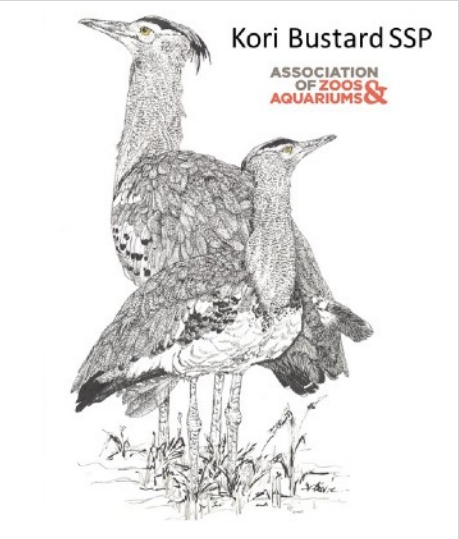
THE GOMPOU

2020 Bustard Newsletter
Volume 18



www.koribustardssp.org

In this issue:

The Gompou is an annual newsletter by the Kori Bustard SSP encompassing all things bustard

This issue was co-edited by Kori Bustard SSP Representatives Kyle Waites and Kayla St. George

We are already looking for content for the next edition of The Gompou! If you have anything you would like to contribute feel free to contact any of the following:

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Kori Bustard in flight, Photo by Darrell Gulin

We Must Unite and Fight to Save the Bustard

A message from Dr. Nigel Collar, Chairman of the IUCN Bustard Specialist Group

Dr. Nigel Collar (center) speaking at the 13th meeting of the Conference of the Parties to the Convention on Migratory Species (CMS CoP13) in Gandhinagar, India, February 2020

Dr. Nigel Collar with other experts at the Desert National Park. Photo courtesy: H S Sathya Chandra Sagar

Thousands of species are coming to the end of their lives in our current extinction crisis. Many of them can be saved with relative ease (if global warming does not take away their habitat), because they have restricted ranges in which reserves can be established, or because they live in colonies that simply need better protection. But others are more problematic, and a few are challenging on a massive scale. At the far end of this spectrum of difficulty-to-conserve lie the bustards. A recent analysis by BirdLife indicates that the bustards are the most threatened terrestrial family of birds on earth; only the seabird families of penguins and albatrosses have a higher proportion of threatened species. These three groups are well ahead of the others in the slide towards extinction.

What is it about bustards that makes them so hard to help? The simple answer is: evolution. Over tens of millions of years, bustards adapted to life in wide open landscapes, and because there were no trees in these grassland habitats they lost their hind toe and, with it, the chance to nest in trees to reduce the risk from ground predators targeting their eggs and young and equally the chance to roost in trees to escape ground predators targeting the adults themselves. Consequently, they developed the highest levels of wariness as their first line of defence, avoiding any unfamiliar form of disturbance to their routine. When, therefore, human settlers move into open landscapes they quickly restrict bustards to the least disturbed areas, and as more people arrive the fewer and smaller such areas remain. So disturbance is a cardinal factor in the retreat of bustards.

Photo courtesy: Ramki Sreenivasan

Some species of bustard evolved to move into and inhabit scrub and savanna, living very cryptically and always at risk of ambush; but these habitats are less exposed to human settlement, and the species in them mostly continue to hold their own. The species that are confined to open habitats are the ones that are most vulnerable. If human disturbance by humans is the first problem they face, the second is human use of the habitat—converting it to their particular needs, either for pasture or for cropland. Both of these activities involve modifications of the habitat, and the more intensive the farming becomes, involving mechanization and the deployment of chemical biocides, the more the habitat changes into short grass and monocultures, usually fenced off into parcels, greatly reducing food resources, breeding cover and accessibility. Thus habitat loss, going hand-in-hand with disturbance, forces the further retreat of the bustards.

Watering hole within typical bustard habitat

On top of this, bustards are large birds and some, at least, make good eating. Hunting is therefore another big threat in many areas, and is difficult to control because it often takes place deep in landscapes beyond the sight and reach of the authorities. Moreover, there is a major danger from dog predation in any areas where human settlements are established; this particularly affects eggs and flightless young birds, greatly compromising reproductive output. Finally—back to evolution— the structure of a bustard's head, with eyes set back to offer 360° vision so as to guard against attack, and its relatively high body weight make a particularly dangerous combination: the position of the eyes means that forward vision is not really sharp, and the weight of the bird means that it flies rather fast and is relatively unmanoeuvrable. The resulting powerline mortalities can in themselves be enough to wipe out entire populations from areas that are otherwise entirely suitable for the species; a single powerline is now likely to finish off the dwindling population of Bengal Floricans in the grasslands around the Tonle Sap in Cambodia, extinguishing an entire subspecies.

Power-lines that threaten bustard habitats

These factors combine to make the challenge of saving bustards as high as any in the wide world of bird conservation. But the low profile that bustards like to keep, as far from human view as possible, means a low profile too with the general public and decision-makers; and the land these birds live on is always in demand for food production, a key human need (with the global population increasing by a million every four days), so there is little political sympathy for the species.

It needs to be stressed that all the threats to bustards need to be confronted together, because any one of them left unaddressed —disturbance, habitat loss, hunting, dog predation, powerlines—has the power to undo all the good things achieved in the fight against the other threats. So bustards need firm friends fast. We need a whole new initiative in Europe and Asia to save them. Everyone needs to play a part, but governments must take a major role, because the issues are far too great for NGOs to tackle alone. All three bustards endemic to India require national and international collaboration to save them.

Photo courtesy: Rajasthan Forest Department / Kamlesh Kumar

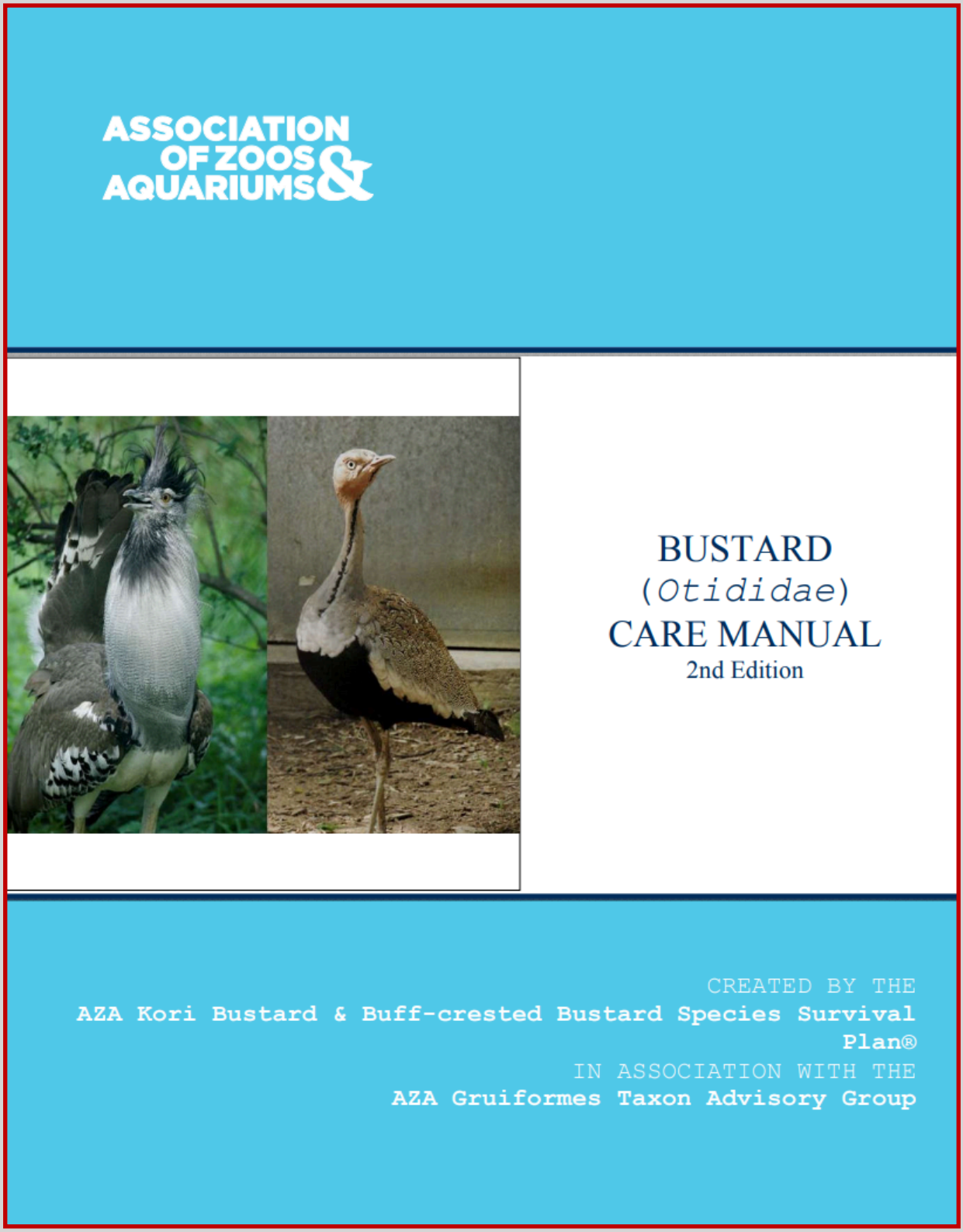
In India, the Bengal Florican is confined as a breeding bird to a thin string of protected areas but with as yet no plans to increase the habitat for them, expand their numbers or do more to protect the lands into which they wander outside the breeding season. The Lesser Florican is in an extinction vortex from which it can be rescued only with a huge effort to save existing breeding sites and create new ones, and to discover more precisely what it does outside the breeding season, where it goes and what it then needs. The GIB needs key power-lines being marked or (better) buried, grasslands restored (the waist-high grass in Desert National Park that used to give it cover is now a memory—it must be allowed to grow back), disturbance reduced, dogs totally controlled. The current massive investment in captive breeding needs to be matched in size by investment in habitat conservation, and this should be done immediately.

Photo courtesy: Ramki Sreenivasan

Bustards are wonderful birds. We cannot afford to lose them from the world. Yet to date we have done nothing like enough to help them, and every year they grow rarer and closer to the abyss of extinction. We must unite and fight to save them. This meeting at the CMS CoP is as good a place to start as any, and I urge you to do so with all my heart.

SSP Updates

Thanks to the dedication and hard work of the Kori Bustard and Buff-crested Bustard SSPs, the 2nd edition of the Bustard (Otididae) Care Manual was completed and released in 2020.
Click on the cover photo below to access to the entire care manual.



Game of Feathers: Battle of the Bustards!

By Jordan Baur - Hoofstock Keeper, Denver Zoo

Whether you're a Game of Thrones fan or not, this bird belongs on the Iron Throne

Would you like to work with a magnificent African bird with incredible personality and charisma? Think of none other than the Kori Bustard! The Olenna Tyrell of birds- smart, slightly salty, and completely lovable. The Kori Bustard SSP and the Gruiformes TAG are encouraging you to consider this wonderful species. We need more facilities to come on board before this unique taxa disappears from our collections like dragons from Westeros.

Did you know? The Chair of the IUCN Bustard Specialist Group said *"A recent analysis by BirdLife indicates that the bustards are **the most threatened terrestrial family of birds on earth**; only the seabird families of penguins and albatrosses have a higher proportion of threatened species".* We can't lose them to a scenario that was completely preventable with better planning #NedStark.

Did you know? AZA is the only zoological association in the world who is actively working with bustards. If we lose bustards from our collections, no other zoological facility will be working with this taxa. We have a responsibility not to let them go the way of Syrio Forel (that means disappear even though we really like them and need them around #plothole).

Did you know? Koris make great exhibit animals and can be housed with other animals:

Mammals: dik-dik, red-flanked duiker, blue duiker, lesser kudu

Birds: East African crowned crane, West African crowned crane, white stork, secretary bird, hammerkop, waldrapp ibis, hadada ibis, bald ibis, abdims stork, yellow-billed stork, demoiselle crane, African comb duck, white-faced whistling duck, Egyptian goose, common shelduck, pink-backed pelican, Abyssinian ground hornbill, guineafowl, female ostrich

Reptiles: Sulcata/African spurred tortoise, red-footed tortoise, fire-breathing dragons

Did you know? These birds can be trained like Arya Stark- so easy you can do it with your eyes closed! Koris do great with crate training and scale training.

Did you know? The males have amazing displays! When the males puff up their throats and display and boom, guests go wild! Unlike season 8, you won't be left disappointed!

Report on *Ex situ* Kori Bustard Breeding and Behavior

Sara Hallager, Jeanette Boylan, Deborah Fripp, & Lauri Torgerson-White

In 2007, the kori bustard Species Survival Plan (SSP) began a behavioral study on kori bustards housed at nine institutions (Birmingham Zoo, Cheyenne Mountain Zoo, Dallas Zoo, Living Desert Zoo, Phoenix Zoo, Smithsonian National Zoological Park, White Oak Conservation Center, Zoo Atlanta, and Zoo Miami). The animal care staff at these facilities collected data on 50 birds (18 adult females, 14 adult males, 8 juvenile females, and 10 juvenile males) daily between 2007 and 2012 using the Colonel Stanley R. McNeil Foundation's EthoTrak Observation System, a Palm®-based program.

Photo: Jessie Cohen, Smithonian's National Zoo

The primary goals for this study were to:

1) document the onset of sexual maturity in males and females,
2) understand the behavioral effects of alpha males on beta males,
3) examine the behavioral effects on dominant females on subordinate females,
4) determine the effects of moving individuals between institutions.

Secondary goals of the project were to:

1) determine activity budgets for each sex, for adults vs. juveniles, and for breeding vs. non-breeding season,
2) understand how birds utilize exhibit space,
3) understand the effect of crowd levels on activity, and
4) evaluate the breeding success of hand-reared vs parent reared birds.

Due to design limitations, not all goals were able to be accomplished, but the study yielded numerous results which shed light on kori bustard management in an *ex situ* setting. The results of this study are summarized below. The full 45-page report will be published as an Appendix in the AZA Bustard Animal Care Manual when it is completed.

The data were used to investigate three categories of questions:

1. An ethogram of 31 behaviors organized into seven categories was adapted for the EthoTrak study from a pre-existing kori bustard ethogram. Analysis of the data generated overall activity budgets, which were compared for males vs. females, juveniles vs. adults, and breeding vs. non-breeding seasons. Differences in behavior by age, sex, and season were identified, as well as individual differences in behavioral profiles.

2. The EthoTrak data in combination with institutional egg logs were used to investigate whether adult kori bustard breeding behavior was affected by the presence of same and opposite-sex conspecifics, heterospecific birds, and humans. Male sexual behavior was a primary factor in whether females laid at all, but one of many factors in how many clutches a given female laid. Male sexual behavior did not impact how much maternal behavior a female showed. The strongest impact on how many clutches a female laid and how much maternal behavior she showed came from the institution, with specific factors difficult to tease out of that effect. Institutional effects also impacted male sexual behavior. Dominant males did not appear to interfere with displaying by other males. In fact, there was a trend toward multiple males stimulating each other to display. The strongest effect on male sexual behavior was the presence of other species of birds: males in exhibits with other species of birds performed significantly fewer display behaviors than males in kori-only exhibits

3. The EthoTrak data were combined with studbook data and data from a separate study on hand-reared chick behavior to investigate whether the choice to hand- or parent-rear kori bustard chicks impacted the chicks' future survival or breeding success. Both hand-rearing and parent-rearing of kori bustards within AZA accredited facilities were equally successful methods of producing chicks that survived to be successfully breeding adults. Hand- and parent-reared chicks behaved equivalently as both chicks and adults. Chicks of both sexes born to hand-reared and parent-reared birds survived to adulthood at equivalent rates to each other and to the chicks born to wild-caught birds.

Kori Bustard booming in Ngorongoro Crater, Arusha, Tanzania.
Photo by Adolfo Castro: Macaulay Library

Kori Bustard SSP Grant Opportunity

The **Association of Zoos and Aquariums (AZA) Kori Bustard Species Survival Plan** is committed to promoting kori bustards in AZA zoos, funding field work in range countries and providing support to those AZA facilities committed to this species.

ASSOCIATION OF ZOOS & AQUARIUMS

Guidelines and Conditions

The AZA Kori Bustard SSP offers small grants to support zoo and aquarium staff and aviculturists engaged in projects related to *in situ* and *ex situ* conservation and management, husbandry, conservation education, and zoological research of kori bustards.

1. Staff employed at AZA zoos and aquariums are eligible.

2. Non-AZA staff may apply, but they must have a sponsor from at least one AZA institution.

3. Individual funding requests cannot exceed $1500 USD during any grant cycle.

4. Only one application per candidate per year will be accepted.

5. Grant recipients are required to submit a report on their project within 12 months of receiving the grant funds. If an extension is required, a request must be submitted via writing or e-mail to the SSP. All invoices and/or receipts detailing use of SSP grant funds shall be included with this report.

6. Funds provided by the Kori Bustard SSP which are not spent within one year of their being awarded must be returned within 30 days. Project applicants who wish to continue to use the funds beyond that time frame must obtain written approval from the SSP Steering Committee, with the request submitted a minimum of one month (30 days) before the one-year expiration date. name of the AZA Kori Bustard SSP must be included in any publications (printed or otherwise), productions, and presentations supported by this grant.

7. Applicants are required to submit this completed application via e-mail to the SSP where it will be reviewed by the Kori Bustard SSP Steering Committee. See 'Application Submission'.

8. Grant recipients agree to provide a written summary of the project for use by the Kori Bustard SSP in promotional materials.

9. Applications which do not clearly demonstrate benefit to kori bustards will not be considered.

Failure to satisfy these requirements will disqualify the applicant, organization, and/or co-investigators from being considered for any future funding requests of the SSP.

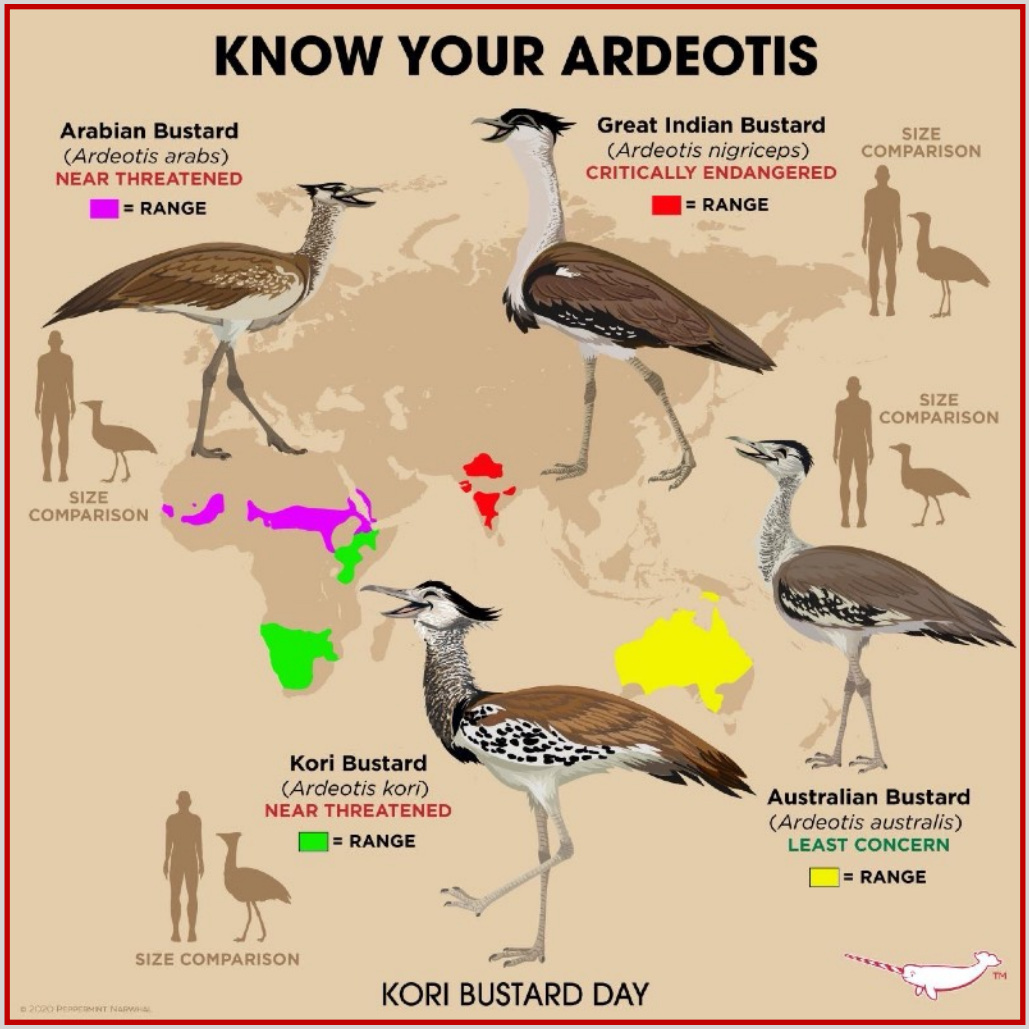
Applications will be accepted from Jan 1st 2021 – March 1st 2021 and award recipients notified in writing by March 31st 2021. Applications received after March 1st 2021 will not be considered.

Click here to apply!

Kori Bustard SSP Education Advisor Position Available

The Kori Bustard SSP is currently looking for an Education Advisor. Becoming the Kori Bustard SSP Education Advisor is a great way to network and develop skills while contributing to the conservation of this magnificent species. If you are passionate about kori bustards and want to become more involved with the SSP, this position is for you. The SSP Education Advisor will contribute to the goals of the SSP by helping to develop educational materials and projects. If you have any interest or would like to learn more, please contact Sara Hallager:

hallagers@si.edu



Kori Bustard Day Goes Virtual!

By Kayla St. George

After last year's newsletter was published, I decided that I wanted to help raise even more awareness about the Kori Bustard. So I made it my yearly goal to organize Zoo New England's very first Kori Bustard Day at the Franklin Park Zoo!

To make sure the event would be memorable, I began meeting with different departments of the zoo to brainstorm ideas for activities. Some of the things we planned for were a keeper talk, coloring sheets, and a grape forage that the public could take part in. There would also be a table set up where volunteers would be able to show guests feather & egg biofacts, and kids could take part in the classic "forage like a Kori" game.

BAM! Hello Covid-19.

As we all know, this threw a wrench into everyone's plans. Unfortunately, these unprecedented circumstances could not have come at a worse time. A week before Kori Bustard Day, the global pandemic forced Zoo New England to close its doors to visitors for more than two months. Just like so many anticipated events this year, Kori Bustard Day was cancelled.

Or was it?

I wasn't about to let this completely halt our efforts. Instead of on-site activities, we decided to go virtual! And what could be more personal, informational, and fun than a keeper takeover?! Thankfully, I had recently borrowed a coworker's camera (Thanks Eli!) so I already had lots of photos of our birds ready to go! I set to work on whittling down all the amazing information that I wanted to share with the world.

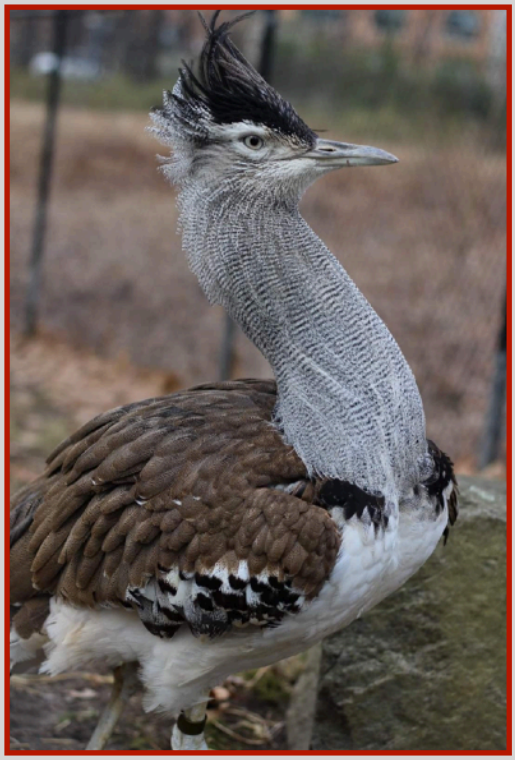
After introducing myself, our social media channels taught our followers how to tell our girls M'guu and Kibibi apart. Next up was some kori bustard natural history and discussion about their cool colored eggs. The amazing collaboration of the fly fishing program was of course spotlighted. There was even a nod to the Kori Bustard's SSP Program website that I just had to throw in there.

The last post called attention to Kori Bustard Day, and incorporated an enter to win contest for a footprint from one of our koris. We randomly selected a winner from all the comments, and shipped the painting to her. All in all, I believe it went very well! People were able to learn more about the heaviest flighted bird of Africa, the threats they are facing, our conservation efforts here at Zoo New England, and how they might help them out!

Special thanks goes out to Genevieve Bregoli for helping me plan the events for the original day, and to our PR team for assisting me in re-working my keeper takeover so that we could still raise awareness for these wonderful birds. I really enjoyed seeing comments from people who said they hadn't even heard of kori bustards before and loved being introduced to and learning more about them. I hope the keeper takeover inspired even just one person to care about kori bustards as much as I do, and I look forward to sharing these magnificent animals with more people in 2021!

ZOO
NEW ENGLAND
Franklin Park Zoo ♦ Stone Zoo

Celebrate Kori Bustard Day on March 26, 2021!



Kibibi at Franklin Park Zoo
See Kayla's post for Kori Bustard Day

Host your very own Kori Bustard Day with these tips and tricks:

Use social media post(s) if you can so that people that are not visiting that day know that it took place and can learn about koris. It can just be a text and photo post. If you have time to do a video or facebook live, even better.

Plan your message. What is the theme for the day? What is the main thing you want them to know when they walk away?

• Our conservation message formula is:
1. What is the problem?
2. What is your Zoo doing to help?
3. What can guests do to help?

We have started relating kori collisions with power- lines to migratory bird collisions with glass here in North America. Other relevant messages are climate change and reducing your carbon footprint and using the kori feather project as an example of how zoos are making a difference in the fight against illegal hunting.

-Melissa King

A Necessity for Crate Training

By Kristina Heston, Lead keeper and Jenny Tibbott, Senior keeper

Here at the San Diego Zoo Safari Park we've worked with Kori Bustards for over 20 years. As we've grown we've also spread out over our acreage. As our kori kids progress in age and size, the distances they need to travel for the next stage of housing can be quite far. At many facilities koris can be hand carried from place to place or driven short distances. After being raised at our chick rearing facility for ~5 weeks, our chicks move to our bird breeding complex to stretch their legs with a lot more room to move around. The bird breeding complex is about 1.5 miles away. The access roads are the highway or over a bumpy road through the park. This isn't a great situation for hand carrying koris. Even riding on someone's lap isn't really safe. Then, if we want them to get used to other birds, docile mammals or to be put on display for guests, we move them again at ~ 1-2 years old from the breeding complex to an enclosure in the main part of the Safari Park; that distance could be another mile. Over time we have learned the benefit of crate training at all stages of development to make a move safer and less stressful for our birds.

I'm sure everyone has a method for training their koris but this is what has worked for us. Since the chicks needed to make their first big move at 5 weeks old, we introduced a small crate (13"W x 16"T x 15"D) into their outdoor pen when they are 3 weeks old to begin to visually desensitize them. At first, the crate was tucked in the corner of the pen. As the chicks became more comfortable with it, the crate was moved closer and closer to their food dishes. Keepers eventually were able to toss favored food items (peas and crickets) into the crates and the chicks would enter the crates to eat the items. On the day of the big move, the keepers were able to walk the kori chicks into the crates to transport them to our bird breeding complex. All went well and the chicks talked to us from inside the crates during the entire length of the drive. They walked out of their crates, into their new pens, without any problems.

The small crates were left in the inside bedroom areas of their new enclosures until they outgrew them at about day 50. We increased the size of the crate to (20”W x 36”T x 24”D). We continued to feed favored food items inside the crates. During this time, we also continually trained our kori chicks to stand on a low platform scale. Eventually, the dish with the entire diet was left inside the crates. This method of training has proved to be a much less stressful approach for the birds and keepers.

SAN DIEGO ZOO
SAFARI PARK

Scale Training with Whitnye

By Natalie Lindholm and Amy Beale

Whitnye (SB 790), was hatched and reared at Fort Worth Zoo in 2017. She arrived at Gladys Porter at the end of May 2019. Amy has been working with her, and here she is demonstrating the desensitization process for scale training. Whitnye is making steady progress and has seen the scale, but has yet to step on it. She is a calm bird with a willingness to try new things.

Keeper Amy working on desensitization with Whitnye

GLADYS PORTER ZOO

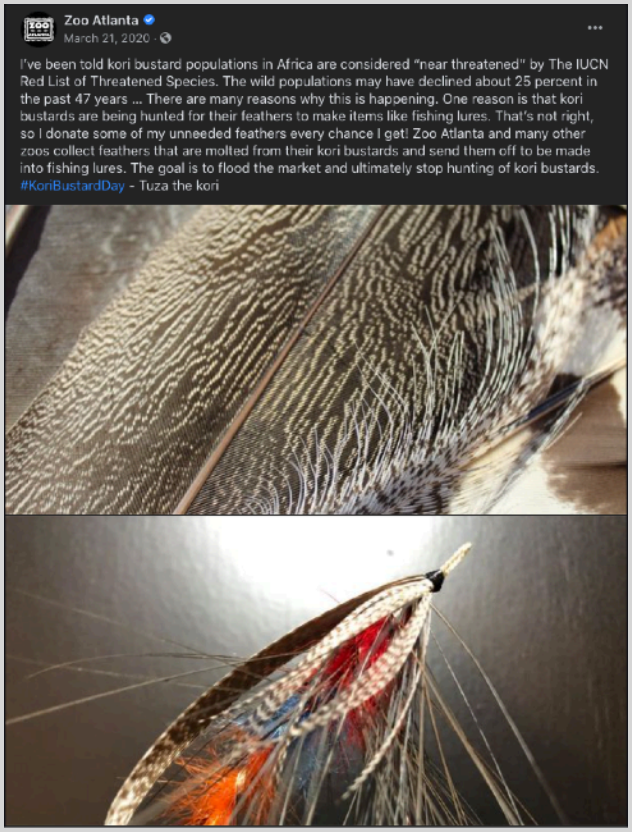
Kori Bustard Program at FeathersMc

As most of you already know, the Free Kori Bustard Program at FeathersMc, which has now been in existence for over 15 years, receives feathers that are collected at several zoological parks throughout the US. This was set up by me through the Kori Bustard Species Survival Plan. We then redistribute the Feathers to the domestic fly tying community. Quite honestly, it is amazing to me how it has grown and benefits fly tiers by providing, at no cost, materials that in the past were prohibitively expensive and difficult to acquire. The Birds at the zoological gardens and parks benefit from the donations that we collect on their behalf. Without this support, they would not be able to purchase and maintain some equipment, such as egg incubators, or conduct certain research projects like what I call the Poop Study.

Here is how it works. Terry and I at FeathersMc receive the zoo feathers; wash, sort and steam them whenever we're lucky enough to get a box. All feathers are available at no cost IF (big if) we have them. Customers pay for postage if it's only Kori that they want please contact me John@Feathersmc.com, we usually include some Kori whenever possible. Unfortunately, we are not permitted to send the Kori feathers internationally. Although supplies are limited and somewhat unpredictable, most customers eventually will get the material they need in a reasonable amount of time. There are many Kori feathers that lend themselves to fishing flies of all kinds.

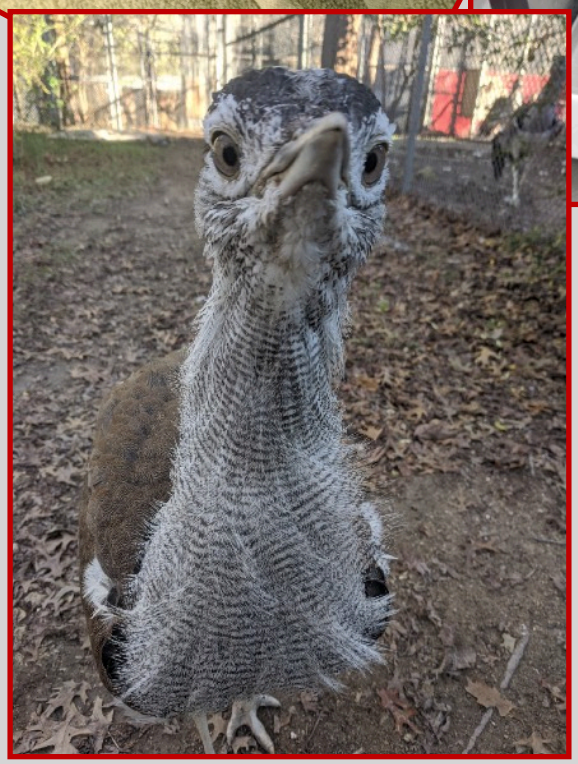
We have provided countless thousands of free feathers (worth many, many thousands of $) to the fly tying community throughout the US for the Kori SSP. We, the fly tying community, need to step up and show our appreciation. I also like to pass on your "Kori" flies to the folks that collect the feathers. More often than not the flies are proudly displayed in explaining to visitors their part in the free feather program. Anything we can do to help them, help us, is a good thing.

www.feathersmc.com



Fantastic post on Zoo Atlanta's Facebook page about making flies from kori feathers

New Hatch at Dallas Zoo



All photos courtesy of Dana Isaacs

Bustard Conservation and Research

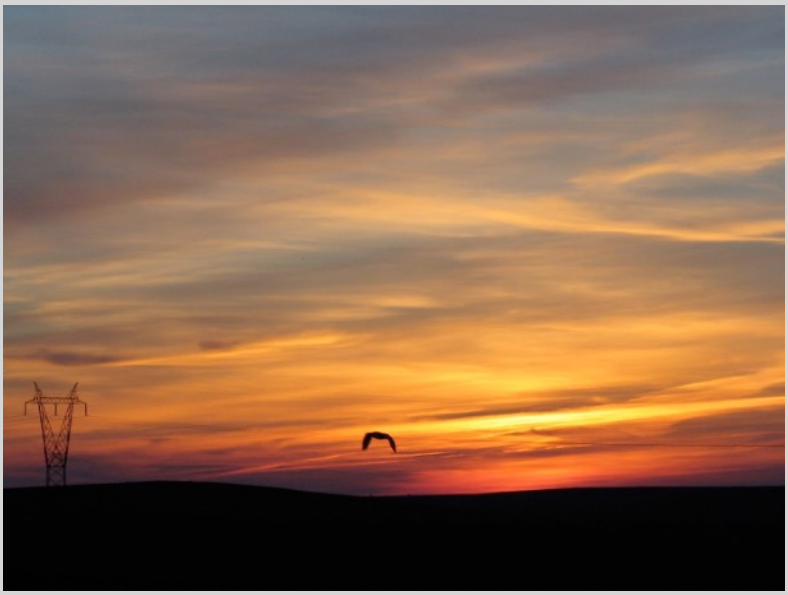
Some interesting research has been conducted on bustards and their conservation in recent years. Below is a compiling of some of the most recently published research on the family Otididae. Each title is hyper-linked to the full article so just click on the title for access to the entire article.

Effects of anthropogenic infrastructures on the spatial ecology of raptors and bustards

Ana Teresa Dias dos Santos Marques[1,2]

1=College of Sciences, University of Lisbon, Lisbon Portugal 2=College of Sciences, University of Porto, Porto, Portugal

Anthropogenic infrastructures are major drivers of human-related effects in the Anthropocene, and several important negative impacts on different taxa and habitats have been described. In the case of birds these impacts include, for example, habitat loss, mortality and changes in behaviour, which can have major consequences on the viability of populations.



The main objective of this thesis was to study how anthropogenic infrastructures influence the distribution and movements of several bird species, in order to identify management actions and support conservation strategies. The thesis focuses on bustards and raptors species in the Iberian Peninsula, which are known to be vulnerable to human infrastructures such as roads, power lines and wind farms. Census data, mortality events in power lines and GPS tracking databases were used to study the interactions between infrastructures and the little bustard (Tetrax tetrax), great bustard (Otis tarda), black kite (Milvus migrans) and Iberian imperial eagle (Aquila adalberti).

In general, this thesis shows that infrastructures, such as roads, power lines and wind turbines, can play an important role in species' distribution (little bustard) and use of space (black kite and little bustard), and may even contribute to accentuate negative population trends (little bustard). Additionally, species features (e.g. morphology or behaviour) and ecology are essential to understand how they are affected and vulnerable to infrastructures. Guidelines for the management of infrastructures and conservation measures targeting vulnerable species are proposed.

Mitochondrial divergence between Western and Eastern Great Bustards: implications for conservation and species status

Aimee Elizabeth Kessler[1], Malia A. Santos[2], Ramona Flatz[2], Nyambayar Batbayar[3], Tseveenmyadag Natsagdorj[4], Dashnyam Batsuuri[5], Fyodor G. Bidashko[6], Natsag Galbadrakh[7], Oleg Goroshko[8,9], Valery V. Khrokov[10], Tuvshin Unenbat[11], Ivan I. Vagner[12], Muyang Wang[13], and Christopher Irwin Smith[2]

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The great bustard is the heaviest bird capable of flight and an iconic species of the Eurasian steppe. Populations of both currently recognized subspecies are highly fragmented and critically small in Asia. We used DNA sequence data from the mitochondrial cytochrome b gene and the mitochondrial control region to estimate the degree of mitochondrial differentiation and rates of female gene flow between the subspecies. We obtained genetic samples from 51 individuals of Otis tarda dybowskii representing multiple populations, including the first samples from Kazakhstan and Mongolia and samples from near the Altai Mountains, the proposed geographic divide between the subspecies, allowing for better characterization of the boundary between the 2 subspecies. We compared these with existing sequence data (n = 66) from Otis tarda tarda. Our results suggest, though do not conclusively prove, that O. t. dybowskii and O. t. tarda may be distinct species. The geographic distribution of haplotypes, phylogenetic analysis, analyses of molecular variance, and coalescent estimation of divergence time and female migration rates indicate that O. t. tarda and O. t. dybowskii are highly differentiated in the mitochondrial genome, have been isolated for approximately 1.4 million years, and exchange much less than 1 female migrant per generation. Our findings indicate that the 2 forms should at least be recognized and managed as separate evolutionary units. Populations in Xinjiang, China and Khövsgöl and Bulgan, Mongolia exhibited the highest levels of genetic diversity and should be prioritized in conservation planning.

Backpack-mounted satellite transmitters do not affect reproductive performance in a migratory bustard

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Backpack-mounted satellite transmitters (PTTs) are used extensively in the study of avian habitat use and of the movements and demography of medium- to large-bodied species, but can affect individuals' performance and fitness. Transparent assessment of potential transmitter effects is important for both ethical accountability and confidence in, or adjustment to, life history parameter estimates. We assessed the influence of transmitters on seven reproductive parameters in Asian houbara Chlamydotis macqueenii, comparing 114 nests of 38 females carrying PTTs to 184 nests of untagged birds (non-PTT) over seven breeding seasons (2012–2018) in Uzbekistan. There was no evidence of any influence of PTTs on: lay date (non-PTT $\bar{x}$ = 91.7 Julian day ± 12.3 SD; PTT $\bar{x}$ = 95.1 Julian day ± 15.7 SD); clutch size (non-PTT $\bar{x}$ = 3.30 ± 0.68 SD; PTT $\bar{x}$ = 3.25 ± 0.65 SD); mean egg weight at laying (non-PTT $\bar{x}$ = 66.1 g ± 5.4 SD; PTT $\bar{x}$ = 66.4 g ± 5.4 SD); nest success (non-PTT $\bar{x}$ = 57.08% ± 4.3 SE; PTT $\bar{x}$ = 58.24% ± 4.5 SE for nests started 2 April); egg hatchability (non-PTT $\bar{x}$ = 88.3% ± 2.2 SE; PTT $\bar{x}$ = 88.3% ± 2.6 SE); or chick survival to fledging from broods that had at least one surviving chick (non-PTT $\bar{x}$ = 63.4% ± 4.2 SE; PTT $\bar{x}$ = 64.4% ± 4.7 SE). High nesting propensity (97.3% year–1 ± 1.9% SE) of tagged birds indicated minimal PTT effect on breeding probability. These findings show that harness-mounted transmitters can give unbiased measures of demographic parameters of this species, and are relevant to other large-bodied, cursorial, ground-nesting birds of open habitats, particularly other bustards.

Asian Houbara with backpack-mounted satellite transmitter and chicks

Spectrum of plant and animal diet of European Great Bustard (Otis tarda tarda) – an overview

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We have pointed out 272 plant and 217 animal, altogether 489 taxa in the diet of Great Bustard on the basis of data received from 9 (10) countries for Otis tarda tarda (Portugal, Spain, United Kingdom, Germany, Austria, Slovakia, Hungary, Ukraine, Kazakhstan, former Soviet Union). Out of 272 plant taxa, 40 were classified as cultivated plants, 232 wild plants and weeds. From the latter, 43 taxa were mono-cotyledons and 189 were dicotyledons. Animal food is shared among Annelida (n = 3), Arthropoda (189) Mollusca (2) and Vertebrata (23) phyla. Arthropods are mostly represented with Insecta (181), Arachnoidea (3), Chi- lopoda (2), Diplopoda (2) and Crustacea (mostly Isopoda) (1) classes. The component of the diet is possibly not related to selection but to the change of the abundance and availability of food and the ever present demand for animal food needed for the organism. Owing to the high number of taxa known as food, Great Bustard is definitely a generalist species. Due to the wide spectrum of animal taxa and because of the ability to subsidize the inefficient quality of food with quantity, Great Bustards can be regarded as a species with positive adaptation ability. It can be explained with a wide plant and animal food spectrum that Great Bustards even in intensive agricultural habitats can find food with indispensable quantity and quality.

A juvenile great bustard released in early August 2014 Photo by David Kjaer.

Status, distribution and threats to Houbara Bustard (Chlamydotis undulata macqueeni) in southern belt of Khyber Pakhtunkhwa Pakistan

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Houbara Bustard lives in large areas of remote desert in southern belt of Khyber Pakhtunkhwa. The four selected areas for study, D.I.Khan, Lakki marwat, Bannu and Tank are frequently large and are located in remote areas that are far from each other. The method of the study was consisting of two parts the literature review and field survey. The first step was literature review which was completed and data and credentials were collected. In the second phase the local people, hunters and poachers were interviewed. Among these four habitats, D.I.Khan held the largest number of birds 283, Tank 114, Lakki marwat 68 and Bannu 23. D.I.Khan is an important habitat for the Houbara bustard, sustaining a good reproduction population every year, successfully enough to support increasing numbers. The major causes of the decreased population of Houbara in recent years are habitat loss by grazing, habitat changes to agricultural lands, hunting and trapping to export live birds illegally to Arab countries. The results indicate that the number of houbara bustard is going to decrease. The habitat destruction and illegal hunting are the main reasons of rapid decrease in their number. If no conservation programs are started then this bird will be a danger of extinction.

Characterization of the complete mitochondrial genome of Chlamydotis macqueenii

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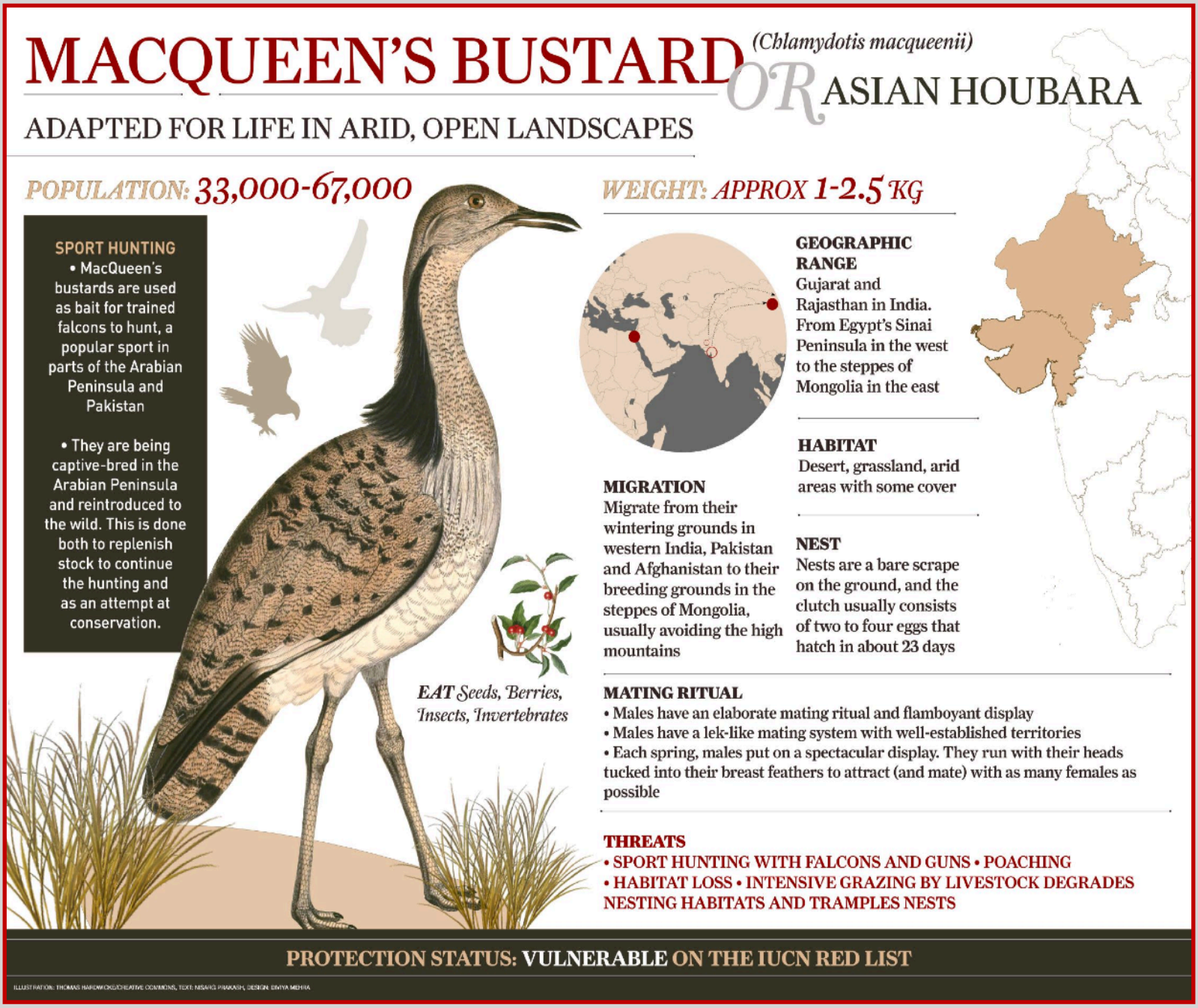
In this study, the complete mitochondrial (mt) genome of Chlamydotis macqueenii was sequenced through the Illumina sequencing method, and the mitochondrial genome map was constructed after de novo assembly and annotation. This intact mt genome (16,821bp) has a typical gene repertoire in vertebrates, with 13 protein-coding genes (PCGs), 22 tRNAs, and 2 rRNAs. The overall GC content of this mitogenome is 44.5%. By phylogenetic analysis using IQTREE, C. macqueenii showed the closest relationship with Otis tarda in the subclade of Otididae.



Status of the Critically Endangered Bengal Florican Houbaropsis bengalensis (Gmelin, 1789) in Koshi Tappu Wildlife Reserve, Nepal

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The Bengal Florican is one of the rarest bustard species and is listed 'Critically Endangered' by the IUCN. The species is restricted to the lowland grasslands of India, Nepal, and Cambodia with fewer than 1,000 mature individuals. To assess the species status in Koshi Tappu Wildlife Reserve, Nepal, we repeated our first comprehensive survey conducted during the 2012 breeding season. In spite of a larger area coverage we recorded only 41 adult Bengal Floricans in 2017 compared to 47 individuals in 2012. Detectability of this rare species is low in its Imperata-Saccharum grasslands. We, therefore, used a long pole with black and white clothing to mimic Bengal Florican's display flight to stimulate male Bengal Florican. The number of adult males recorded was the same as in the 2012 survey and the adult male density remains one of the highest in the Indian subcontinent. Management recommendations for the long-term conservation of the species in Koshi Tappu include maintenance of Imperata-Saccharum grasslands in the reserve favoured by the Bengal Florican and working with farmers and communities adjacent to the reserve where the birds breed in order to maintain some agricultural lands with vegetation height suitable for the species especially during the species' breeding season.

Bengal Florican on the cover of Journal of Threatened Taxa, Volume 12, 26 June 2020
Photo by Chungba Sherpa

Fun!

We all know 2020 was incredibly hard on everyone so we figured we would end this years' edition with some fun for all. Whether you are looking for a bustard greeting card, a kori bustard design for some accessories, or even to just take a step away from everything and sit-back to enjoy an entertaining enrichment video, we have you covered.

Bustard greeting card by Renee Bauhofer on Etsy

Kori Bustard design by michdevilish on Red Bubble

Pipe (pronounced Pip), a male Kori Bustard at the Phoenix Zoo enjoying his enrichment. Pipe loves his lettuce so I started playing around with hanging it in a mesquite that is in his enclosure and he really enjoyed it! Offering his lettuce this way helps to encourage natural foraging behaviors.
Video by Kyle Waites - Bird Keeper, Phoenix Zoo