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IN THE SHADOW OF THE STEPPE: LIFE OF THE GREAT BUSTARD



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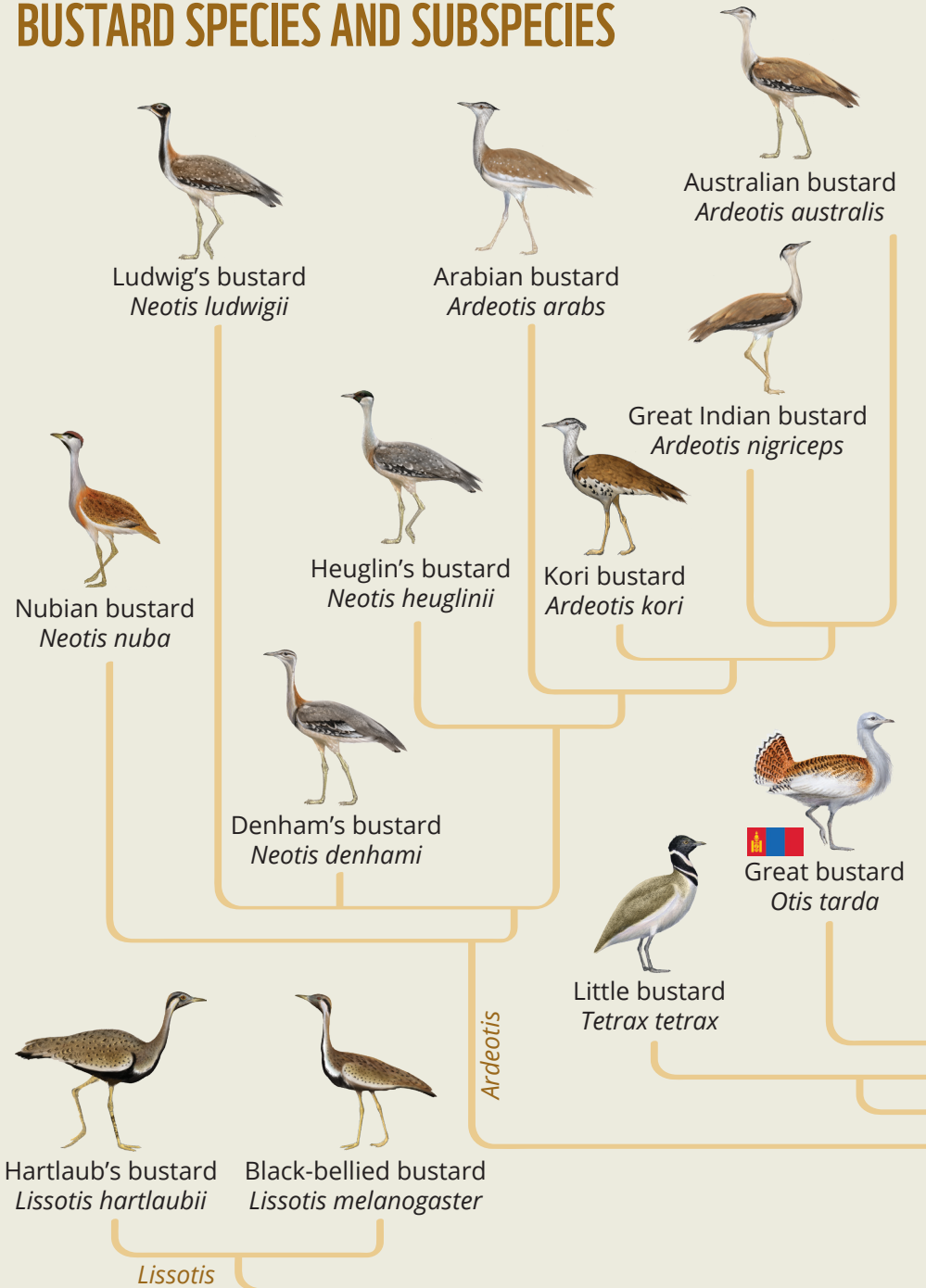
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BUSTARD SPECIES AND SUBSPECIES





Bengal florican
Houbaropsis bengalensis



Savile's bustard
Lophotis savilei



White-bellied bustard
Eupodotis senegalensis



Blue korhaan
Eupodotis caerulescens



Red-crested bustard
Lophotis ruficrista



Buff-crested Bustard
Lophotis gindiana



Southern black korhaan
Afrotis afra



Northern black korhaan
Afrotis afraoides



Lesser florican
Sypheotides indicus



MacQueen's bustard
Chlamydotis macqueenii



Little brown bustard
Eupodotis humilis



Ruppell's korhaan
Eupodotis rueppelii



Karoo korhaan
Eupodotis vigorsii

Lophotis

Afrotis

Heterotetrax

Eupodotis

Otidinae



Two Bustard Species Recorded in Mongolia

NAME

Scientific name – *Otis tarda dybowskii*
(Linnaeus, 1758)

Mongolian name – Хонин тоодог

English name – (Eastern) Great Bustard



STATUS

A migratory bird that breeds in Mongolia.

Common name: 大鹑 (Chinese); Great Bustard (English); Дуадақ (Kazakh); түйеқұс (Kazakh oralman); 느시 (Korean); گریبج (Kurdish); Чоң тоодак (Kyrgyz); Хонин тоодог (Mongolian); غرم شىم (Persian); Большая дрофа (Russian); Дуғдоғ (Tajik); Токлутай (Turkmen); Тогдук (Tuvan); Тухта тувалоқ (Uzbek)



CONSERVATION STATUS OF THE GREAT BUSTARD



Listed as Rare in the Red Book of Mongolia.



Classified as globally 'Endangered' and regionally 'Vulnerable' by the IUCN.



Listed in Appendix II of the "Convention on International Trade in Endangered Species of Wild Fauna and Flora" (CITES)



Listed in Appendix I and II of the Convention on the Conservation of Migratory Species (CMS).

ORIGIN

Great bustards are considered among the most ancient representatives of steppe ecosystem fauna. The earliest fossils attributed to great bustards were discovered in Germany and date back to the mid-Eocene (56–33.9 million years ago). However, the modern species is believed to have emerged during the Pleistocene epoch (2.58 million to 11.7 thousand years ago).

TWO SUB-SPECIES OF GREAT BUSTARD IN THE WORLD

The species is found in two distinct regions: one in Europe and the other in Asia. The European subspecies is called the Western Great Bustard (*Otis tarda tarda*), while the Asian subspecies is the Eastern Great Bustard (*Otis tarda dybowskii*).

***Otis tarda tarda* (Europe):**

The main range of this subspecies is in Europe, with its eastern edge covering the western and southwestern Altai Mountains. “Compared to the Asian subspecies, the male of the European subspecies has a darker blue-gray head and neck, a brighter orange upper body, and more prominently brownish sides.”

***Otis tarda dybowskii* (Asia):**

This subspecies is distributed in Asia covering from east of Altai Mountain range in western Mongolia to eastern Russia, and north-east China. Males are characterized by a light blue-gray head and neck, orange upperparts, and paler sides on the wings.

The Asian subspecies, which lives in the steppes south of Lake Baikal and adjacent Mongolia, was named in honor of the famous Russian and Polish scientist Benedikt Ivanovich Dybowski (1833-1930), who conducted many different biological surveys in Siberia and the Far Eastern Russia.

IDENTIFICATION AND MORPHOLOGY

Although great bustards resemble cranes and ostriches in appearance, genetic studies have confirmed that they belong to the bustard family (Otididae). Genetic evidence also reveals that bustards share distant evolutionary ties with cuckoos (Cuculiformes) and turacos (Musophagiformes), together forming a distinct clade known as Otidimorphae.

Body length: 90-105 cm

Wingspan: 170-260 cm

Weight: 3.3-21 kg



Male great bustards can weigh up to 21 kg, making it the heaviest flying bird in the world. In contrast, females are significantly lighter, typically weighing between 5 and 7 kg.

Great bustards are one of the largest birds in the family, distinguished by a large head, a long, thick neck, and strong legs. Its head and neck are light gray, often appearing white from a distance. The back is bright yellow with black stripes, while the sides and belly are pale. Males are significantly larger and bulkier than females and are adorned with long, beard-like white feathers extending from the base of the beak. Females are slimmer and have a browner overall coloration. The wings are broad, and the tail is relatively short. During the breeding season, males display prominent white “beard”-like feathers and a paler neck. By mid-summer, these feathers become less visible, and the neck shifts to a more bluish-gray hue. While overall plumage does not change significantly with the seasons, there is a clear difference in size and ornamentation between the sexes, with males being notably larger and more visually striking.

DIET



© G.Amarkhuu

Great bustards have an omnivorous diet, meaning it feeds on both plant- and animal-based foods. Its dietary preferences vary depending on factors such as habitat, age, sex, season, and food availability. During the summer, it primarily consumes insects, while in winter, its diet shifts more toward plant-based food.

Great bustards occasionally feed on various cereals, legumes, and plant roots. They also consume a wide range of insects, including grasshoppers, crickets, beetles, ants, blackflies, and insect larvae. Their diet may additionally include butterflies, red-footed bugs, small mammals such as mice and rats, amphibians like frogs and lizards, reptiles, and even the eggs of small bird species.

Unlike cranes, bustards do not dig deeply into the soil or wrap their beaks around grasses. Instead, they often pick food directly from the surface. Because their diet is largely composed of seeds, they have a high-water requirement. After feeding, they actively seek clean, cold water often preferring spring water to quench their thirst. In winter, they meet their hydration needs by swallowing snow.

BREED

Male great bustards typically begin breeding at around 5 to 6 years of age. In early spring, bustards arrive at their breeding grounds in small flocks. During the breeding season, males congregate at slightly elevated sites, where they perform elaborate courtship displays to attract females. The great bustard is a polygamous species, with each male mating with multiple females. The breeding season extends through the end of May, and individuals tend to return to the same display sites each year.



BREEDING BEHAVIOR AND “DISPLAYING”

It is one of the few bird species that exhibits its most dramatic and fascinating behavior during the breeding season, performing an elaborate courtship display. This display is carried out by males to attract the attention of females.



During the display, the male bustard flaunts his entire body, inflating his throat sac and expelling the air with a distinctive sound, while raising the white feathers on the insides of his tail and wings transforming his appearance to nearly all-white when viewed from a distance. Males typically choose high, open, and well-lit areas for these displays. There, they move slowly, stomp their feet, and produce a variety of unique vocalizations to captivate nearby females.

Males that successfully attract a female's interest proceed to mate with her. These displays are most frequent at dawn and in the late afternoon, when temperatures are cooler. During these periods, males also take time to forage for food.





PREPARING NESTING

After the breeding season, the female lay eggs. The male does not participate in the rearing of the chicks, but move to post breeding areas to join with other males. The female chooses an open area to nesting, digging a hole with her feet and clearing the surrounding grass to prepare a nesting site. The great bustard has three short, forward-pointing toes that are not adapted for perching, indicating its entirely terrestrial lifestyle. This anatomical feature confirms that the species nests exclusively on the ground. Females typically lay 1 to 3 eggs per clutch. The eggs are glossy and greenish-brown in color, often marked with a distinct marbled pattern and covered with dark spots across the entire surface providing excellent camouflage within the steppe environment. (Balatsky, 2020).



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INCUBATION PERIOD

The incubation period lasts approximately 28 to 30 days from the laying of the first egg (Balatsky, 2020). The female incubates her eggs very carefully, taking advantage of the color of her feathers to cover her entire body so as not to freeze the eggs, and to hide in the grass, almost indistinguishable from her habitat. In the morning and evening, the female temporarily leaves the nest and feeds not far from the nest.





HATCHING PERIOD

Bustard chicks are precocial, meaning they can walk and feed independently shortly after hatching. As soon as they emerge from the eggs, they leave the nest but remain nearby for several days. During this initial period, they are primarily fed insects by the mother. Gradually, the chicks adapt to the steppe environment and begin to forage on their own. However, they still rely on their mother for protection and guidance, as they are not yet capable of full independence. They lead a secretive life during this stage, staying well-hidden from predators until they learn to fly. By late summer, the chicks leave the nesting area and begin to migrate over short distances.



HABITAT

The species is generally distributed across steppes and is also found along sparse forest edges, mountain slopes, dry river valleys, and in degraded or fallow agricultural fields.



DISTRIBUTION

GLOBAL DISTRIBUTION MAP OF GREAT BUSTARDS

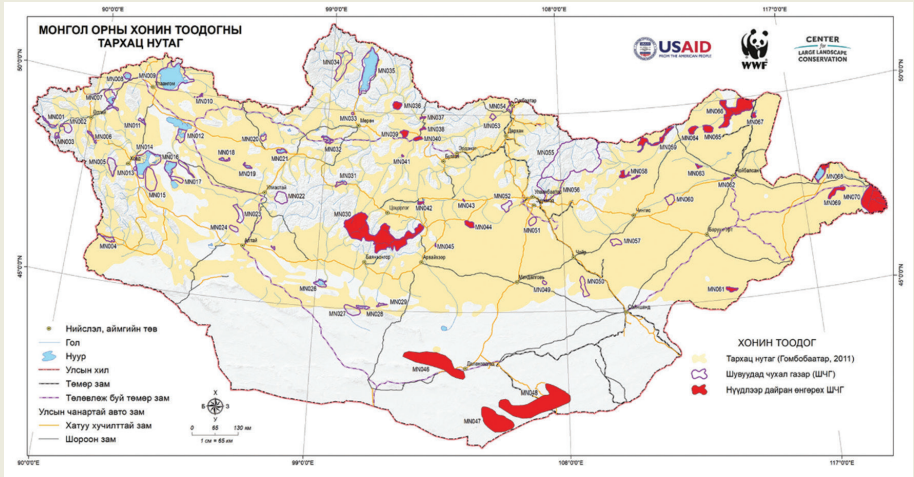


BirdLife International and Handbook of the Birds of the World 2023. Otis tarda. The IUCN Red List of Threatened Species. Version 2023-1

Great bustards' distribution range is shrinking year by year due to human encroachment, and to protect the species, it is necessary to develop comprehensive policies and implement integrated habitat management, with the participation of local decision-makers, in cooperation with neighboring countries (Boyd, et al. 2008). Three review estimation of the Great Bustard population were conducted in Mongolia between 2003 and 2017. In 2003, due to habitat pressure from livestock overgrazing in the bustards nesting habitat, the population was estimated to be around 1,500-1,700 individuals in Mongolia (Tsevenmyadag, 2003). In 2011, the number of mature individuals remaining was estimated to be around 1,000 and declining, and the species was classified as "Vulnerable" according to the IUCN Red List criteria at the regional level (Gombobaatar and Monks, 2011). In 2017, local and international researchers estimated that there were fewer than 1,000 individuals in Mongolia (Collar et al, 2017). Currently, breeding populations are believed to exist in Mongolia in the Numrug, Mongol Daguur, Khurkh-Khuiten valley, Onon and Ulz River valleys, in the northeastern part of Khuvsgul, around Uvs Lake in Uvs province, and in parts of Bulgan province (Tsevenmyadag, 2001).

Great bustards are distributed in Mongolia, except for the Gobi Desert, and nine habitats have been identified, covering a total area of 849,044 km² (Gombobaatar et al., 2011). The average area is 94,338 ± 264,363 km². Within the range, there is 39,303 km² (1,456 ± 2,470 km²) of habitat near the wetland, which is important for birds along the migratory routes where the bustard breeds and congregates.

DISTRIBUTION OF GREAT BUSTARDS



Roads: 11,473 km (123 ± 106 km) of national and local paved roads pass through the Great Bustard’s range, with the longest being the Choibalsan-Sumber (414 km) and the shortest being the Zuunmod-Nalaikh (0.3 km) road. Nine roads, totaling 190 km, cross the Great Bustard’s migratory route and important areas for large flocks of birds.

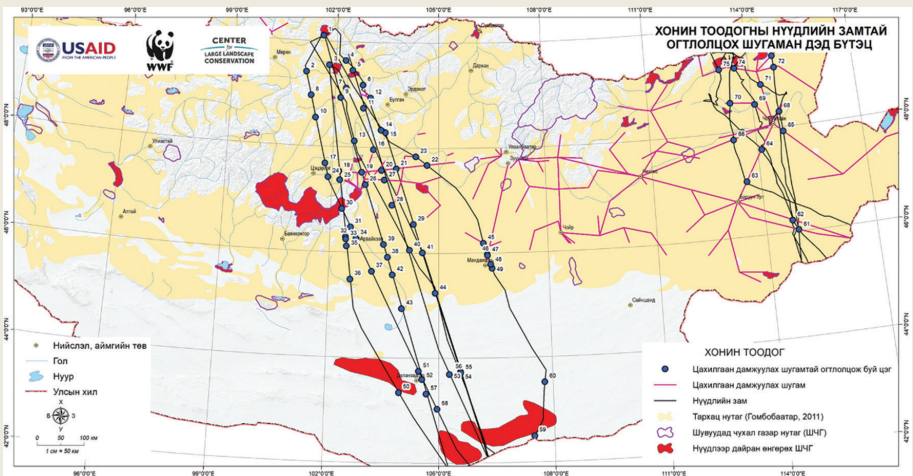


Railway: The 2,203 km long railway line will pass through the distribution area, while a new 3,061 km long railway line (255 ± 228 km; Bogdkhan, Artssuuri port-Shiveekhuren port, Sarkhairkhan Aчит Lake-Asgat ord, Bayantes-Ovoot, Ovoot-Erdenet, Khandgait-Tumurtein mine, Booroljuut coal mine, Tavan Tolgoi-Sainshand-Khuut-Choibalsan, Khuut-Bichigt port, Choibalsan-Sumber port) is likely to pass through. The 53 km long railway line will pass through the confluence of the Buir Lake, Ulz and Kherlen Rivers, while a new 73 km long railway line is planned to be laid.



Power line transmission network. A total of 18,584 km of powerline transmission and distribution lines pass through the territory, of which 15,148 km (78.6%) are existing lines; the remaining 3,436 km are planned to be newly laid. 5,156 km (27.7%) of the total powerline transmission network is occupied by 10 kW and 15 kW lines, which have a significant impact on bird mortality. 943 km of powerline transmission lines pass through important areas for breeding and migratory birds. The great bustard's migratory route overlaps with power lines at 75 points, of which 20 overlap with 10 kW and 15 kW lines, which have the greatest impact on bird mortality.

INFRASTRUCTURE CROSSING THE MIGRATION ROUTES OF GREAT BUSTARDS

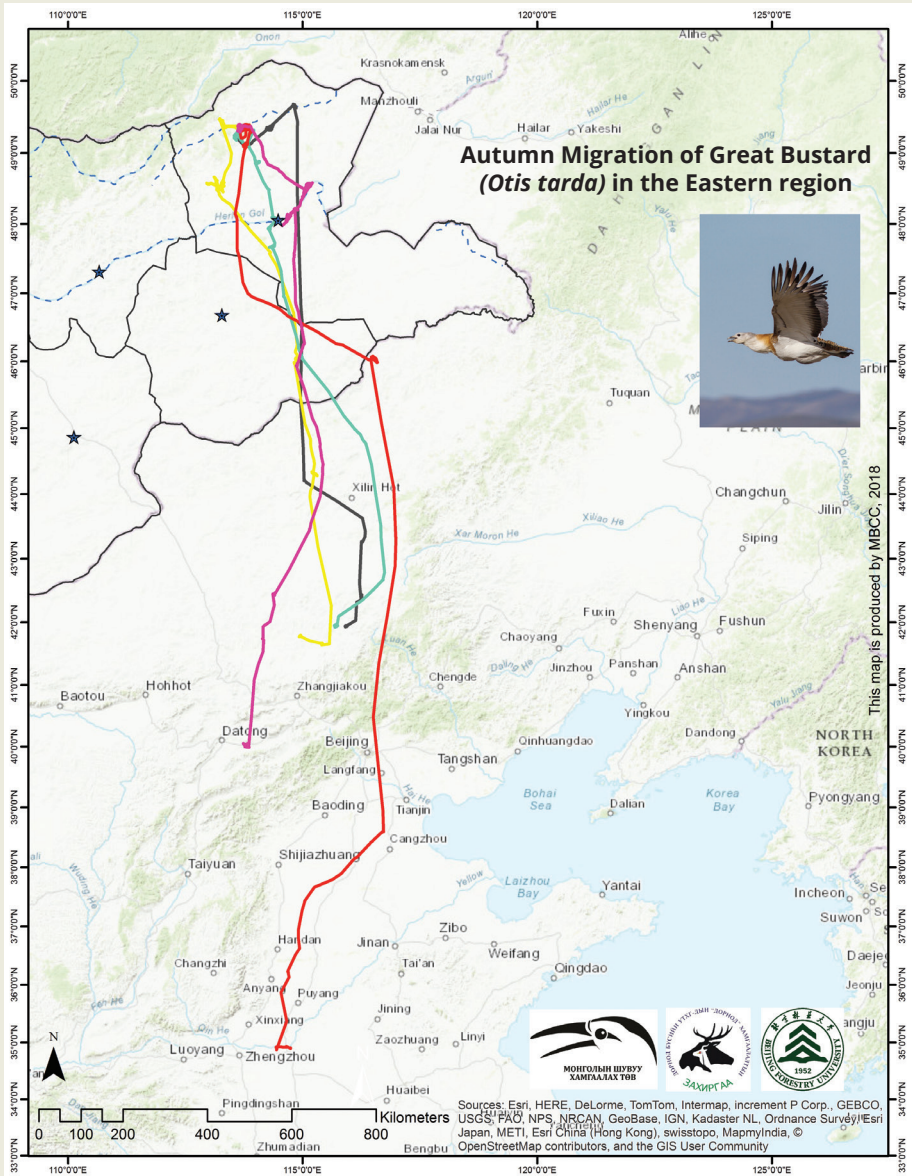


MIGRATION



Before and after migration, great bustards form large flocks in a behavior known as a “gathering.” These gatherings serve different purposes depending on the season. In spring, after migration, adult males congregate at traditional breeding sites to perform elaborate courtship displays and attract mates. At the same time, non-breeding young birds also gather nearby, forming their own flocks and remaining together for a period of time. As autumn approaches, a different kind of gathering occurs. All individuals—including that year’s chicks, young birds, and adults—assemble in specific areas. These sites offer abundant food, allowing the birds to build up fat reserves and energy in preparation for their migration to wintering grounds.

It is an umbrella species in the Mongolian steppe ecosystem, with an isolated breeding population along the Ulz River (MBCC, 2018). During migration, it is observed in large numbers in the steppe areas of eastern Mongolia, particularly around the Kherlen River valley, which is an important habitat for the migratory species. Great Bustards rest and feed in the Kherlen River valley during migration (MSK, 2018). Researchers from the Mongolian Bird Conservation Center are tracking the migration of eight great bustards (6 males and 2 females) in eastern Mongolia using satellite transmitters. Satellite data indicate that the Kherlen River is an important resting and feeding habitat for great bustards during their migration, and that appropriate management of pastures along the River is needed, and that management plans for national and local protected areas in Bulgan, Hulunbuir, Tumentsogt, and Bayan-Ovoo soum should include the migratory behavior of species and include conservation measures. The great bustards begin their autumn migration in early October (MBCC, 2018).



Ecological and economical evaluation

465,000 ₮

THREATS



Great bustards are highly sensitive to external disturbances in its habitat and leads a secretive life. During the breeding and incubation periods, loud noises from machinery, firearms, or other disruptions can lead to nest abandonment or breeding failure. Startled females may trample their own eggs or fail to return to the nest.



Bustards build their nests on the ground, often in agricultural fields, where they are at risk of being destroyed by farm machinery.



Bustards feed their chicks insects, but the use of pesticides is causing a decline in insect populations, threatening chick survival.



Although bustards are strong fliers, they are not agile and cannot make sharp turns like smaller birds. This makes them vulnerable to collisions with power lines.



Despite legal protections, illegal hunting of Great Bustards continues on both the Mongolian and Chinese sides of the border.



Because they inhabit dry steppe regions, bustard eggs and chicks are at risk of being lost in wildfires, especially during dry years.



Natural predators-including domestic dogs, wolves, corsac foxes, and red foxes-prey on eggs and small chicks.



Unfortunately, harmful superstitions persist among some local communities, including the belief that "bustard meat will fill the pot."



As large birds, bustards have low reproductive rates and tend to lay fewer eggs. Combined with high adult mortality, this makes it difficult for populations to recover, contributing to their ongoing decline.

INTERESTING FACT



Bustards lack oil glands to waterproof their feathers, so getting wet is dangerous-especially in cold weather. After rain, the wet feathers can cause the bird to shiver, making it vulnerable.



Since birds do not have sweat glands, bustards regulate their body temperature by spreading their wings to increase heat loss. They may also open their beaks and breathe deeply to cool down.



Great bustards are capable of long-distance migration, it prefers to run on the ground rather than fly during the non-migratory seasons.



The Mongolian name for the great bustard is inspired by the male's breeding display. During the mating season, the male turns the inner side of its wings outward, creating a striking, sheep-like white appearance.



The bustard's brown, black, and white-spotted plumage provides excellent camouflage in the Daguur steppe. Even at close range, the bird is difficult to spot. When threatened, it crouches.



With its long, strong legs, the great bustard is a fast runner. For this reason, locals in some regions refer to it as the "steppe chicken."



Its long neck, powerful beak, large head, and sharp eyesight are all well adapted for spotting food and navigating the wide-open steppe.



An adult male bustard is about the size of a four-year-old child, making it one of the heaviest flying birds.



Like many bird species, bustards swallow small stones-known as gastroliths-which help grind and digest food in their stomachs.

HOW TO OBSERVE AND REGISTER FOR GREAT BUSTARD?

- Estimating the actual number of great bustards is challenging, particularly because they migrate across national borders, making it difficult to count individuals in transboundary areas. Population assessments are more effective during migration or “gathering” periods, when bustards form larger, more visible flocks.
- During spring migration, the birds often travel in groups, allowing for some monitoring. However, the most effective time to count bustards is during the breeding season, when adult males gather at specific display sites. These display grounds are relatively few and localized, and the displaying males are especially conspicuous, making them easier to spot and count. It is also more convenient to count during the gathering before the autumn migration, when the chicks of that year join the flock. At this time, it is possible to directly assess the regional population and observe the growth, decline, and breeding success of the population.



COUNTING AND OBSERVING ON THE SPRING MIGRATION

- During spring migration, bustards tend to return to the same locations—typically near meadows, rivers, and lakes. It is important to identify and clear these traditional spring gathering and resting sites in advance. The optimal time for this work is in early April.
- Observing and counting the birds as they arrive at these sites is crucial. By comparing these observations with data from previous years, we can track population trends. Additionally, assessing the condition of these habitats during spring migration helps ensure that the sites remain suitable for the bustards’ stopover needs.



COUNTING AND OBSERVING DURING DISPLAY

- An important aspect of monitoring during the breeding season is recording the presence of females near displaying, or “parachuting,” male bustards. Females that approach these males are likely selecting mates and may nest nearby. Their presence can help identify potential nesting sites.
- Great bustards typically choose slightly elevated areas of the steppe for breeding, which offer better visibility and protection from predators.



THINGS TO NOTE WHEN COUNTING AND OBSERVING

When counting bustards, it is essential not to startle or chase them, or make loud noises. Bustards are extremely shy and will take flight if they sense people or vehicles approaching. To avoid disturbing them, observers should hide near their habitat or display sites and use binoculars or a telescope to watch from a distance.

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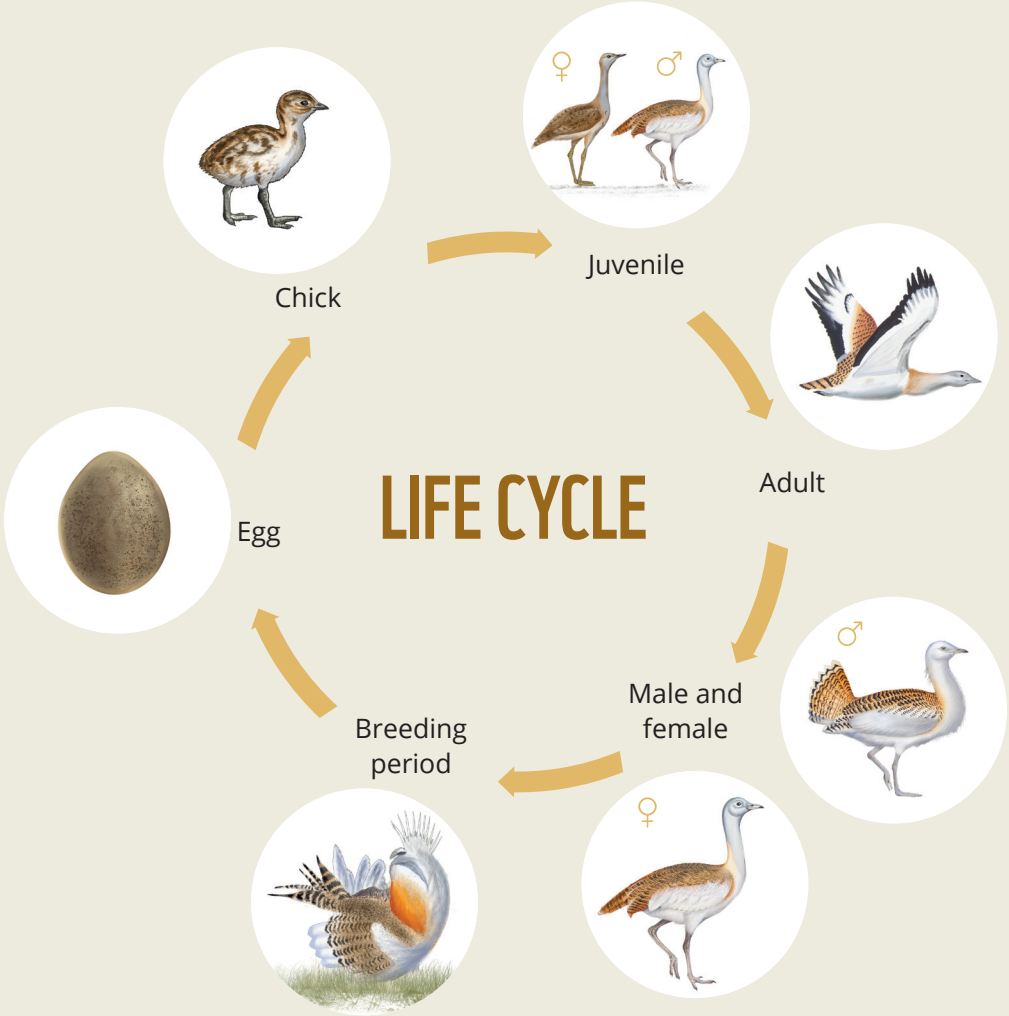
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