International* 32(3): 337–359.

Munteanu, A. 2015. [*Otis tarda*]. *In:* Duca, G., Chirică, L., Toderaş, I., Teleuţă, A. (eds). [*Red Book of the Republic of Moldova*] 3rd edition. Ştiinţa, Chişinău, Moldova. pp. 313. [In Romanian]

Muratov, R.Sh. 2021. [*Bird Migration in the Pamir-Alai Region*]. Donish, Dushanbe, Tajikistan. [In Russian]

Muratov, R.Sh., Talbonov, Kh.M. 2022. The near-extirpation of the Great Bustard *Otis tarda* as a wintering species in Tajikistan. *Sandgrouse* 44(1): 80–83.

Muratov, R.Sh. 2025. Slight increase in the number of wintering Little Bustards *Tetrax tetrax* in Tajikistan. *Sandgrouse* 47: 150–154.

Nabi, G., Ullah, R., Khan, S., Nawsherwan, Amin, M., Rauf, N. 2019. The Asian Houbara Bustard *(Chlamydotis macqueenii)*: on an accelerating path to extinction? *Biodiversity and Conservation* 28: 1301-1302.

Naderi, M. 2017. *Action Plan for the Great Bustard in Iran*. Department of Environment, Tehran, Iran.

Nagy, A. 2023a. Report on monitoring *Otis tarda* and other species affected by disturbance and limiting factors. Project report "Conservation, protection and promotion of the natural values from the Salonta-Békéscsaba

crossborder area, ROHU-14 – The Nature Corner, Interreg V-A Romania-Hungary". Milvus Transilvania Vest, Salonta, Romania.

Nagy, A. 2023b. Report on monitoring *Otis tarda* and other species affected by powerlines. Project report "Conservation, protection and promotion of the natural values from the Salonta-Békéscsaba crossborder area, ROHU-14 – The Nature Corner, Interreg V-A Romania-Hungary". Milvus Transilvania Vest, Salonta, Romania.

Nagy, A. 2023c. Report on monitoring *Otis tarda* and other species affected by natural predators. Project report "Conservation, protection and promotion of the natural values from the Salonta-Békéscsaba crossborder area, ROHU-14 – The Nature Corner, Interreg V-A Romania-Hungary". Milvus Transilvania Vest, Salonta, Romania.

Nagy, A. 2023d. Report on set of proposals for an enhanced conservation and protection of natural values from the Salonta area. Project report "Conservation, protection and promotion of the natural values from the Salonta-Békéscsaba crossborder area, ROHU-14 – The Nature Corner, Interreg V-A Romania-Hungary". Milvus Transilvania Vest, Salonta, Romania.

Narwade, S., Bora, N., Bishnoi, P., Rithe, K. 2023. The collaboration between the Indian Army and BNHS to safeguard the Great Indian Bustard from the threat of extinction. Bombay Natural History Society, Mumbai, India.

Nefedov, A.A. 2015. [Bustards in Omsk oblast']. *Russian Ornithological Journal* 24(1099): 300–306. [In Russian]

Nefedov, A.A. 2022. The urgent need for a transboundary steppe sanctuary to secure the last Great Bustard *Otis tarda tarda* populations in western Siberia and northern Kazakhstan. *Sandgrouse* 44(1): 86–96.

Nissardi, S., Zucca, C. 2014. [First complete census of territorial male Little Bustard in Sardinia (2009-2011)]. *In:* Tinarelli, R., Andreotti, A., Baccetti, N., Melega, L., Roscelli, F., Serra, L., Zenatello, M. *Proceedings of the 16th Italian Ornithology Conference.* Centro Naturalistico Sammarinese, Cervia, Italy. pp. 407–408. [In Italian]

Onrubia, A., Aboulouafa, R., Amezian, M., El Idrissi Essougrati, A., El Khamlichi, R., Noaman, M. 2016. Alarming decline and range reduction of the highly threatened Great Bustard *Otis tarda* in Morocco. *Ostrich* 87: 277–280.

Oparin, M.L., Kondratenkov, I.A., Oparina, O.S., Mamaev, A.B. 2017. [*Little Bustard Population in Saratov Oblast'*]. [*Volga Ecological Journal*] 2: 157–169. [In Russian]

Oparin, M.L., Fedosov, V.N. 2021. [*Little Bustard Tetrax tetrax* Linnaeus, 1758]. *In:* [*Red Data Book of the Russian Federation. Animals*]. 2nd edition. VNII Ekologiya, Moscow, Russia. pp. 700–702. [In Russian]

Oparin, M.L., Oparina, O.S. 2021. [Little Bustard]. *In:* [*Red Data Book of Saratov Oblast'. Fungi. Lichens. Plants. Animals*]. Ministry of Natural Resources and Environment of Saratov Oblast', Papirus, Saratov, Russia. pp. 397. [In Russian]

Oparin, M.L., Oparina, O.S., Abushin, A.A., Fedosov, V.N., Nefedov, A.A. 2025. Status of Little Bustard *Tetrax tetrax* in Russia Based on Assessments in Four Key Regions. *Sandgrouse* 47: 59–72.

Oparina, O.S., Oparin, M.L. 2020. [*Impact of Intensive Agricultural Production in the Trans-Volga Part of Saratov Oblast' on Little and Great Bustard Populations*]. *In:* Zanin, M.A. (ed.). [*Biodiversity and Anthropogenic Transformation of Natural Ecosystems*] Saratovsky Istochnik, Saratov, Russia. pp. 57–63. [In Russian]

OSME (Ornithological Society of the Middle East). 2016. "Houbara Bustard (*Chlamydotis undulata*) in Egypt: A Review." *OSME Bulletin* 52: 12–18.

Ostrowski, S. 2025. The Little Bustard *Tetrax tetrax* in Afghanistan. *Sandgrouse* 47: 155–159.

Ostrowski, S., Rajabi, A.M., Noori, H. 2008. Assessment of raptor trade in Afghanistan: a short visit to Mazar-e-Sharif. *Falco* 31: 14–117.

Oufkir, L. 2019. [Bustard territories in Morocco: from nomad to globalization via the Emiratis.] *GéoDév* 7(6-7): 1–21. [In French]

Özbağdatlı, N., Karauz, S., Bünyamin, A. 2004. [National Action Plan]. Nature Association and General Directorate of Nature Conservation and National Parks, Istanbul, Türkiye. [In Turkish]

Özbağdatlı, N., Tavares, J.P. 2006. The situation of Great and Little Bustards in Turkey. Doğa Derneği, Ankara, Türkiye. https://www.dogadernegi.org/wp-content/uploads/2015/09/Great-and-little-bustard-in-Turkey-toy-makale.pdf.

Özgencil, İ.K., Akarsu, F., Karataş, M.M., Gürsoy-Ergen, A., Saygılı-Yiğit, F., Karakaya, M., Soyluer, M. 2022. Current status of Great Bustard *Otis tarda* in Turkey: Population size, distribution, movements, and threats. *Bird Conservation International* 32(4): 531–543.

Özgencil, İ.K., Soyluer, M., Karataş, M.M., Akarsu, F. 2022. Unconventional habitat choices by some Great Bustard *Otis tarda tarda* populations in Turkey. *Sandgrouse* 44: 113–121.

Özgencil, İ.K., Mueen, Q.H., Yavuz, K.E., Sözen, M.S., Karataş, A., Uysal, İ., Şahin, Ö.F., Çekici, A.A., Kaplan, K., Karataş, M.M., Erturhan, M., Uslu, A., Hatinoğlu, B., Boyla, K.A., İsfendiyaroğlu, S., Ekşioğlu, S., Akarsu, F. 2025. Türkiye's Little Bustards *Tetrax tetrax* in decline: assessing distribution, population trends and threats. *Sandgrouse* 47: 25–36.

Packman, C.E. 2011. Seasonal landscape use and conservation of a critically endangered bustard: Bengal Florican in Cambodia. Doctoral dissertation, University of East Anglia, UK.

Packman, C.E., Gray, T.N.E., Collar, N.J., Evans, T.D., Van Talinge, R.N., Virak, S., Lovett, A.A., Dolman, P.M. 2013. Rapid loss of Cambodia's Grasslands. *Conservation Biology* 27(2): 245–247.

Palacín, C., Alonso, J.C. 2009. Probable population decline of the Little Bustard *Tetrax tetrax* in north-west Africa. *Ostrich* 80(3): 165–170.

Palacín, C., Alonso, J.C., Martín, C.A., Alonso, J.A. 2012. The importance of traditional farmland areas for steppe birds: a case study of migrant female Great Bustards *Otis tarda* in Spain. *Ibis* 154: 85–95.

Palacín, C., Martín, B., Onrubia, A., Alonso, J.C. 2016. Assessing the extinction risk of the Great Bustard *Otis tarda* in Africa. *Endangered Species Research* 30: 73–82.

Palacín, C., Alonso, J.C., Martín, C.A., Alonso, J.A. 2017. Changes in bird migration patterns associated with human-induced mortality. *Conservation Biology* 31: 106–115.

Palacín, C., Alonso, J.C. 2018. Failure of EU biodiversity strategy in Mediterranean farmland protected areas. *Journal for Nature Conservation* 42: 62–66.

Palacín, C., Alonso, J.C. 2021. Avutarda euroasiática *Otis tarda. In:* López-Jiménez, N. (ed.). [Red Book of the Birds of Spain], SEO/BirdLife. Madrid, Spain. pp. 754–758. [In Spanish].

Palacín, C., Farias, I., Alonso, J.C. 2023. Detailed mapping of protected species distribution, an essential tool for renewable energy planning in agroecosystems. *Biological Conservation* 277: 109857.

Palacín, C., Alonso, J. C. 2024. [Great Bustard *Otis tarda]*. *In*: [*Improving knowledge of the conservation status of wild birds in Spain and updating the breeding bird atlas*]. SEO/Birdlife, and Ministry for Ecological Transition, Madrid, Spain. [In Spanish]

Patil, P., Chindarkar, P. 2012. Stray dogs a threat to Great Indian Bustards in Bustard Sanctuary, Maharashtra. *MISTNET* 13: 9–10.

Payne, S.L., Cunningham, S.J., Howes, C.G., McKechnie, A.E. 2023. A trait-based assessment of southern African arid-zone birds' vulnerability to climate change. *Biological Conservation* 287: 110338.

Per, E., Özbek, M.U., Uzunhisarcıklı, M.E., Bilgili, B. 2012. Great Bustard *Otis tarda* in Turkey: Adult female with three chicks at forest edge in Kars province. *Sandgrouse* 34: 148–150.

Pérez, C., Acebes, P., Franco, L., Lluisa, D., Morales, M.B. 2023. Olive grove intensification negatively affects wintering bird communities in central Spain. *Basic and Applied Ecology* 70: 27–37.

Perlman, Y. 2025. Decline in Little Bustard *Tetrax tetrax* numbers wintering in Israel since 1980s. *Sandgrouse* 47: 48–51.

Pinto, M., Rocha, P., Moreira, F. 2005. Long-term trends in great bustard *(Otis tarda)* populations in Portugal

suggest concentration in single high quality area. *Biological Conservation* 124(3): 415–423.

Pitra, C., Lieckfeldt, D., Alonso, J.C. 2000. Population subdivision in Europe's great bustard inferred from mitochondrial and nuclear DNA sequence variation. *Molecular Ecology* 9: 1165–1170.

Pitra, C., Suárez-Seoane, S., Martín, C.A., Streich, W.J., Alonso, J.C. 2011. Linking habitat quality with genetic diversity: a lesson from great bustards in Spain. *European Journal of Wildlife Research* 57: 411–419.

Poirel, C., Dalloyau, S., Villers, A., Boudarel, P., Wolff, A., Bizet, D., Menard, C., Bretagnolle, V., Devoucoux, P. 2020. [3rd National Action Plan for the Little Bustard]. Ministry of Ecological and Solidarity Transition, DREAL, New Aquitaine, France. [In French]

Potts, B.M., Barbour, R.C, Hingston, A.B., Vaillancourt, R.E. 2003. Genetic pollution of native eucalypt gene pools – identifying the risks. *Australian Journal of Botany* 51: 1–25.

Pratt, T.K., Beehler, B.M. 2015. *Birds of New Guinea*. Second edition. Princeton University Press, Princeton, USA.

Prangel, E., Kasari-Toussaint, L., Neuenkamp, L., Noreika, N., Karise, R., Marja, R., Ingerpuu, N., Kupper, Tiiu, Keerberg, L., Oja, E., Meriste, M., Titsaar, A., Ivask, M., Helm, A. 2023. Afforestation and abandonment of semi-natural grasslands lead to biodiversity loss and a decline in ecosystem services and functions. *Journal of Applied Ecology* 60(5): 825–836.

Prinsen, H.A.M., Boere, G.C., Píres, N., Smallie, J.J. 2011. Review of the conflict between migratory birds and electricity power grids in the African-Eurasian region. CMS Technical Series No. 20. CMS, Bonn, Germany.

Prokopov, K.P. 2022. Breeding and migratory Great Bustards *Otis tarda tarda* persist in the Zaisan lake basin, eastern Kazakhstan. *Sandgrouse* 44(1): 76–79.

Purev-Ochir, G., Dieuleveut, T., Namdag, L., Chorgaar, S., Hingrat, Y. 2025. First confirmed nesting record of Asian Houbara Bustard *Chlamydotis macqueenii* in the Uvs Lake Basin, Northwestern Mongolia. *Mongolian Journal of Biological Sciences* 23(1): 31–36.

Raab, R., Julius, E., Spakovszky, P. 2009. Guidelines for Great Bustard nests. Convention on Migratory Species. CMS Document: CMS/GB/MoS3/Doc.7.4.2/Annex 2.

Raab, R., Spakovszky, P., Julius, E., Schütz, C., Schulze, C.H. 2011. Effects of power lines on flight behaviour of the West-Pannonian Great Bustard *Otis tarda* population. *Bird Conservation International* 21: 142–155.

Raab, R., Schütz, C., Spakovszky, P., Julius, E., Schulze, C.H. 2012. Underground cabling and marking of power lines: conservation measures rapidly reduced mortality of West-Pannonian Great Bustards *Otis tarda*. *Bird Conservation International* 22: 299–306.

Rabier, R., Lesobre, L., Robert, A. 2021. Reproductive performance in houbara bustard is affected by the combined effects of age, inbreeding and number of generations in captivity. *Scientific Reports* 11: 7813.

Radde, G. 1884. [Ornithological Fauna of the Caucasus. Systematic and Biological-Geographical Description of Caucasian Birds]. Printing Office of the Office of the Chief Civil Unit in the Caucasus, Tiflis, Georgia. [In Russian]

Rahmani, A.R. 2006. *Need to start Project Bustards.* Bombay Natural History Society, Mumbai, India.

Rahmani, A.R., Manakadan, R. 1986. Movement and flock composition of the Great Indian Bustard *Ardeotis nigriceps* (Vigors) at Nanj, Solapur District, Maharashtra, India. *Journal of the Bombay Natural History Society* 83: 17–31.

Rahmani, A.R., Shobrak, M.Y., Newton, S. F. 1994. Birds of the Tihamah coastal plains of Saudi Arabia. *Bulletin of the Ornithological Society of the Middle East* 32: 1–19.

Ralston-Paton, S., BirdLife South Africa. 2025. Summary of Bird Monitoring Reports from Operational Wind Energy Facilities in South Africa. *BirdLife South Africa Occasional Report Series:* 3.

Ram, M., Gadhavi, D., Sahu, A., Srivastava, N., Rather, T.A., Bhatia, K., Jhala, L., Zala, Y., Gadhvi, I., Modi, V. 2023. Unravelling the secrets of Lesser Florican: a study of their home range and habitat use in Gujarat, India. *Scientific Reports* 13(1): 19082.

Ramadan-Jaradi, G., Itani, F., Serhal, A. 2017. Interesting bird records for Lebanon including a Diederik Cuckoo

Chrysococcyx caprius, two Red Crossbills *Loxia curvirostra* and the first records of Macqueen's Bustard *Chlamydotis macqueenii* and Blue-cheeked Bee-eater *Merops persicus* for over 58 and 70 years respectively. *Sandgrouse* 39(2): 187–192.

Ramos, R.F., Diogo, J.A., Santana, J., Silva, J.P., Reino, L., Schindler, S., Beja, P., Lomba, A., Moreira, F. 2021. Impacts of sheep versus cattle livestock systems on birds of Mediterranean grasslands. *Scientific Reports* 11: 10827.

Ramos, R.F., Franco, A.M.A., Gilroy, J.J., Silva, J.P. 2023a. Temperature and microclimate refugia use influence migratory timings of a threatened grassland bird. *Movement Ecology* 11: 75.

Ramos, R.F., Franco, A.M.A., Gilroy, J.J., Silva, J.P. 2023b. Combining bird tracking data with high-resolution thermal mapping to identify microclimate refugia. *Scientific Reports* 13(1): 4726.

Razdan, T., Mansoori, J. 1989. A review of the bustard situation in the Islamic Republic of Iran. *Bustard Studies* 4: 135–145.

Rhymer, J.M., Simberloff, D. 1996. Extinction by hybridization and introgression. *Annual Review of Ecology, Evolution, and Systematics* 27: 83–109.

Riou, S., Judas, J., Lawrence, M., Pole, S., Combreau, O. 2011. A 10-year assessment of Asian Houbara Bustard populations: trends in Kazakhstan reveal important regional differences. *Bird Conservation International* 21: 134–141.

Riou, S., Combreau, O. 2014. Male territories and the lek-like mating system of MacQueen's Bustard *Chlamydotis macqueenii*. *Journal of Ornithology* 155: 959–967.

Rustamov, E.A. 2022. The Great Bustard *Otis tarda tarda* is Critically Endangered in Turkmenistan. *Sandgrouse* 44(1): 19–25.

Rustamov, E.A., Khodzhamuradov, H.I. 2024. Great Bustard, Houbara Bustard. *In:* Saparmuradov, D. (eds.). *Red Book of Turkmenistan*. Turkmen State Publishing Service, Ashghabat, Turkmenistan. pp. 264–267.

Rustamov, E.A., Shcherbina, A.A. 2025. The Little Bustard *Tetrax tetrax* in Turkmenistan: an analysis of status, 1880-2024. *Sandgrouse* 47: 140–149.

Saint Jalme, M., Gaucher P., Paillat P. 1994. Artificial insemination in Houbara bustards (*Chlamydotis undulata*): influence of the number of spermatozoa and insemination frequency on fertility and ability to hatch. *Reproduction* 100: 93–103.

Saint Jalme, M., Williams, J., Michaelian, I., Paillat, P. 1996. Seasonal variation of LH, sex steroids, body mass, moult, display and laying in two subspecies of houbara bustard *Chlamydotis undulata undulata* and *Chlamydotis undulata macqueenii* housed in outdoor cages under natural conditions. *General and Comparative Endocrinology* 102(1): 102–112.

Saleh, M.A. 1989. The status of the Houbara Bustard in Egypt. *Bustard Studies* 4: 151–156.

Salim M.A. 2022. The Current Status and Population of the Threatened Bird Species in the Ahwar of Southern Iraq: Conservation and Management Approaches. *Jordan Journal of Natural History* 9(1): 55–71.

Sánchez-Zapata, J.A., Donázar, J.A., Delgado, A., Forero, M.G., Ceballos, O., Hiraldo, F. 2007. Desert locust outbreaks in the Sahel: resource competition, predation and ecological effects of pest control. *Journal of Applied Ecology* 44: 323–329.

Santangeli, A., Cardillo, A., Pes, M., Aresu, M. 2023. Alarming decline of the Little Bustard *Tetrax tetrax* in one of its two population strongholds in Sardinia, Italy. *Bird Conservation International* 33: e57.

Sastre, P., Ponce, C., Palacín, C., Martín, C. A., Alonso, J. C. 2009. Disturbances to great bustards (*Otis tarda*) in central Spain: human activities, bird responses and management implications. *European Journal of Wildlife Research* 55: 425–432.

Sayre, R., Karagulle, D., Frye, C., Boucher, T., Wolff, N.H., Breyer, S., Wright, D., Martin, M., Butler, K., Van Graafeiland, K., Touval, J., Sotomayor, L., McGowan, J., Game, E.T., Possingham, H. 2020. An assessment of the representation of ecosystems in global protected areas using new maps of World Climate Regions and World Ecosystems. *Global Ecology and Conservation* 21: e00860.

Schilling, J., Freier, K.P., Hertig, E., Scheffran, J. 2012. Climate change, vulnerability and adaptation in North Africa with focus on Morocco. *Agriculture, Ecosystems & Environment* 156: 12–26.

Schuster, C., Iglesias–Lebrija, J.J., Carrascal, L.M. 2012. [Recent population trends of the Houbara bustard in the Canary Islands: methodological analysis and conservation status]. *Animal Biodiversity and Conservation* 35(1): 125–139. [In Spanish]

Schuster, R.K., Sivakumar, S., Kinne, J. 2025. Parasite findings in the MacQueen's bustard, C*hlamydotis macqueenii* (Grey, 1832), and considerations on the parasite fauna of bustards and the systematic position of some of the parasites. *Veterinary Parasitology: Regional Studies and Reports* 57: 101146.

Scott, D.A. 1995. *A directory of wetlands in the Middle East*. IUCN, Gland, Switzerland.

Senyatso, K.J., Collar, N.J., Dolman, P.M. 2013. Assessing range-wide conservation status change in an unmonitored widespread African bird species. *Diversity and Distributions* 19(2): 106–119.

Serra, G., Al-Qaim, G., Abdallah, M.S., Kanani, A., Assaed, A.K. 2005. A long-term bird survey in the central Syrian desert (2000-2003). Part 1. *Sandgrouse* 27(1): 9–23.

Shakula, G.F, Shakula, S., Baskakova, Kessler, M. 2022. A comprehensive review of records shows eastern Kazakhstan has multiple opportunities to conserve the Great Bustard *Otis tarda tarda* year-round. *Sandgrouse* 44(1): 59–75.

Shakula, G.F, Shakula, V., Shakula, S., Baskakova, Kessler, M. 2022. Southern Kazakhstan is crucial to the survival of Central Asia's remaining Great Bustard *Otis tarda tarda* populations. *Sandgrouse* 44(1): 44–58.

Shakula, V.F., Shakula, S.V., Shakula, G.V. 2017. [Little Bustard—a natural component of agricultural landscapes of South Kazakhstan]. *In:* [*Proceedings of the Conference 'Biosphere Farming and Sustainable Development of Rural Areas'*]. Ottisk, Irkutsk, Russia. pp. 23–25. [In Russian]

Shaw, J.M. 2013. Power line collisions in the Karoo: Conserving Ludwig's Bustard. Doctoral dissertation, University of Cape Town, South Africa.

Shaw, J.M., Jenkins, A.R., Allan, D.G., Ryan, P.G. 2016. Population size and trends of Ludwig's Bustard *Neotis ludwigii* and other large terrestrial birds in the Karoo, South Africa. *Bird Conservation International* 26(1): 69–86.

Sheldon, R.D., Launay, F. 1998. Monitoring Houbara Bustard *Chlamydotis undulata macqueenii* distribution, populations and time of occurrence within the Abu Dhabi Emirate using a network of local rangers. *Bird Conservation International* 8: 1–9.

Sherif, B.E.D. 1999. *Directory of Important Bird Areas in Egypt*. Palm Press, Cairo, Egypt.

Shobrak, M.Y., Al-Sirhan, A. 2022. *Conservation directory of the birds of Kuwait*. IUCN, Gland, Switzerland, and Environment Public Authority, Kuwait City, Kuwait.Shobrak, M.Y., Rahmani, A.R. 1991. Notes on the Arabian Bustard in Saudi Arabia. *Sandgrouse* 13: 14–23.

Showler, A.T. 2019. Desert locust control: the effectiveness of proactive interventions and the goal of outbreak prevention. *American Entomologist* 65: 180–191.

Silva, J.P., Pinto, M., Palmeirim, J.M. 2004. Managing landscapes for the little bustard *Tetrax tetrax*: lessons from the study of winter habitat selection. *Biological Conservation* 117: 521–528.

Silva, J., Santos, M., Queirós, L., Leitão, D., Moreira, F., Pinto, M., Leqoc, M., Cabral, J. 2010. Estimating the influence of overhead transmission power lines and landscape context on the density of Little Bustard *Tetrax tetrax* breeding populations. *Ecological Modelling* 221: 1954–1963.

Silva, J.P., Estanque, B., Moreira, F., Palmeirim, J.M. 2014a. Population density and use of grasslands by female Little Bustards during lek attendance, nesting and brood-rearing. *Journal of Ornithology* 155: 53-63.

Silva, J.P., Palmeirim, J.M., Alcazar, R., Correia, R., Delgado, A., Moreira, F. 2014b. A spatially explicit approach to assess the collision risk between birds and overhead power lines: A case study with the little bustard. *Biological Conservation* 170: 256–263.Silva, J.P., Catry, I., Palmeirim, J.M., Moreira, F. 2015. Freezing heat: thermally imposed constraints on the daily activity patterns of a free-ranging grassland bird. *Ecosphere*

6(7): 119.

Silva, J.P., Correia, R., Alonso, H., Martins, R.C., D'Amico, M., Delgado, A., Sampaio, H., Godinho, C., Moreira, F. 2018. EU protected area network did not prevent a country wide population decline in a threatened grassland bird. *PeerJ* 6: e4284.

Silva, J.P., Arroyo, B., Marques, A.T., Morales, M.B., Devoucoux, P., Mougeot, F. 2022. Threats Affecting Little Bustards: Human Impacts. *In:* Bretagnolle, V., Traba, J., Morales, M.B. (eds), *Little Bustard: Ecology and Conservation.* Springer, Cham, Switzerland. pp. 243–271.

Silva, J.P., Marques, A.T., Bernardino, J., Allinson, T., Andryushchenko, Y., Dutta, S., Kessler, M., Martins, R.C., Moreira, F., Pallett, J., Pretorius, M.D., Scott, H.A., Shaw, J.M., Collar, N.J. 2023a. The effects of powerlines on bustards: how best to mitigate, how best to monitor? *Bird Conservation International* 33: e30.

Silva, J.P., Marques, A.T., Carrapato, C., Machado, R., Alcazar, R., Delgado, A., Godinho, C., Elias, G., Gameiro, J. 2023b. A nationwide collapse of a priority grassland birds related to livestock conversion and intensification. *Scientific Reports* 13: 10005.

Silva, J.P., Gameiro, J., Valerio, F., Marques, A.T. 2024. Portugal's farmland birds crisis requires action. *Science* 383: 157–157.

Sopyev, O.S., Ataev, K. 2011. [Houbara Bustard]. *In:* Annabayramov, B. (ed). [*Red Book of Turkmenistan*]. Ylym, Ashgabat, Turkmenistan. pp. 278–279. [In Turkmen]

Sorci, G., Lesobre L., Vuarin P., Levêque G., Saint Jalme M., Lacroix F.,Hingrat Y. 2021. Enforced monoandry over generations induces a reduction of female investment into reproduction in a promiscuous bird. *Evolutionary Applications* 14: 2773–2783.

Sorochinskii, M.V. 2023. [Materials on the Little Bustard *Tetrax tetrax* in the North Kazakhstan region]. [*Russian Journal of Ornithology*] 32(2305): 2179–2183. [In Russian]

Spakovsky, P., Raab, R., 2020. Impact of agriculture irrigation on the habitat structure and use by Great Bustards (*Otis tarda*) in a Natura 2000 site. *Ornis Hungarica* 28(2): 74–84.

Srinivas, Y., Yumnam, B., Dutta, S., Jhala, Y. 2022. Assessing genetic diversity and population structure for prioritizing conservation of the critically endangered Great Indian Bustard (*Aredotis nigriceps*). *Global Ecology and Conservation* 40: e02332.

Starikov, S.V. 2015. [Observations of Little Bustard *Tetrax tetrax* in the steppes of the Kalbinskii plateau (Eastern Kazakhstan)]. *Russian Journal of Ornithology* 24(1212): 4068–4069. [In Russian]

State Nature Conservancy of the Slovak Republic. 2019. [*Management Programme for the Sysľovské polia Special Protection Area for the Years 2020–2049*]. Banská Bystrica, Slovakia. [In Slovak]

Streich, W.J., Litzbarski, H., Ludwig, B., Ludwig, S. 2006. What triggers facultative winter migration of Great Bustard (*Otis tarda*) in Central Europe? *European Journal of Wildlife Resources* 52: 48–53.

Suárez-Santana, C.M., Marrero-Ponce, L., Navarro-Sarmiento, J., Rivero-Herrera, C., Grandia-Guzman, R., Colom-Rivero, A., Quesada-Canales, O., Sierra, E., Fernández, A. 2024. Blunt Force Trauma in the Canarian Houbara Bustard (*Chlamydotis undulata fuertaventurae*) Produced by Collision with Over-Head Lines. *Veterinary Sciences* 11(7): 287.

Sultanov, E., Mukhtarov ,H. 2023. [Great Bustard, Little Bustard, and Houbara] *In:* [*Red Book of the Republic of Azerbaijan*]. Ministry of Ecology and Natural Resources of Azerbaijan Republic, Baku, Azerbaijan. pp. 178–180. [In Azerbaijani]

Symes, A., Taylor, J., Mallon, D., Porter, R., Simms, C., Budd, K. 2015. *The Conservation Status and Distribution of the Breeding Birds of the Arabian Peninsula*. IUCN, Gland, Switzerland, and Environment and Protected Areas Authority, Sharjah, UAE.

Tarjuelo, R., Barja, I., Morales, M.B., Traba, J., Benítez-López, A., Casas, F., Arroyo, B., Delgado, M.P., Mougeot, F. 2015. Effects of human activity on physiological and behavioral responses of an endangered steppe bird. *Behavioral Ecology* 26: 828–838.

Taubenböck, H., Wurm, M., Dech, S., Esch, T. 2015. [*Global Urbanisation – Perspective from Space*]. Springer Spektrum, Berlin Heidelberg, Germany. [In German]

Tejera, G., Rodríguez, B., Armas, C., Rodríguez, A. 2018. Wildlife-vehicle collisions in Lanzarote Biosphere Reserve, Canary Islands. *PLoS ONE* 13(3): e0192731.

Ten, A., Gritsina, M., Abduraupov, T., Kreuzberg, E., Mitropolskiy, M., Marmazinskaya, N., Raykov, A. 2025. Warming temperatures and reduced snow cover are associated with new wintering grounds for the Little Bustard *Tetrax tetrax* in Uzbekistan. *Sandgrouse* 47: 133–139.

Thiollay, J.M. 2006. Severe decline of large birds in the Northern Sahel of West Africa: a long-term assessment. *Bird Conservation International* 16: 353–365.

Tishchenkov, A., Aptekov, A. 2001. [Records of some rare birds in the Dnestr Region in 2000-2001]. *Berkut* 10(2): 153–155. [In Russian].

Torres, A., Palacín, C., Seoane, J., Alonso, J.C. 2011. Assessing the effects of a highway on a threatened species using Before–During–After and Before–During–After-Control–Impact designs. *Biological Conservation* 144: 2223–2232.

Tourenq, C., Combreau, O., Lawrence, M., Pole, S. B., Spalton, A., Gao, X. J., Al Baidani, M., Launay, F. 2005. Alarming Houbara bustard population trends in Asia. *Biological Conservation* 121(1): 1-8.

Traba, J., Morales, M.B. 2019. The decline of farmland birds in Spain is strongly associated to the loss of fallowland. *Scientific Reports* 9: 9473.

Traba, J., Morales, M.B., Silva, J.P., Bretagnolle, V., Devoucoux, P. 2022. Habitat selection and space use. *In*: Bretagnolle, V., Traba J., Morales, M.B. (eds). *Little Bustard: Ecology and Conservation*. Springer, Cham, Switzerland. pp. 101–121.

Trpkov, B., Dončev, I., Drozdovski, I. 1978. Hunting manual. Federation of the hunting associations of Macedonia, Skopje, Macedonia. 1997. In: Keller, V., Herrando, S., Voříšek, P., Franch, M., Kipson, M., Milanesi, P., Martí, D., Anton, M., Klvaňová, A., Kalyakin, M.V., Bauer, H.G., Foppen, R.P.B. (eds). Unpublished data from *European Breeding Bird Atlas 2: Distribution, Abundance and Change.* European Bird Census Council & Lynx Edicions, Barcelona, Spain.

Turner, D.A. 1982. The status and distribution of the Arabian Bustard *Otis arabs* in northeastern Africa, and its possible occurrence in northern Kenya. *Scopus* 6: 20–21.

Ubushaev, B.I., Badmaev, V.Ya., Erdnenov, G.I., Muzaev, V.M., Medzhidov, P.A. 2016. [Final Assessment of the Little Bustard's Breeding and Migrating Populations in the Republic of Kalmykia.] Ministry of Natural Resources and Environment of the Russian Federation. Chornye Zemli State Nature Biosphere Reserve. Komsomol'skii, Republic of Kalmykia, Russia. [In Russian]

Ucero, A., Abril-Colón, I., Palacín, C., Alonso, J.C. 2021. [Houbara Bustard (*Chlamydotis undulata fuertaventurae*)]. *In:* López-Jiménez, N. (ed.). [*Red Book of the Birds of Spain*], SEO/BirdLife, Madrid, Spain. pp. 125–136. [In Spanish]

Ucero, A., Alonso, J.C., Palacín, C., Abril-Colón, I., Álvarez-Martínez, J.M. 2023. Display site selection in a ground dwelling bird: the importance of viewshed. *Behavioral Ecology* 34(2): 223–235.

Ucero, A., Alonso, J.C., Palacín, C., Abril-Colón, I., Álvarez-Martínez, J.M. 2024. Power line density and habitat quality: key factors in Canarian houbara bustard decline. *Bird Conservation International* 34: e32.

Ucero, A., Alonso, J.C., Abril-Colón, I., Palacín, C. 2025. [*Feral cats and houbara bustards: an unresolved conflict in the Canary Islands*]. *Quercus* 474: 14–17. [In Spanish]

Uddin, M., Dutta, S., Kolipakam, V., Sharma, H., Usmani, F., Jhala, Y. 2021. High bird mortality due to power lines invokes urgent environmental mitigation in a tropical desert. *Biological Conservation* 261: 109262.

Usta, T., Tatar, B., Yıldırım, G., Çatal, H., Bolat, Ü. 2016. [Great Bustard Species Action Plan]. Republic of Türkiye Ministry of Forestry and Water Affairs, General Directorate of Nature Conservation and National Parks, Istanbul, Türkiye. [In Turkish]

Vadász, C., Lóránt, M. 2014. Key mortality causes of the Great Bustard *(Otis tarda)* in Central Hungary: an analysis of known fatalities. *Ornis Hungarica* 22(2): 32–41.

van Heezik, Y., Seddon, P.J. 2002. Patch use and exploratory movements of a resident houbara bustard in northern Saudi Arabia. *Journal of Arid Environments* 50(4): 683–686.

van Heezik, Y., Jalme, M. Saint, Hémon, S., Seddon, P.J. 2002. Temperature and egg-laying experience influence breeding performance of captive female houbara bustards. *Journal of Avian Biology* 33: 63–70.

Vande weghe, J.P., Vande weghe, G.R. 2011. *Birds in Rwanda*. Rwanda Development Board, Kigali, Rwanda-Vilkov, V.S. 2014. [Little Bustard *Tetrax tetrax* nests again in the North Kazakhstan region]. [*Russian Journal of Ornithology*] 23(1088): 4165. [In Russian]

Visser, E., Perold, V., Ralston-Paton, S., Cardenal, Á.C., Ryan, P.G. 2019. Assessing the impacts of a utility-scale photovoltaic solar energy facility on birds in the Northern Cape, South Africa. *Renewable Energy* 133: 1285–1294.

VNII Ekologiya. 2021. [Red Data Book of the Russian Federation: Animals]. 2nd edition. VNII Ekologiya, Moscow, Russia. [In Russian]

von Mollendorff, O.F. 1877. The vertebrata of the province of Chihli with notes on Chinese zoological nomenclature. *Journal of the North-China branch of the Royal Asiatic Society* 11: 40–113.

Vyas, R., Sharma, B.K. 2013. Distribution, Status and Conservation of Lesser Florican *Sypheotides indicus* in Rajasthan. *In:* Sharma, B.K., Kulshreshtha, S., Rahmani, A.R. (eds). *Faunal Heritage of Rajasthan, India: General Background and Ecology of Vertebrates.* Springer, New York, USA. pp. 347–356.

Wamiti, W., Mikula, P., Hromada, M. 2015. Bird records from northern Kenya. *Kenya Birding* 9: 34–35.

Wamiti, W., Hromada, M., Mikula, P. 2016. Kenya's fifth record of Arabian Bustard *Ardeotis arabs* in Sibiloi National Park. *Scopus* (36): 46–47.

WANEE Asia. 2023. Bengal Florican of Vietnam. https://wanee.asia/bengal-florican-of-vietnam/.

Waters, D. 2023. Nesting in 2022. *Otis (Newsletter of the Great Bustard Group)* Winter: 17–23.

Watzke, H. 2024. [Germany's Last Great Bustards: Help for the Great Bustard]. *Der Falke* 11: 37–43. [In German]

Welch, G., Welch, H. 1984. Birds seen on an expedition to Djibouti. *Sandgrouse* 6: 1–22.

Welch, G., Welch, H. 1989. A preliminary survey of the Arabian Bustard in Djibouti. *Bustard Studies* 4: 177–184.

William, G., Saqib, Z., Qadir, A., Naeem, N., Brohi, M. A., Kamran, A., Rafique, A. 2025. Assessing the vulnerability of wintering habitats for the red-listed Asian Houbara (*Chlamydotis macqueenii*) using climate models and human impact assessments. *Avian Research* 16(1): 100221.

Williams, V.L., Cunningham, A.B., Kemp, A.C., Bruyns, R.K. 2014. Risks to Birds Traded for African Traditional Medicine: A Quantitative Assessment. *PLOS One* 9(8): e105397.

Winkler, D., Billerman, S., Lovette, I. 2020. Bustards (*Otididae*), version 1.0. *In: Birds of the World*. Cornell Lab of Ornithology, Ithaca, USA.

Withings, M.J., Williams, V.L., Hibbitts, T.J. 2011. Animals Traded for Traditional Medicine at the Faraday Market in South Africa: Species Diversity and Conservation Implications. *Journal of Zoology* 284: 84–96.

Woinarski, J.C.Z., Stobo-Wilson, A.M., Crawford, H.M., Dawson, S.J., Dickman, C.R., Doherty, T.I.M.S., Fleming, P.A., Garnett, S.T., Gentle, M.N., Legge, S.M., Newsome, T.M. 2022. Compounding and complementary carnivores: Australian bird species eaten by the introduced European red fox *Vulpes vulpes* and domestic cat *Felis catus*. *Bird Conservation International* 32: 506–522.

Yakovlev, V.A., Berber, A.P., Erzhanov, N.T., Rybalkina, O.A., Tuganov, D.E. 2016. [New data on the Great Bustard *Otis tarda*, Little Bustard *Tetrax tetrax* and Houbara Bustard *Chlamydotis undulata* in Central Kazakhstan.] [*Russian Journal of Ornithology*] 25(1367): 4522–4526. [In Russian]

Yang, W., Qiao, J., Combreau, O., Gao, X., Zhong, W. 2002. Display-sites selection by houbara bustard (*Chlam-*

ydotis [*undulata*] *macqueenii*) in Mori, Xinjiang, People's Republic of China. *Journal of Arid Environments* 51: 625–631.

Yang, W.K., Qiao, J.-F., Combreau, O., Gao, X.Y.,Zhong, W.Q. 2003. Breeding habitat selection by the Houbara Bustard *Chlamydotis [undulata] macqueenii* in Mori, Xinjiang, China. *Zoological Studies* 42: 470–475.

Yang, W., Qiao, J., Gao, X., Zhong, W. 2005. The current status of ecological and biological research on the bustard. *Arid Zone Research* 22(2): 205–210.

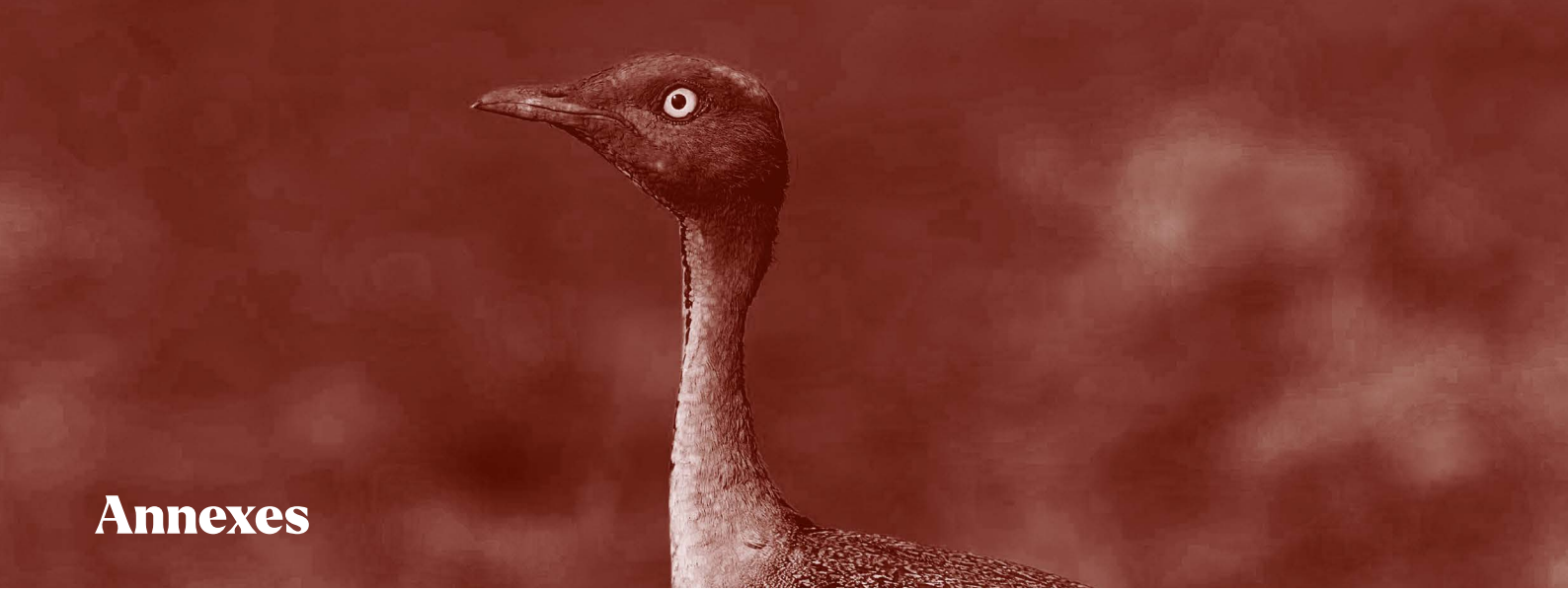
Yanushevich, A.I., Tyrin, P.S., Yakovleva, I.D., Kydyraliev, A., Semenova, N.I. 1959. [*Birds of Kirgizia*]. Academy of Sciences, Frunze, Kyrgyzstan. [In Russian]

Yousefi, M. 2017. Steppe-land birds and ecological traps. *In:* Student Conference on Conservation Science, University of Cambridge, Cambridge, UK.

Yousefi, M., Kafash, A., Malakoutikhah, S., Ashoori, A., Khani, A., Mehdizade, Y., Ataei, G., Ilanloo, S.S., Rezaei, H.R., Silva, J.P. 2017. Distance to international border shapes the distribution pattern of the growing Little Bustard *Tetrax tetrax* winter population in Northern Iran. *Bird Conservation International* 28: 499–508.

Yousefi, M., Ahmadi, M., Nourani, E., Rezaei, A., Kafash, A., Khani, A., Sehhatisabet, M.E., Adibi, M.A., Goudarzi, F., Kaboli, M. 2017. Habitat suitability and impacts of climate change on the distribution of wintering population of Asian Houbara Bustard (*Chlamydotis macqueenii*) in Iran. *Bird Conservation International* 27: 294–304.

Ziembicki, M. 2010. *Australian Bustard*. CSRIO Publishing, Collingwood, Australia.



Annexes

Annex 1. Country-specific information sheets

The country-specific information sheets for all Range States covered by the Bustard MsAP are based on the data presented in the species assessment sheets in Part 3. In addition, they include country-specific priority conservation actions, identified through questionnaires received and/or direct consultations with experts in the respective Range States. Where available, published sources used for both the species-specific and the country-specific sheets are listed below the relevant country tables and also included in the general list of references.

Key threats are evaluated as to their severity using a scale adapted from the IUCN Threats Classification Scheme (Version 3.3) and described below. Threat rankings indicate the current or near-future relevance of each threat to the species at the country level.

Threat score categories:

C = **Critical:** a factor causing or likely to cause ***very rapid declines*** (>30% over 10 years);
H = **High:** a factor causing or likely to ***cause rapid declines*** (20-30% over 10 years);
M = **Medium:** a factor causing or likely to ***cause relatively slow, but significant, declines*** (10-20% over 10 years);
Low = **Low:** a factor causing or likely to ***cause fluctuations***;
Loc = **Local:** a factor causing or likely to ***cause negligible declines;***
U = **Unknown:** a factor that is likely to ***affect the species but it is unknown to what extent.***

BUSTARD

Multi-species Action Plan