# Scinclscript An eye on the conservation of the wildlife of the Sahara and the Sahel



The biannual publication of Sahara Conservation, only organization dedicated uniquely to the biodiversity of the Sahara and Sahel

### **Celebrating Birds**

Welcome to Sandscript 31 – a celebration of the amazing diversity of birds, large and small, that inhabit the Sahel and Sahara or pass through on their annual migrations. While perhaps better known for its work on large mammals, SaharaConservation is also steadily contributing to a growing body of knowledge on the status of the region's bird life. Major initiatives focusing on ostriches and vultures are ably covered in this issue by Cloé Pourchier, Abdoul Razack Moussa Zabeirou and Firmin Dingamtebeye from Sahara Conservation, and Latifa Sikli from the Moroccan High Commissariat for Water and Forests and Desertification. Beyond these, however, staff of Sahara Conservation and its partners are constantly documenting the presence of thousands of smaller birds encountered during their work, making a notable contribution to the ornithology of areas rarely visited by birders.

The Sahel-Sahara zone is highly important to endemic and poorly known aridland specialists, and provides vital feeding and water for a multitude of migrant birds, large and small, that cross the Sahara annually. Thanks to the West African Bird Database (www.wabdab.org), information collected over the last 10 years is now systematically organised by location and date, where it can be accessed, with maps and in many cases photographs, allowing search and retrieval by species and protected area. In the case of Chad's Ouadi Rimé - Ouadi Achim Faunal Reserve (OROAFR), we now have current and historical data on 316 species that have been observed during one season or another.

Given their globally threatened status, sightings of all vultures encountered in Chad, for example, are recorded. Data show that while the white-headed vulture appears to have been lost almost entirely since the 1970s, the OROAFR is a particularly important nesting area for Rüppell's and lappet-faced vultures.

For the threatened large bustard species, described by John Newby in this issue, we have derived the first reliable population density estimates, demonstrated a relatively stable trend in local numbers over the last 11 years, depicted some of the movement patterns of different species, and provided the first formal description of the unusual display behavior of the Nubian bustard. Team members routinely catalogue their encounters with other prominent species, such as storks and cranes. An account of the importance of the reserve to both migrant and African resident storks is provided in the article by Caleb Ngaba Waye Taroum.

Over the years, the monitoring team has contributed a variety of more anecdotal, but nonetheless significant and interesting observations. The discovery of more than fifty dead nightingales in the centre of a vast area of recently burnt ground on a March afternoon in 2019, when the temperature was more than 46 °C, is but one of many. The realisation that diminutive, migrant wood warblers are recorded in the OROAFR only during a brief period in the northern autumn, but never in spring, was explained this year by unrelated research in the UK. This showed that all four wood warblers, fitted with geo-locators in their summer breeding territories in southern England, flew first to Chad via Italy, before moving west to Sierra Leone and returning north via Spain.

Work in Chad on the analysis of the song of the golden nightjar, helped resolve an historical confusion with that of the rednecked nightjar. Sahara Conservation's teams have documented the first records in Chad of birds as large as the golden eagle (in the act of killing a Nubian bustard in flight) and as small as the chestnut sparrow. Most recently, in 2022, we confirmed that the short-toed snake eagle, long considered strictly a non-breeding Palearctic migrant, has started to breed south of the Sahara.

Beyond their intrinsic value, birds are also valuable indicators of environmental health and pressures. Documenting the rich variety of local and long-distance migrant water birds that depend on temporary wet season wadis and pools clearly underlines the importance of these habitats and the need for their protection. Data on the presence, locations, group sizes and frequency of observations of birds also help establish a valuable baseline for monitoring and measuring the impacts of local and global threats from habitat loss and larger scale phenomena such as climate change, pesticide use and desertification.

Tim Wacher, D. Phil. SENIOR CONSERVATION BIOLOGIST ZOOLOGICAL SOCIETY OF LONDON



# Sandscript







Migratory birds and conservation: a collaborative challenge Case of Egyptian vultures





Vultures in Niger: what are the threats and how can they be addressed?





North African ostrich conservation program in Morocco





The return of the North African ostrich to Ouadi Rimé-Ouadi Achim faunal reserve





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Meet and greet the bustards of the Sahara and Sahel





### Migratory birds and conservation: a collaborative challenge Case of Egyptian vultures

#### **Migratory birds**

Through their travels, migratory birds connect countries and continents and are the symbol of an interconnected world. They cross thousands of kilometres each year in search of favorable ecological conditions to feed and reproduce.

However, they pose a particular challenge in terms of conservation, as the occurrence of events in one geographical region can have an impact on the populations in distant regions. Migratory birds pass through regions where the nature of the threats varies, and across countries with different legislation and conservation actors. Many migratory bird populations have seen their numbers drastically decline, primarily due to the widespread expansion of infrastructure and human activities, and the deterioration of their habitat.

Classified as Endangered on the International Union for Conservation of Nature (IUCN) Red List, the Egyptian vulture (Neophron percnopterus) is declining across almost all its range, that includes Europe, Asia, the Middle East, and Africa. Most of the individuals from Northern populations are long-distance migratory birds, spending the winter in Sub-Saharan Africa and on the Arabian Peninsula. Using thermal currents to fly, their migration itineraries are largely determined by geographical characteristics. As a result, the total migration distances vary from one population to another. The population of the Balkans, for example, travels distances up to twice as long as other Egyptian vulture populations. Each year, the birds cover more than 8,000 km to reach their wintering grounds in autumn and return in spring.

### The Egyptian Vulture New LIFE project: an international collaboration to conserve the Eastern European population of Egyptian vultures

The Egyptian vulture population in the Balkans has declined by more than 80% over the past 30 years. The reasons for this decline originate in their breeding grounds, as well as all along their migratory route. To meet the challenge of coordinating measures to conserve this population, actors and organisations from 14 countries on three continents, all located along the migration path, have pooled their efforts within the framework of the Egyptian Vulture New LIFE project, launched in 2017 and co-funded by the European Union's LIFE program.

Analysis of the causes of mortality of individuals fitted with transmitters has revealed some of the main threats. For example, without the guidance of birds of the same species, young vultures frequently make the wrong choice of migration route that involves crossing of large bodies of water that can be fatal. The recent rapid decline of the population seems to be due in part to fewer of vultures migrating, for example. Other threats linked to human activities such as poisoning, cases of electrocution or poaching have also been observed. However, the effective alleviation of these threats depends on an understanding of their breadth and geographical scope.

Migratory Egyptian vultures generally spend the winter in regions where non-migratory breeding populations are also present, making it doubly important to implement actions to conserve the species.



#### Migration map des of Egyptian vultures

#### The case of Niger

Thanks to studies carried out by our Birdlife partners in Bulgaria and Greece, Niger has been identified and documented as one of the wintering sites of the Egyptian vulture population from the Balkans, in the same respect as other countries in the Sahelian region such as Chad, Sudan and Ethiopia.

The case of Paschalis, a young Greek vulture fitted with a transmitter and killed during its first migration by a Nigerian hunter in Niger, highlighted the importance of including Niger in the list of partner countries to the Egyptian Vulture New LIFE project.

Within the framework of this project, direct and indirect proof of the poaching of these birds and their use in traditional medical practices has been gathered from different sources in the country. The results of these studies have made it possible to understand the roots and the ins and outs of these practices and to draw up a targeted conservation strategy.

Due to the complexity of the threats to be dealt with and their cultural footing in the community, the action's success lies in the implementation of complementary activities involving a wide array of stakeholders.

Capacity-building sessions dedicated to the competent authorities were organised, in conjunction with meetings bringing together the main stakeholders involved, namely hunters and traditional practitioners. The involvement of local leaders, active awareness-raising among the local populations and an introduction to environmental education for the younger generations have increased the public's commitment to vulture conservation. Through an interconnected approach, our aim is to initiate global awareness-raising, hold the different stakeholders more accountable for vulture conservation in Niger and further develop the different players' local capacities to combat these threats.

Conservation of these migratory birds requires coordination between the multiple countries linked by the movements of these species. The EV New LIFE project has intensified Sahara Conservation's work on vultures in Niger, providing the necessary proof and allowing unprecedented conservation actions to be implemented. A comparative study of the markets in 2019 and 2022 in the targeted regions of Niger highlighted the reduction in the number of vultures for sale, benefiting migratory Egyptian vultures such as Paschalis, as well as all vulture species present in Niger.

Cloé Pourchier Program officer SAHARA CONSERVATION

## Vultures in Niger: what are the threats and how can they be addressed?

Niger is a landlocked country in West Africa, located in the transition area between the Sahelo-Sudanian strip and the Sahara desert. Due to the diversity of its ecosystems, it is home to a wide variety of fauna and flora. Out of the 11 species of African vultures, eight can be observed in Niger and six are resident: the white-headed vulture (*Trigonoceps occipitalis*), hooded vulture (*Necrosyrtes monachus*), African white-backed vulture (*Gyps africanus*), Rüppell's vulture (*Gyps rueppelli*), lappet-faced vulture (*Torgos tracheliotos*) and Egyptian vulture (*Neophron percnopterus*).

Since 2008, Sahara Conservation has set up regular monitoring of lappet-faced vulture, Rüppell's vulture, white-headed vulture and Egyptian vulture nests in the Termit Massif, Dilia Kandil Bouzou, Gadabedji Biosphere Reserve (GBR) and the Koutous Massif.

After several years' monitoring, we have been able to gather considerable information about the nesting habits of vultures in Niger and their main distribution areas. The nature reserves of the Sahelo-Saharan biome represent an ideal site for vulture breeding. However, like the rest of Africa, we are unfortunately observing a decline in the region's vulture populations. Although they are protected species, poaching represents the greatest threat for vultures in Niger, especially during the breeding period, as nests are targeted. According to a survey conducted by Sahara Conservation's team among different stakeholders (animal product sellers, healers, traditional medical practitioners, traditional chiefs, etc.), it has emerged that vultures parts are used in traditional medicine or for marabout practices and black magic. These uses, which lead to the illegal hunting of the birds, put great pressure on vulture populations, which are



**CCIOÉ Pourchier** 

already relatively weakened. Several sources underline that poaching is primarily carried out by people from Nigeria, in collusion with certain people from the region.

Due to the complexity of the threats to be addressed and their cultural footing in the community, complementary activities involving a wide array of stakeholders have been set up.

First, the main aim is to tackle the vulture supply chain, by implementing direct actions to reduce the illegal killing of breeding populations in the targeted areas. Accordingly, Sahara Conservation has put in place support for the GBR's management unit to carry out monitoring actions, reinforced by two community workers during the breeding season (from February to June).





Over and above regular monitoring work, the surrounding local communities play a crucial role, primarily in areas such as the Koutous Massif that do not have a team dedicated to protect their integrity. A dedicated awareness-raising officer has been working with the local communities for several months to help them understand vultures' role and value, along with the threats they are facing. By involving members of the local communities, we firmly believe that they could successfully spread the message and encourage them to help protect the vultures around them.

In parallel, awareness-raising and upskilling work was carried out among the main stakeholders involved in the trafficking of vultures and their belief-based use. In addition, capacity building about the trafficking of endangered species and its consequences, along with training on vulture identification was implemented among environmental officers.



Furthermore, information and awareness-raising activities, aiming to develop traditional healers and hunters' local knowledge, in order to combat vulture



hunting and trafficking, were put in place within the framework of the Egyptian Vulture New LIFE project. Several approaches were used, such as visiting markets in the designated areas to meet targeted people, organising discussion groups with the main stakeholders and holding in-depth study sessions.

As far as traditional practitioners are concerned, a particular focus was placed on alternatives to vulture parts, such as plant-based products with similar properties, that would allow them to continue their practices without affecting the vulture populations. Involving the leaders and influential people in each group guarantees that the message is spread.

By targeting hunters and the competent authorities, our aim is to break the supply chain, while working with local communities and traditional healers to reduce the demand for these products and promote plant-based alternatives.

Finally, some of the activities focus on raising awareness among younger generations. First of all, schools were identified in key areas near vulture breeding sites in order to support them, while putting their needs into perspective in terms of the project's environmental education goals.

To optimise and intensify the actions already undertaken, fitting transmitters on a few vulture individuals would make it possible to supply priceless data on vultures' ecology, distribution and breeding, as well as the potential causes of mortality in areas for which we have fewer data. Working in collaboration with neighbouring countries, particularly Chad and Nigeria, would also be extremely important to combat the illegal harvesting of vultures in the region.



Abdoul Razack Moussa Zabeirou Niger country representative SAHARA CONSERVATION

## North African ostrich conservation program in Morocco

In Morocco, the North African ostrich (*Struthio camelus camelus*) population in the wild has very significantly declined since the 19<sup>th</sup> century, to the extent of entirely disappearing from the Oued Eddahab region in the second half of the 20<sup>th</sup> century. Since the nineties, a reintroduction program has made it possible to bring the North African ostrich back to its original Moroccan distribution area.

In 1996, some thirty ostriches living in the wild in Chad were transferred to Souss-Massa National Park (PNSM) in Agadir, to enable this population to develop and thus prepare for later *in situ* reintroduction programs.

#### North African ostrich in situ reintroduction program

Between the reintroduction in PNSM and the late 2000s, the number of ostriches increased to around 150 adult individuals, making up **the largest semicaptive population in the Sahelo-Saharan region.**  This semi-captive population has made it possible to begin translocation operations, to create breeding groups in the ostrich's historic and potential distribution area. Currently, in addition to the one present in PNSM, four semi-captive populations are situated in the south (provinces of Essmara, Boujdour and Dakhla) and south-east (Tinghir), counting over 300 individuals. Moreover, a group of around thirty individuals was created in the south-east (province of Zagora) from 2018, to begin the release program into the wild.

In February 2023, Morocco carried out the first operation to release the North African ostrich into the wild. A group of 16 ostriches, consisting of 10 males and 6 females, was released. Three weeks after being released, the ostriches are timidly exploring their new habitat and contenting themselves with roaming in a 4-km radius from the release site.

#### Artificial incubation program



The program to reintroduce the species to its historic distribution area is determined by the success of the annual breeding season, which remains linked to different endogenous factors for the species, such as the low survival rate of young ostriches in the natural



Agence Nationale des Eaux et Forêts du Maroc



habitat and the abandonment of nests, or factors linked to climatic hazards, particularly irregular and scarce rainfall.

In 2019, Morocco set up an ex situ conservation program for the North African ostrich, based on an artificial incubation protocol, to complement the natural breeding program in the reserves. This protocol falls under a partnership with the Forestry Research Centre, GIZ and Erlebnis-Zoo Hannover, and has led to good results over three breeding seasons. The hatching rate varies between 25 and 34%, which

The conservation program for the North African ostrich in semicaptivity in Morocco has made it possible to form significant semi-captive populations



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has allowed the transfer of 47 ostrich chicks to the different acclimatisation stations. The survival rate is estimated at 93% during the first weeks of life and up to 44% at over 18 months old.

The conservation program for the North African ostrich in semi-captivity in Morocco has made it possible to form significant semi-captive populations. The main challenge for the future is re-establishing viable wild populations of the North African ostrich in its historic distribution area.

Latifa Sikli Veterinarian FORESTRY AND WATER NATIONAL AGENCY - MOROCCO

## The return of the North African ostrich to Ouadi Rimé-Ouadi Achim faunal reserve

The subspecies of ostrich existing in Chad is known as North African ostrich Struthio camelus camelus and its range spans from the Atlantic coast to Eritrea and northern Uganda.



### Geographical distribution of the four ostrich subspecies in Africa

Historically, this species was present in both the Saharan and the Sudano-Sahelian regions. In the Saharan area, the ostrich was found up to the Eguei region on the border between Kanem and Borkou, passing through Ouadi Aouach and Ennedi, to the edges of the Mourdi Depression (Depierre, 1968). In northern Chad, the ostrich population was estimated to number more than 1,500 individuals (Depierre, 1968). The ostriches recently observed in the Ennedi (African Parks Network, 2018) are the last existing individuals in the Saharan region and probably count less than a dozen animals.

The ostrich reintroduction program set up in Chad by Sahara Conservation, in partnership with African Parks Network (APN), consists in translocating ostrich chicks from Zakouma National Park and reintroducing them into Ennedi Natural and Cultural Reserve (ENCR) and Ouadi Rimé-Ouadi Achim Faunal Reserve (OROAFR).

The aim of these translocations is to recreate viable populations through captive breeding in enclosures, and releasing translocated ostriches into the wild once they have reached a suitable age, approximately 16-18 months. The translocated ostriches therefore spend around 16 months in enclosures located in the concerned reserves, and are then released to breed and create a new population. They are fitted with transmitters, making it possible for the team to track their movements for a defined time, to facilitate their monitoring and ensure their protection.





In March 2020, a first group of 34 ostrich chicks (aged between 2 weeks and 2 months) was translocated and divided in half between the two reserves. One year later, in March 2021, the operation was repeated for a second group of 29 ostrich chicks (aged between one week and 2 months).

One of the key steps in the reintroduction process is the vaccination of the ostriches against common diseases that can affect their health and development.

On their arrival, the ostrich chicks followed a vaccination program against Clostridium (Covexion) and Newcastle's disease (Etanew). Some of the ostrich chicks carried tapeworms and were treated with Zentel. Unfortunately, two ostrich chicks in RNCE died from this parasite burden.

To identify individuals, a numbered metal ring was clipped on their wing, allowing us to match the individuals with feather samples taken for DNA analysis. However, these rings proved to be unsuitable as the ostriches grew and we had to remove them.

Ostrich chicks are very fragile for their first three months, so they were treated with a great deal of care including trying to teach them to eat and drink.

To help solidify their bones, we grew a small portion of alfalfa in the pen. The ostrich chicks pick at the leaves, making movements that help them develop the suppleness of their legs. The enclosures were disinfected daily to prevent any possible contamination between individuals. At nightfall, the larger individual ostriches are separated from the smaller ones to avoid them trampling each other.

In order to track their growth, a calibrated iron bar is attached near the water trough providing a means to regularly measure their growth. Monthly weigh-ins also made it possible to assess their weight for the first three months in captivity. The team caring for the ostrich chicks received monitoring and advice from a panel of seasoned veterinarians.

To deepen our knowledge of their eating habits, the enclosure's team of keepers makes daily observations. We thus noticed that the ostrich chicks in the enclosures appreciate much Balanites aegyptiaca and Citrullus colocynthis leaves and fruit, along with Bracharia deflexa seeds.

Ahead of the reintroduction process, a team made up of members of Sahara Conservation and APN followed practical training on the composition of the diet of ostrich chicks in captivity. The calculation of the food rations for the ostrich chicks from 15 days to 10 months The aim of these translocations is to recreate viable populations through captive breeding and releasing translocated ostriches into the wild

old was based on the availability of the different ingredients existing in Chad.

### Conservation efforts for the North African ostrich are bearing fruit.

For the first time in 50 years, this majestic bird has bred in its natural environment. The first ostriches have just been born in the Ouadi Rimé Ouadi Achim faunal reserve, and although these chicks are still fragile, this is an important step in the reintroduction of the species.

We will continue to monitor their development closely, taking care of their diet and environment. When the chicks are big enough, we will be able to release the family into the wild, where they will join the individuals already released in 2021 and 2022.

Firmin Dingamtebeye Basecamp logistics manager SAHARA CONSERVATION





### Birds attracted by seasonal wetlands in Ouadi Rimé-Ouadi Achim faunal reserve

As a typical Sahelo-Saharan area, the Ouadi Rimé-Ouadi Achim faunal reserve (OROAFR) contains many seasonal wetlands, along the main drainage lines (wadis), including watering places and small lakes during the brief rainy season, which lasts three months from July to September.

Like many wetlands worldwide, these temporary habitats welcome many bird species from the first long rains, often during the first two weeks of July. As diverse as they are numerous, these birds roam the watering places from one end of the reserve to the other, depending on the intensity, quantity and duration of the rainfall.

For this issue of Sandscript, we invite you to discover the main species of storks that regularly visit OROAFR, heralding the beginning and the end of the rainy season.

Storks play an important ecological role by feeding on grasshoppers, which are found in abundance in the region, along with snakes and rodents. We can observe their activities on vast prairies with herbaceous cover, teeming with all kinds of acridian species during the verdant period. On an aerial survey of the reserve during the rainy season, we were able to observe hundreds of storks around the wetlands, not far from the nomadic pastoralists' camps. According to data collected by the reserve's ecological monitoring team (of Sahara Conservation), over the past three rainy seasons (2020–2022), the species most often observed are white storks, Abdim's storks and marabou storks.

#### 1. White stork, Ciconia ciconia

The white stork has a vermilion beak and legs, its wings are primarily black. It is a species very frequently observed in OROAFR. They stay there in their thousands during the rainy season due to the abundance of grasshoppers. They also find many insects to feed on during and after bush fires.



#### 2. Abdim's stork, Ciconia abdimii

Abdim's stork is a colorful bird: its plumage is bronze black, its back, chest and stomach are white, its face is bluish grey and its beak green with a red tip, its legs are green grey and, finally, its knees are red. It lives in the dry regions of tropical Africa, moving according to the seasons. Abdim's stork also comes to RFOROA in great flocks and then returns to Southern Chad, where it likes to nest in the tall trees in the middle of villages and towns. It is observed in OROAFR from mid-August to mid-October.



#### 3. Marabou stork, Leptoptilos crumeniferus

The marabou stork, a scavenger species, presents a large pocket of bare skin under its neck. It has black wings with a light grey border on the secondaries. It begins its stay in OROAFR at almost the same period as the previous species, in other words mid-July or early August depending on how heavy the first rains are. It remains there until mid-November, after sharing the carrion with most of the reserve's nesting and migratory vultures. In August 2022, marabou storks were present in their thousands, hunting for acridians. Although they are normally observed in high numbers



Like many wetlands worldwide, these temporary habitats welcome many bird species from the first long rains

in Chad, there is little recent information about where they nest.

In short, the vast grasslands of Chad, and particularly those in OROAFR, represent favourable biotopes and a high-quality refuge for the populations of these three stork species and offer us an incomparable area of investigation to study both their migratory movements and nesting sites.

Ngaba Waye Taroum Caleb Ecological monitoring manager SAHARA CONSERVATION

**Tim Wacher, D. Phil.** Senior Conservation Biologist ZOOLOGICAL SOCIETY OF LONDON



### Meet and greet the bustards of the Sahara and Sahel

Bustards<sup>1</sup> are some of the largest and most spectacular birds that fly, and with twenty-two African species are, except for dense forests, found throughout the continent. Seven of these species can be found in the greater Sahelian and Saharan biomes. Bustards are large, ground-dwelling birds that prefer to walk rather than fly. When they do take to the air, however, they are strong and powerful fliers, with the Arabian and kori bustards among the world's heaviest flying birds. Just like ostrich, where walking has superseded flying, resulting in a subsequent reduction in the number of toes, so the bustard has lost its hind toe to facilitate walking.

In the vast open plains and grasslands of the Sahara and Sahel, the bustards' cryptic brown and sandy coloration aids them blend into their surroundings, helping them avoid detection and attack from both aerial and terrestrial predators. Bustards are omnivorous, eating a large range of items, from lizards and crickets to ants, and the ripe seedheads of panicum grass. Like many of the larger animals living in the desert, they also consume the bitter, water-rich fruits of the desert melon. In both Chad and Niger, the Arabian bustard is reputed to eat gum arabic exuded from the trunk and branches of acacia trees. As major consumers of grasshoppers and locusts, bustards play a critically important role in keeping potentially hazardous crop pests in check. In the sub-Saharan grasslands of Chad and Niger,

both the Arabian and Nubian bustards breed during the summer months from July to September. As a prelude to finding a mate and breeding, the adult males undertake a spectacular parade along a prominent skyline ridge or dune. With head back, chest out and tail fanned, the male struts back and forth, occasionally throwing back its head and making a loud "popping" sound. Male bustards will, if undisturbed, parade for long periods but are especially active in the early morning and late afternoon.

The bustard's nest is a simple scrape on the ground, partially screened amongst tussocks of grass or under low-branched shrubs and trees. Up to four eggs are laid. When chicks are threatened by a predator, adult bustards will employ diversionary tactics to draw them away from the nest. When they are older and fully fledged, the chicks leave the nest to forage in the company of the adult birds. If spooked by a predator, the animated group makes its way to dense vegetation and with heads down and necks out scramble and weave their way to safety. Predators include a host of small carnivores, including jackals, honey badgers and pale fox. Brown-necked ravens almost certainly devour any eggs they find, and eagles will take even adult birds weighing over 5 kg. In the Chadian Manga, a golden eagle was seen to pursue and kill a flying adult Nubian bustard with ease.

1 Two Palearctic species - the Little and the Great Bustard - have been excluded from this list.

In the Sahel, most if not all the bustards, migrate locally to some extent, moving north with the rains and south at the end of the wet season. During the hot season, the Nubian bustard will typically move south from its sub-Saharan range, occupying rangelands usually dominated by the Arabian bustard. Of the Sahel's larger bustards, Denham's undertakes the most significant migrations. During the Chadian summer, Denham's bustards arrive in large numbers from the savannas of central Africa. These beautifully patterned birds, often seen in small groups, do not breed in Chad and by October have largely moved back south from the rapidly drying Sahelian grasslands. Where exactly the birds come from and when they breed are poorly known and should be resolved by using satellite tracking devices. In 2016, with cooperation from the Abu Dhabi-based International Fund for Houbara Conservation (IFHC), Sahara Conservation successfully captured and tagged nine adult Arabian bustards in Termit, Niger, to monitor their local movements and survivorship.

Bustard populations are under pressure and as such need to be considered conservation dependent species

Although not yet considered to be endangered, i.e., falling into the higher threat categories of the IUCN Red Data List, bustard populations are under pressure and as such need to be considered conservation dependent species. Habitat loss and degradation are real issues, with many parts of the Sahel-Sahara grasslands subject to overgrazing, conversion to agriculture, and chronic bushfires. Hunting pressure on bustard populations has also evolved significantly over recent decades. Traditionally, the larger bustards were hunted for food. Throwing sticks, spears, and bows and arrows were used, as were foot-nooses made of plaited hair from the tails of horses laid on or near nests. An old Arab once told me how as a young boy he had been partially buried next to a bustard nest to grab a bird returning to incubate its eggs.

In recent decades, the bustards of the Sahel and Sahara, particularly the Arab and Nubian bustards in Sudan, Chad, Niger, and Mali, and the houbara bustard in North Africa, have been exposed to significant pressure from hunting parties from the Arabian Peninsula. Although only "armed" with falcons, and occasionally saluki hunting dogs, the size of the hunting parties, with their sophisticated transport and communications, can lead to significant and unsustainable offtake in a very short time. The abusive hunting of bustards and gazelles in Mali, Niger and Chad was the focus of the very first campaign launched by the embryonic Sahara Conservation Fund in 2002. Thankfully, hunting like this in the Sahel has declined, but it remains to be seen if this is due to increased insecurity or a change of heart on the part of the hunters. On the flipside, however, the efforts undertaken by the International Fund for Houbara Conservation are to be warmly applauded. Since 1998, around 180,000 captive-bred houbara bustards have been released across North Africa

With their large size and gorgeous plumage, bustards are truly iconic species of the grasslands of North Africa. To my mind, nothing is more evocative of the beauty and wildness of the Sahel than to see a bustard studiously walking through the tall grass looking for food while being followed by a bee-eater or two happy to snap up any insects the bustard has disturbed while feeding.



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John Newby Senior adviser SAHARA CONSERVATION





Since its inception, Sandscript articles have been written by our teams, our partners, and all those who, through their fieldwork, make the conservation of biodiversity a reality.

Its primary purpose is to inform the public of our conservation activities in the Sahara and Sahel, and to share all related news, but also to make the readers aware of the beauty and richness of this region of the world. Over the years, Sandscript has gone beyond a simple informative role to provide original perspectives on zones of Africa that are relatively unknown, poorly documented, and home to a biodiversity that is unfortunately very poorly protected.

We are grateful to all those who contribute to make Sandscript one of the first and finest sources of information on the species of the Sahel and Sahara, unique in the world, and yet neglected.

#### How can you help?

The Sahara and Sahel are home to a biodiversity that is undergoing a "silent" extinction. Until very recently, this decline has been ignored, its study and measures to combat it have been underfunded by the international conservation community and development agencies around the world.

In 2004, a small group of committed individuals and institutions created the Sahara Conservation Fund (now Sahara Conservation) issuing an urgent call to action, with this question in mind: "If not us, then who will speak for Saharan wildlife?"

Sahara Conservation is now leading a rapidly growing movement for the conservation of Sahel and Sahara wildlife, aiming to protect and restore a unique and extraordinary array of key species, such as the addax, the scimitar-horned oryx, vultures and bustards, the North African ostrich or the dama gazelles. As a registered NGO in the United States and France, Sahara Conservation relies on donations, grants and other funding from individuals, corporations and organizations to help drive its mission and give a voice to the Sahara, helping to preserve its incredible natural and cultural wealth.

We invite you to give voice with us, to restore the wildlife of the Sahel and the Sahara, by supporting Sahara Conservation.

To make a donation: www.saharaconservation.org/donate



Sahara Conservation's missions is to conserve the wildlife, habitats, and other natural resources of the Sahara and its bordering Sahelian grasslands to the benefit of all people and wildlife. To implement our mission, we forge collaborations between communities, governments, zoos and scientific experts, international conventions, non-governmental organizations and funders. A powerful network with a common goal: the conservation of deserts and their unique natural and cultural heritage.

www.saharaconservation.org

