

# The Gompou

The Kori Bustard SSP Newsletter  
December 2012 Vol 10

## INSIDE THIS ISSUE

New Hatches  
Husbandry News  
Medical News  
Updates  
Around the Zoo  
Bustard News  
Acknowledgements

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If you are interested in  
submitting an article or  
information for the  
2013 newsletter please  
feel free to contact  
Dara at any time



## 2012 Kori Bustard Hatchings



National Zoo—Ngoma (hatched June 9th) and Shemshi (hatched June 10th). Ngoma is Swahili for drum and Shemshi is Swahili for sunshine. Photo credit—Jim Jenkins



Birmingham Zoo—Kobo hatched June 1st 2012. This is the first kori bustard hatched at the Birmingham Zoo. Photo credit—Lydia Cost

# HUSBANDRY NEWS



## Kori Bustard Female Aggressive Behavior

Jennifer Tibbott, Senior Bird Keeper, San Diego Zoo Safari Park

At the San Diego Zoo's Safari Park we have observed some interesting behaviors from our 28 yr old wild caught female over the past year. In April of 2011 our breeding male 367 died. He was paired with our breeding female 99. Female 99 had been paired with 367 for ~2 years with steady production and normal observed behaviors. She had previously been paired with a 17 yr old male 585 with no production but seemingly normal male/female interactions observed. Female 99 had also been paired with a 16 yr old male 192, with successful reproduction and normal male/female interactions.

In November of 2011, 99 was introduced to 9 yr old 610. We started by putting male 610 into a holding pen for 2 days with visual access to the exhibit which housed female 99. Two days later, he was introduced to the exhibit with female 99. In most male/female kori relationships, the male would be the dominant figure and should be released into her territory to reduce aggressive tendencies toward her. To our surprise, the female entered the holding pen with him, and displaced him, head down, wings out and barking. He was very afraid of her after that so we put the female in a holding pen overnight and let him acclimate to the other species already in the exhibit. The next day the female was released. She chased him around a little and pushed him back when he entered her space but the aggression level did not escalate beyond some chasing. In early December we noted more chasing from the female predominantly at feeding time. The aggression soon was directed at other exhibit mates; storks, secretary birds, ducks, with aggressive chasing of a female secretary bird specifically noted. We managed her aggressive behavior by allowing her daytime exhibit access and when observations could occur.

In late December, 99 was seen chasing 610 across the exhibit. No injuries resulted but this was the greatest amount of aggression seen to date. By the end of December the aggression had not subsided so we moved 99 into a pen next with a shared chainlink fence line that allowed visual access only to 610. The enclosure was familiar to her and is also a mixed species exhibit including W.A crowned cranes, Abdim's storks, yellow-billed storks, steenbok and male kori 585, who she's been paired with in the past. When the female was put with 585 her behavior completely changed. She became submissive and fled if 585 was too close. Male 610 continued to spend most of his time at the shared fence line. Most of his interactions were with male 585. In early January male 585 was seen in full display. At the end of January male 610 was seen in partial display.

In late May we started noticing male 585 grabbing at the females head and face with his beak. Her reactions were always barking and running away. On one occasion we saw the male grab some of the feathers on her back and pull them out. She ran away barking. None of male 585's advances were received by the female and by June her fear response to him had increased. Her food response behavior started to change and we were concerned she might be being aggressed by male 585 when we weren't around. It had been about 6 months since female 99 and male 610 were separated and we thought enough time had passed that we could try them together again.

When introduced, she aggressed him again and a few weeks later she intimidated him prior to a feeding opportunity so that he ran across the exhibit erratically running into a log. He lacerated his leg and was taken to the hospital. The laceration was large but, only a skin tear. It was sutured and he was returned to the exhibit after a 9 day hospital stay.

Since male 610 returned from the hospital there has been a slight reduction in aggressive behavior from female 99 toward him. There has also been a reduction in tentative response from him. When she makes an aggressive move he will now rear up and occasionally stand his ground as she approaches. No contact is made during the encounters. The female is dominant toward other birds [a shelduck and 2.2 European white storks in particular] with some occurrence of chasing/pushing. She is now submissive to one exhibit mate, a male secretary bird. The secretary birds new dominance could be good news, and I'm hoping it's changing the social structure of the exhibit occupants giving the female bustard less confidence.

Female 99 has been in the collection almost her entire life without ever showing behaviors like what we have observed over the past year. We don't know what could have contributed to this sudden change in behavior or if she is experiencing changes hormonally that would contribute to these behaviors. It is also unknown as to why male 610 displays overly submissive behavior to all exhibit mates. Moving male 585 to another enclosure is an option but we hesitate doing this because the male visual access display stimulation has been very successful for us with past pairs. We are managing the aggressive interactions using the holding pen during times of increased activity. All exhibit inhabitants are exhibiting normal behaviors and are otherwise healthy. We are hopeful that the male will become more confident as breeding seasons cycle through. His unwavering interest in male 585 is concerning but at this time we are housing female 99 with male 610, allowing visual access to male 585.



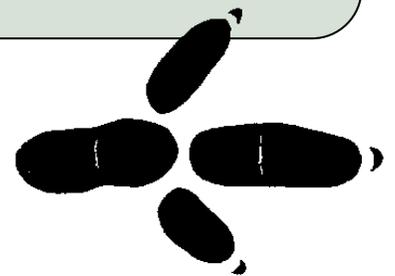
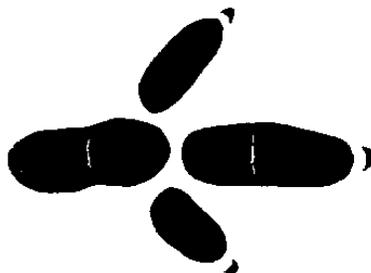
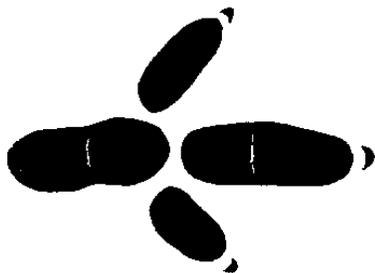
Photo by Lisa Barker

Interestingly, similar female:male dominance has also been observed in a trio of koris housed at National Zoo. All birds [1.2] were captive born in 2008. The females were handreared and the male was parent reared. The group for the most part lives peacefully together, but on occasion one of the females chest bumps the male and also does some bill sparring with him. The same female is always observed being the aggressor. The picture above is just prior to one of these bill sparring incidents.

Sara Hallager, Biologist, Smithsonian National Zoological Park



Smithsonian  
National Zoological Park



# Why do Bustards Boom?

Jenna Curtis; M.S. Candidate; Dept. of Fisheries and Wildlife; Oregon State University

Chances are, if you know Kori Bustards, you have seen a male "booming" at least once - perhaps many hundreds of times. The male stands in place with his throat inflated, then repeatedly bobs his head and snaps his bill. As he does this a deep, resonant drumming sound is emitted, which can be heard nearly a mile away. But why do bustards boom? Here we examine the purpose of booming and how it - and many other breeding rituals - have developed in birds.

The elaborate displays of Koris are not unique in the Bustard family. The Great Indian Bustard (*Ardeotis nigriceps*), a close relative of the Kori Bustard, exhibits a similar inflated booming display. Both Houbara Bustards (*Chlamydotis undulata*) and Great Bustards (*Otis tarda*) inflate their necks and fan out their feathers in magnificent displays of plumage. Displaying Black-bellied Bustards (*Lissotis melanogaster*) extend and retract their neck to make an interesting series of whistling, wheezing, and gurgling noises.



In fact, fascinating displays are prevalent throughout the entire *Otididae* family, which also includes Korhaans and Floricans. Red-crested Korhaans (*Lophotis ruficrista*) raise a distinctive ruff of rust-colored feathers on the back of their head while displaying, and Northern Black Korhaans (*Afrotis afraoides*) accentuate their striking black and white plumage with loud territorial calls. Many people have recently become familiar with the display of the Lesser Florican (*Sypheotides indicus*), which leaps up above the high grasses where it lives, arches its neck and calls, then falls back down into the grass. (For more thorough descriptions of many individuals in the *Otididae* family, see: Hoyo, Josep, Andrew Elliott, Jordi Sargatal, and José Cabot. *Handbook of the Birds of the World*. Barcelona: Lynx Edicions, 1992.)

But what purpose do these behaviors serve? Consider the fantastic, waving plumage of Birds of Paradise, the complex social "dances" of flamingos and cranes, or the tender, synchronized movements of grebes. All of these developed for one major purpose: convincing a female to choose that male as her mate. In a single display, a male needs to communicate that he is healthy, experienced, and/or has "good genes". Sometimes this is done directly; by ritualized preening or gifts of food, a male shows he has the necessary skills for survival. But other times breeding displays are less direct, using brightly colored feathers, complex songs, or eye-catching dances as "cues" about more subtle characteristics. Because females invest a lot of time and energy into laying and incubating eggs, they have to be discerning about which male should contribute to the long, arduous nesting process. This is especially true of polygynous species like Kori Bustards, where males mate with multiple females and do not help to raise chicks. In these cases, a female's decision may rest solely on whether or not that male's genetic makeup will ensure the survival of their offspring. Scientists still struggle to explain why females favor a certain display, such as the magnificent tail of the Peacock or the striking booming display of Koris, but males with bigger and better traits mate more often and pass on their genes to more offspring. Over time, the process of choosy females selecting eye-catching males produces the beautiful breeding displays we see today. (For more information, see Andersson, M., Simmons, L.W., 2006. Sexual selection and mate choice. *Trends in Ecology & Evolution* 21, 296–302.)

Kori Bustard males boom singly as well as in "leks", or competitive groups of displaying males. Because Bustards spend most of the year dispersed across African savannahs, their breeding-season leks are generally small and loosely formed. Other species, such as the Greater Sage-grouse and Prairie Chicken, can have dense leks with over a hundred displaying males. Lekking can be advantageous for females, who can compare displays and pick the best mate out of many options. This also benefits the one or two males with the best displays, because females are likely to see them as the top candidates for mating. Scientists believe that younger and less desirable males still choose to gather in leks because of the potential for a "spill-over effect". Females may choose to mate with a slightly less quality male than wait in line for the "better option." However, in most instances nearly every female will mate with the same one or two best males! Unfortunately very little is known about the lekking behavior of Kori Bustards in the wild. Because males will occasionally display on their own, the behavior does not seem obligatory. More research is needed to determine what drives Koris to display in groups, and the dynamics between males within the lek.

(continued on next page)

Greater Sage-grouse also have a booming display similar to that of Kori Bustards. Males inflate a pouch near their esophagus, then thrust it out and away from their chest to produce a resonant thrumming sound. This also reveals a bright yellow patch of skin underneath their throat feathers. Extensive research on Sage Grouse booming suggests that males with a specific resonance frequency (*i.e.* sound pitch) and rate of booms had a higher chance of mating. The color of the esophageal skin may also relate to the overall health of the male. For example, a reddish skin color instead of yellow could be indicative of tuberculosis or other disease. All of these factors help inform a female Sage-grouse who would be the best mate. (For further information on Greater Sage-grouse behavior see: Schroeder, M. A., J. R. Young and C. E. Braun. 1999. Greater Sage-Grouse (*Centrocercus urophasianus*), The Birds of North America (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology.)



A Greater Sage-grouse booming display  
Photo courtesy Joseph V. Higbee [www.birdweb.org](http://www.birdweb.org)

Unfortunately we do not yet know what about a Kori Bustard's boom is so attractive to females. Like Sage-grouse, it could be the pitch of the boom itself, or how often a male booms per minute, the relative size of the inflated neck, or even the whiteness of his erect tail feathers. Some behaviors, such as the extensive neck-pecking males perform just prior to copulation, currently have no

explanation at all!

Ultimately, bustards boom to attract a mate. But there are still many things we need to learn about Kori Bustard breeding behavior in order to support conservation both in captivity and the wild. Providing females with what they perceive to be quality mates has the potential to improve breeding program success. Fortunately for researchers, even if we don't yet understand the subtleties of these displays, they are just as attractive and charismatic to people as they are to the target female!

## The Importance of a Primary Keeper in the Lives of Captive Kori Bustards

Sara Hallager, Smithsonian National Zoological Park

Those who make caring for animals their life's work, realize the importance of knowing the intricacies of our animals. When caring for animals on a full time basis over many years, we come to know each animal as an individual, complete with their own personalities, quirks and preferences. Knowing the individual animals we care for is vitally important when managing kori bustards. Koris are a challenging species to keep on many levels. In addition to their seemingly inherent clumsiness which provides its own set of challenges, they seem particularly sensitive to individual caretakers. Primary keepers report they are able to associate more closely with koris compared with relief keepers. Primary keepers also report birds approaching for food or out of curiosity. This observation is not commonly reported by relief keepers. Anecdotal evidence supports these observations. Carlstead et al. [2005] found that on days when the primary kori keeper did not care for the birds, cortisone (stress) levels increased in the flock. This physiological response to less familiar keepers supports observations that birds that have spent more time with a primary keeper are less timid. Similarly, kori bustards at the Al Ain Zoo reportedly ran away from people approaching their pen but remained calm when their keeper was in the enclosure, appearing to "trust" the familiar keeper [Ramadan-Jaradi 1991]. Researchers at the Dallas Zoo felt that familiarity with the keeper was "essential for breeding" [Weeks 1992]. The importance of having a primary keeper caring for koris is a critical component of a successful breeding program. Unpublished data suggests that those females that are the least shy and timid tend to be breeding individuals, cared for by one primary keeper. For bustards, which are shy by nature, having a primary keeper provides an environment that is calming, predictable and reassuring. The simple act of providing one caretaker for koris may have more significance in the management of this species than caretakers currently realize, but there is enough anecdotal evidence to suggest that it should be employed whenever possible at all facilities housing koris.

Carlstead K, Bennett, C, Shepherdson, D, Weilebnowski, N. 2005. Stress Assessment for Individual Zoo Animals. Proceedings International Conference on Environmental Enrichment.

Ramadan-Jaradi G, Ramadan-Jaradi M. 1991. Captive breeding of the kori bustard (*Ardeotis kori*) in Al Ain Zoo. Zool Garten NF 61: 001-006.

Weeks L. 1992. Bustard husbandry. AAZPA 1992 Regional Proceedings. p. 810-816.

## A New Incubator for the Bird Department and a First Kori Bustard Hatch!

Cindy Pinger, Curator, Birmingham Zoo

For the past several years, the Birmingham Zoo Bird Keepers have been sending naturally molted Kori Bustard feathers to the Kori Bustard feather project. This is a joint effort between the Kori Bustard Species Survival Plan (SSP) and AZA zoos that house Kori Bustards, and a fly-tying organization headed by John McLain in Michigan which provides free kori feathers to all interested fishermen. Formerly, Kori Bustard feathers were very expensive and birds were poached in their native Africa to meet these demands. By providing these feathers at no cost, the market for feathers from poached birds has been dramatically reduced.

The Kori Bustards at the Birmingham Zoo have produced fertile eggs for the past two years but we did not have a suitable incubator and the eggs failed to hatch. Thanks to the Kori Bustard SSP and John McLain, Fly-tier Program Coordinator we have a state of the art Grumbach incubator which enable us to hatch our first kori ever in 2012!



# MEDICAL NEWS

## Honey, Not Just a Tasty Treat!

Sam Rivera and Kate Leach, Associate Veterinarians, Zoo Atlanta

Honey has been used in human medicine for centuries to treat several conditions including contaminated wounds. We cringed the first time we thought of using honey to treat superficial wounds on birds. Once we used it, not only were we impressed by how wonderfully effective it was, but we were also delighted to see there were no deleterious effects to the bird's plumage.

Our story started when "Tuza", a 5-year old, female Kori Bustard was startled and ran into a post, resulting in the dislocation of the right carpus. Not only was the joint dislocated, but there was severe soft tissue trauma to the skin and underlying tissue. We tried to save the wing, but despite our best attempts to stabilize the carpus, it became unstable and developed a severe infection at the trauma site, even with oral antibiotic treatment. At this time the decision was made to amputate the wing at the carpus. Due to swelling and infection, the surgery site could not be fully closed, and we had to manage the surgery site as an open wound, using honey as the sole wound dressing agent. Bandages were changed every 3-5 days, with fresh honey applied to the wound. After 17 days the site healed well and no further bandages were needed. This is just an example of how honey can be beneficial to treat superficial wounds in birds. It was also rewarding to know that the honey came from the two bee hives we keep at the zoo.

Why is honey such a good agent to treat infected wounds? It has several unique properties which make it an ideal wound dressing agent. First, it is a supersaturated solution of sugars and it pulls water from the wound site; the lack of "free" water and discharge on the wound surface inhibits the growth of bacteria. Second, when honey is diluted by wound discharge, hydrogen peroxide is produced, which is released slowly to provide antibacterial activity without causing tissue damage. Third, some honeys, such as the honey from Manuka trees (*Leptospermum scoparium*), have been found to have high levels of antibacterial phytochemicals. In addition to its antimicrobial properties, honey also appears to stimulate lymphocytic and phagocytic activity, which are important immune system responses against infection.

In summary, honey was very successful in the treatment of a contaminated, open wound in our Kori Bustard. It provided a moist healing environment that prevented bacterial growth even when the wound was heavily infected. We will not hesitate to use honey again and keep a stash of it in our medical cabinet.



### References:

- Honey as a topical antibacterial agent for treatment of infected wounds. Molan PC. *World Wide Wounds*, 2001.
- *The Review of Natural Products*. DerMarderosian A, Beutler JA eds. 2<sup>nd</sup> ed. Facts and Comparisons, 2002: 328-329.
- Use of Honey for Wound Management. Beebe SE. *Proceedings of the Western Veterinary Conference*, 2011.



## Zubi the Kori Bustard; Flightless, Fearless and Fantastic

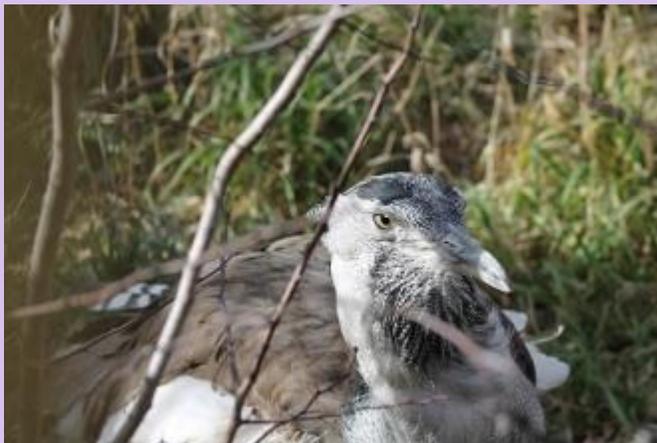
RoxAnna Breitigan, Animal Care Manager  
Cheyenne Mountain Zoo, Colorado Springs, CO

Several years ago, six-year-old Zubi, a male Kori Bustard, came to Cheyenne Mountain Zoo (CMZ). Even then, we knew that he would be a special case; special not just in personality but because this bird had no wings. Past wing injuries had left him a double wing amputee. But aside from his lack of wings, Zubi was all Kori Bustard.

When Zubi first arrived at CMZ, we already had a pair of Koris that were quite bonded. So, we decided to keep Zubi as a bachelor for the time being. When our other male died, we introduced Zubi to our female, but they always kept a safe distance from each other and acted more like roommates who merely tolerated each other than a bonded pair. Zubi now is a self-appointed bachelor and proudly shows himself off in the Bird Yard of the African Rift Valley exhibit with a mountain backdrop full of giraffe.

In the summer of 2011, Zubi stumbled and fell over on exhibit. At first we were not very concerned since occasionally we would see him get overzealous and try to leap into the air, forgetting that he couldn't fly. Sometimes, upon his awkward landings he would fall over. But after noticing this behavior several days in a row, keepers knew something was wrong. He seemed to show some neurological symptoms and just did not seem like his usual self. Vet staff began series of tests including blood work and x-rays. He was started on a round of antibiotics and Vitamin E to prevent capture myopathy. However, Zubi was not responding to the treatments and was getting weaker as each day passed. Keeper staff began hand feeding him as he was too weak to eat on his own. One morning, keepers found him on his back and were not sure how long he had struggled. Worries began to mount as we were scared of losing him to capture myopathy while vet staff worked to determine what was wrong with him.

Zubi could not stand on his own so it was decided to bring back the Kori sling, which had previously been used on an injured Kori Bustard. Keeper staff dusted it off and installed it in the barn for Zubi. Upon placing him in the sling, he did not struggle much at all in the sling and most of the time he would barely lift his head. Keepers made him as comfortable as possible by putting towels under his chin, elevated on a hay bale to keep his head up. They rearranged him multiple times a day to keep him upright and comfortable. They took him out and assisted him in walking for exercise and to keep him moving and his circulation going. Almost a week after the first stumble during a vet check, a heart murmur was heard in Zubi. After looking at his eyes more closely, it was becoming obvious that Zubi was losing his sight. It seemed he could only see shadows and his retinas were inflamed. After more testing, it was determined that he was dehydrated and had early signs of kidney failure. We had a very, very sick bird on our hands. Vet staff started Zubi on intravenous fluids to help with these new issues.



At this point, vet staff suspected the West Nile Virus had taken hold of Zubi. At CMZ, we vaccinate all our birds for this virus but, despite that, it was becoming clear that this was the culprit making our bird so sick. Vet staff checked the blood of Bella, our female Kori Bustard, for comparison to Zubi's blood levels. It was found that Zubi's levels were much, much higher than that of the healthy bird, which confirmed our suspicions.

After lengthy research, we found out that there was only one other documented case of a Kori Bustard contracting the West Nile Virus. The great news is that bird lived. A slight glimmer of hope overtook the barn.

Soon, however, everything quickly seemed to be getting worse; his blood levels, his appetite, his strength and his attitude. As his health was diminishing, so was our hope for him. We set the meeting that we were all dreading—the meeting to discuss Zubi's quality of life. Through tears it was determined that we should let him go. But then, as animals continue to do, he surprised us. The day we had planned on euthanizing him, he showed some new strength, a strength we had not seen in him in weeks. He seemed brighter and more alert. We decided to assess him daily and we would base our decisions based on his progress or lack of progress.



I am happy to say that Zubi continued to amaze us by showing minor improvements each day. He started to lift his head, be more responsive to staff and more interested in food. Keepers were still hand feeding him four times a day with bison, a treat meat we discovered he particularly liked. Blood work showed that his kidney values had improved as had his weight, so he was taken off of the IV fluids. As his strength grew each day, so did our hope. Zubi was still very weak from being sick and in the sling for so many weeks, so keepers took Zubi out for daily assisted walks three times a day to help him regain his balance and strength in his legs. Finally, staff began to see some fight from Zubi and it looked like his sight was returning. These were welcome signs that he was on his way back to his old self. He was able to stay out of the sling for a few hours during each day and then be put back in it overnight.

Zubi had been inside the barn for the duration of his illness. When it looked like he was doing much better, keepers took him outside for fresh air and sun. He seemed to enjoy this change of scenery and slowly started to walk on his own. We began to give him daily supervised outdoor time, which not only helped him regain his strength and balance, but his attitude as well. As he continued to recover, the sling was removed completely. He began to eat on his own and could have outside yard time for longer periods of time without supervision. Finally, the day came when Zubi was able to go back on exhibit. Zubi had beaten West Nile Virus.

This was a long nine week battle, not only for Zubi, but for the keeper and vet staff. It was many long hours, full of tearful days and weeks of not knowing how this would end. Even when things looked hopeless, Zubi never gave up and his staff never gave up on him. He kept fighting and our staff kept looking for solutions to help him. This is a story about never giving up even when the situation seems hopeless. It is a story about an extremely dedicated and caring staff who would not give up. It is a story about Zubi, the wingless wonder who against all odds survives and thrives on a mountain in Colorado.

Thank you to the dedicated African Rift Valley keeper staff and the CMZ Vet staff who worked so hard to ensure we would not lose Zubi to the West Nile Virus. Without their tireless efforts we surely would have had a different outcome.



## Fecal Hormone Study

Results from a fecal hormone study that occurred from 2004 – 2008 at Dallas Zoo, Denver Zoo, Sedgwick County Zoo, Smithsonian's National Zoo, Toledo Zoo, St Catherine's Wildlife Survival Center, White Oak Conservation Center, and Zoo Atlanta has been published on line in Zoo Biology and the abstract is below. The primary objective of this study was to determine whether differences in fecal testosterone could be used to indicate reproductive status of juvenile and breeding versus non-breeding male and female kori bustards. A secondary objective was to examine the role of estrogens in determining seasonality in female kori bustards.

**Differences in Fecal Androgen Patterns of Breeding and Nonbreeding Kori Bustards (*Ardeotis kori*). Penfold, L., Hallager, S., Boylan, J., de Wit, M., Metrione, L. and Oliva, M. 2012.**

To better understand breeding conditions to promote reproduction in captive kori bustards, fundamental endocrine studies measuring fecal androgen metabolites in male and female kori bustards were conducted. Feces collected weekly from males and females were analyzed for testosterone using enzyme-linked immunoassay. Results from adult males ( $n = 5$ ), adult females ( $n = 10$ ), immature males ( $n = 10$ ), and immature females ( $n = 10$ ) revealed seasonally elevated testosterone concentrations in fertile, but not nonfertile adult males and females ( $P > 0.05$ ). Adult females that were not maintained in a breeding group, or that did not produce eggs, did not demonstrate increases in testosterone compared to egg laying counterparts. In males, but not females, seasonal testosterone increases were accompanied by weight gain. Peaks in male fecal androgen metabolites ranged from 10- to 22-fold higher than nonbreeding season ( $181.5 \pm 19.1$  vs.  $17.0 \pm 0.94$  ng/g;  $P < 0.05$ ). Mean breeding season values for adult males were  $83.6 \pm 6.1$  ng/g vs. nonbreeding season values of  $12.3 \pm 0.73$  ng/g ( $P < 0.05$ ). In females, average breeding season testosterone concentrations were approximately 4-fold higher than nonbreeding season ( $55.9 \pm 6.0$  vs.  $14.5 \pm 1.8$  ng/g), with peaks 10- to 30-fold higher. Results show that noninvasive fecal androgen metabolite analysis can provide a means of predicting fertility potential of male and female kori bustards and might be utilized to assess effects of modifying captive environments to promote reproduction in this species.

**Zoo Biol. 00:1–13, 2012. C\_ 2012 Wiley Periodicals, Inc. DOI 10.1002/zoo.21034. Published online in Wiley Online Library (wileyonlinelibrary.com).**



# SSP UPDATES

## Cokes for Koris Fundraiser Update

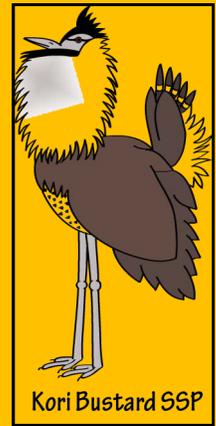
Katie Bagley; Lead Keeper, Zoo Atlanta

It's been almost one year since the bird department at Zoo Atlanta has started Cokes for Koris. This is a fundraiser that directly supports the Kori Bustard SSP. Sodas are donated or purchased in bulk and sold for 50 cents to zoo staff. The sodas are stored in the bird keepers' break room refrigerator. Staff and volunteers from all over the zoo know the best place to go for a cold (and caffeinated) beverage. We have raised \$270 with this easily organized fundraiser. While it doesn't sound like much, **it would really add up if every zoo housing kori bustards organized a fundraiser like this.** We are hoping for another successful year with this and fundraiser and **encourage** other zoos to consider this **simple way to help the kori SSP.**

Kori Bustard Husbandry Video Camera Update

Kori bustards present some unique challenges when it comes to husbandry. Keepers that work with koris should be aware of what is required to be successful in managing this species.

One of the goals of the Kori Bustard SSP is to create a kori bustard husbandry video. This video will provide an accessible resource for institutions that house kori bustards.



**Nutrition**

- Preparing meatballs
- Diet presentation
- Hopper feeding
- Food items as enrichment
- Grain feeder prototypes
- Ideas to encourage koris to consume more grain

**Transport**

- Crate designs including dimensions and padding
- Loading/Removing a kori from a crate
- Crate training

**Behavioral Husbandry**

- Training (scale, shifting, voluntary feather trims)

Enrichment

**Enclosure**

- Footage of:
  - enclosures/exhibits
  - holding
  - fencing materials
  - use of heat pads

**Capture techniques**

- Catching
- Various restraint methods
- Things to watch for

**Medical Care**

- Wing trimming
- Broken blood feathers
- Collecting fecal samples
- Procedures

- Setting up stalls for sick koris

**Reproduction**

- Breeding
- Nesting
- Incubation
- Hatching
- Introductions
- Behaviors to note
- Taping of angel wing
- Hand-rearing

**Managing imprinted males**

- Training
- Crating
- Shifting
- Stationing

This list covers the major topics but is not comprehensive. Institutions that received a camera are encouraged to record anything they feel is relevant to kori bustard husbandry. Please contact Sara Hallager ([hallagers@si.edu](mailto:hallagers@si.edu)) for further instructions on husbandry topics and how to send video.



Photo by Lisa Barker

### Causes of morbidity and mortality in captive kori bustards (Ardeotis kori) in the United States between 1988 and 2008

By Rhéa Hanselmann, D.V.M.

Submitted in Partial Fulfillment of the Requirements for the Degree MASTER OF PREVENTIVE VETERINARY MEDICINE (MPVM) School of Veterinary Medicine University of California, Davis Davis, California May 2012

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**Objectives** - To describe demographics, husbandry, and causes of > morbidity and mortality of captive kori bustards (*Ardeotis kori*) housed in U.S. zoos between 1988 and 2008, and to identify captive management targets for these birds.

**Design** - Cross-sectional survey

**Animals** - 198 captive kori bustards

**Procedure** - Data were collected from eligible institutions via an electronic survey. The association of traumatic injury and death with certain risk factors was examined using Pearson's chi-squared or Fisher's exact tests. Potential predictors of age at death (years) were examined using one-way analysis of variance and linear regression.

**Results** - Lameness (48 cases), GI parasitism (45 cases), and wing integumentary trauma (32 cases) were the most frequently observed clinical and pathologic findings. Trauma was a common cause of morbidity (134 cases) and the most common cause of mortality (53 individuals, 40% of deceased animals). Traumatic injuries are more likely to occur in kori bustards older than one year that are housed with hoofstock (Fisher's exact test,  $P = 0.024$ ). Traumatic death was most common in birds older than one year (Pearson's chi-squared test,  $P = 0.004$ ).

**Conclusions and Clinical Relevance** - Captive management of kori bustards should focus on developing strategies that minimize opportunity for injury. Priorities include decreasing stress associated with human activity, handling and transport, and preventing exposure to potentially hostile exhibit mates.

*\*\*\*Thanks to the Kori Bustard Species Survival Plan for conceiving the idea of this survey and supporting its inception. Thanks to all of the curators, veterinarians, biologists, zoo keepers, and other individuals who took the time to compile records and submit information about the many kori bustards housed at their facilities. Thanks to Zoo Atlanta for setting up the online survey and covering the monthly fees associated with this endeavor. The kori bustard SSP will be meeting at the AZA mid year conference to discuss the findings of this paper and develop an Action Plan for going forward on improving kori bustard management.*

## AROUND THE ZOO

They say an elephant never forgets but a kori may not forget either.

In 2010, Former Curator of Birds at National Zoo, Paul Tomassoni carried out an informal study at the request of Sara Hallager. Paul and the breeding male kori at NZP "Noname" had a unique relationship. Noname disliked Paul because it was Paul who always held Noname for feather trimming or medical exams. During his tenure at the Zoo, any time Paul walked by the kori bustard exhibit, regardless of what he was wearing, Noname would bark and run. **Six months** after Paul left the Zoo, Noname still remembered Paul, reacting as he did when Paul worked at the Zoo. **Twelve months** after retiring, Noname retained his memory of Paul as evidenced by a response of fleeing into the exhibit at the sight of Paul. **Two years** after his departure from the Zoo, Paul walked by the kori enclosure in Dec 2011. Noname spotted him and promptly moved deeper into the yard.

Dec 2012 Update: **Three years later:** Paul walked by the kori yard but there was no reaction from Noname. So it looks like a kori can remember for at least two years!



Paul? Paul who?

A new carousel has opened at the National Zoo featuring 58 different species.

**Including.....yes.....a kori bustard!** The Speedwell Foundation Conservation Carousel is one of only a few solar-powered carousels in the world. <http://nationalzoo.si.edu/animals/zooart/carousel.cfm>



## Kori bustard Keeper Profile

Alan Yester, Bird Keeper 3, Birmingham Zoo



Alan has been a bird keeper at the Birmingham Zoo for 9 years. He has a B.S. in Wildlife Biology from the University of Montana at Missoula. Alan was instrumental in the successful kori bustard chick hand-rearing in 2012. He carefully monitored the egg in the incubator and was very meticulous when it came to chick care. Alan made sure that the chick got plenty of exercise and could often be seen out with the feather duster and the kori chick close behind. He made sure that we had a healthy, well-adjusted and well-exercised kori chick. Alan is an exceptional bird keeper and I feel very fortunate to have him on the bird staff.

Submitted by Cindy Pinger, Curator, Birmingham Zoo



## Kori Bustard of the Year



Photo by Jessie Cohen

“Noname” is a male wild caught kori bustard who came to the National Zoo in 2000 after having been at St. Catharine’s since 1990 following entry into the country from Tanzania. Within a few months of arriving at the National Zoo, he was a breeding male. This was amazing because he had never bred previously, but in the years to come, he would prove himself to be the top breeder in the country and has consistently bred every year since 2000. I had never worked with a kori with so much personality and presence before Noname [whose name is really No Name] and it was and continues to be, a distinct honor to care for this animal. A magnificent bird in every regard, Noname’s strong and dominant personality has sometimes been a challenge for his other exhibit mates to live with. But this challenge has taught me much about managing kori bustards. I have learned a great deal from this bird over the past 12 years and he has taught me what a male kori is truly capable of. Although faced with an incurable cancer now, he continues to amaze me every day I work with him and demonstrates a remarkable spirit to survive. I hope to see Noname live through another breeding season, but if he does not, I will forever cherish his memory and be thankful for all he has taught me about kori bustards.

Sara Hallager,

Smithsonian National Zoological Park

# AROUND THE ZOO

## VOLUNTEER CORNER

### **Lisa Barker, Volunteer, National Zoo, Kori Behavior Watch**

Noname was in the thick of a full-on breeding display one pleasant evening last May. He was in the front of the yard for a change, a rare treat for both me and visitors alike. I was quite busy collecting data on him and his fellow flockmates, Tanzy and Tufani, when I heard a group of older teenaged boys approaching. They were quite loud, laughing and joking around, UH-OH... Needless to say, I wasn't expecting them to linger long at the koris..."BOOM-BOOM!" Undeterred, Noname continued with his drumming as the boys drew nearer. To my amazement, the closer they got, the quieter they became. They stopped opposite Noname, gazing in near-reverent awe at his spectacular balloon display. "Is that bass sound coming from HIM?" the tallest one asked me incredulously. I replied affirmatively, and he effused "I thought it was this awesome speaker in the distance! I just bought a new subwoofer, and he sounds like that, only better...it's like he's a Feathered Subwoofer!" LOL! Now it was MY turn to laugh! I've heard Noname called a number of different things over the years ("watermelon-neck" is another favorite), but nothing's come close to describing him this perfectly!

### **Wendy Goodwin, Volunteer, National Zoo, Kori Behavior Watch**

Mammals had always been my species of choice. When I began as a volunteer at the National Zoo, I gravitated to the elephant program. But all that changed when I met the koris.

I started my kori behavior watches with our adult group, consisting of Noname, and his females. Noname was wild born and very old, but he was totally in charge of his habitat. I loved getting to know the individual koris and very quickly stopped thinking of them as "just birds". When the behavior watches expanded to our newly formed subadult group, I jumped on board. The subadults included two of Noname's daughters and an unrelated young male. The subadult group was very different from the adults. In fact, one of the females seemed to be dominant. This last summer I added a kori chick watch to my repertoire of observations. I had so much fun watching the little balls of fluff flop around trying to learn their kori behaviors.

The cycle of life affects koris as it does all species. Sadly, as I write this, Noname is in the last phase of an illness that will eventually end his life. But in preparing to say good-bye to Noname, we look forward to watching our young male grow into his new role. How will he take charge of the girls he has been hanging out with and how will Noname's mature female respond to him? I can't wait for the story to unfold. Thank you koris for letting me be a part of your world.

### **Judith Gray, Volunteer, National Zoo, Kori Behavior Watch**

When I first started participating in kori bustard watches in 2001, our breeding pair was "Dick" and "Jane", whose likeness was captured in a beautiful line-drawing that subsequently was used on T-shirts. But after they were gone, a handsome young male came to us, a bird with "no name," who then became "Noname" (with the addition of a 3rd syllable, accent on the 2nd). Over the years, I've delighted in the late March-early April late-afternoon watches, waiting for those early soundless bill-claps, followed in subsequent weeks by the occasional head-toss as he limbers up for full-scale booming displays. From then on, it's been a matter of counting his booming cycles --- and truly marveling at the energy he has had, booming for 20+ minutes in a row, sometimes as many as three boom-cycles per minute. Of course, his principal mate "Tanzy" was not always immediately taken with his displays. But over the years, I've been fortunate enough to observe their mating three times (late Sunday afternoon seems to have been a good time!). A few years ago, though, he worried us when his display came to an abrupt end in what seemed like mid-season. Several of us did extra shifts, watching him specifically to see if he was eating and behaving more normally. He recovered and displayed the next year, but now we know he won't be with us very much longer. Still, he's still foraging, ruffling up those feathers, running across the yard (with the two females moving aside), and being the grand bird we've long known. I will truly miss Noname when he's gone.

# BUSTARD NEWS

## Status of Wild Kori Bustards

Senyatso, K., Collar, N. and Dolman, P.

**Assessing conservation status change in an unmonitored wide-spread African bird species. Diversity and Distributions. Article first published online: 10 APR 2012. DOI: 10.1111/j.1472-4642.2012.00909.x**

### Abstract

**Aim:** There are no systematic, long-term, large-scale bird monitoring programmes in Africa, and the most comprehensive available data for most species are incidental occurrence records. Can such data be used to assess range-wide conservation status of widespread low-density species? We examine this using Kori Bustard *Ardeotis kori*, a large, easily identifiable species with an extensive African range.

**Location:** Southern and East Africa, 14 countries

**Methods:** A comprehensive and systematic review of published and unpublished sources provided 1948 unique locality records spanning the years 1863–2009; these included 410 non-atlas records and 97 historical (pre-1970) records. Potential range-size changes were examined by comparing minimum convex polygons to quantify Extent of Occurrence pre- and post-1970, and by testing whether more historical records fell outside the recent (post-1970) 95% probability kernel than expected by chance. Additionally, qualitative evidence of changes 36 in abundance was obtained from historical published accounts and contemporary assessments by in-country experts.

**Results:** Since the late nineteenth century, range-size (measured as Extent of Occurrence) has contracted, by 21% in East Africa and 8% in southern Africa. There is strong qualitative evidence of considerable pre- and post-1970 population declines in all range states, except Zambia (slight increase) and Angola (trend unclear). In some countries declines occurred from the early 1900s. Thus, while relatively modest change in range-size has occurred in over 100 years, numbers have greatly reduced throughout the species's range.

**Main conclusions:** Our methodology allowed objective appraisal of continent-wide status of this species. Despite lacking quantitative population estimates and trends, and poor understanding of the species's autecology, common issues for many African species, incidental occurrence records can be used to assess range-wide changes in status. We recommend that this or similar approaches be applied to other widespread low-density species that probably also have rapidly declining populations despite apparently stable range-extents.



Photo by :  
Suzan Murray

## News of Other Bustards

There are 25 species of bustards and many are poorly understood. News of a few species is as follows:

**Great Indian bustard *Ardeotis nigriceps*:** Critically Endangered. The great Indian bustard now numbers less than 300 birds. BirdLife International 2012. *Ardeotis nigriceps*. In: IUCN 2012. IUCN Red List of Threatened Species. Version 2012.2. <[www.iucnredlist.org](http://www.iucnredlist.org)>. Downloaded on 13 December 2012.

**Bengal florican *Houbaropsis bengalensis*** Critically Endangered. The population in Cambodia was estimated at 294 displaying males or c.600 individuals in 2007, with just 32-60 individuals left in Nepal. No recent estimates are known from India but the total global population for this species is likely to fall in the range 250-999 mature individuals. This equates to 350-1,500 individuals. IUCN Red List of Threatened Species. Version 2012.2. <[www.iucnredlist.org](http://www.iucnredlist.org)>. Downloaded on 13 December 2012.

Read about some of Niger's endemic bustards, the **Nubian bustard *Neotis nuba*** , **Arabian bustard *Ardeotis arabs*** and **Denham's bustard *Neotis denhami*** at <http://www.saharacconservation.org/?-Bustards->



Nubian bustard



Denham's bustard



Arabian bustard

Photos by John Newby

**Lesser florican *Sypheotides indicus*** Endangered. The species's population was estimated at 2,200 birds in the mid-1990s, and based on this the number of mature individuals is put at ~1,500. IUCN Red List of Threatened Species. Version 2012.2. <[www.iucnredlist.org](http://www.iucnredlist.org)>. Downloaded on 13 December 2012.

**Great bustard *Otis tarda*:** follow the exciting news of the species reintroduction into the **United Kingdom** at <http://greatbustard.org/>. And also, be sure to check out the great bustards in **Mongolia** at [www.AsianGreatBustard.org](http://www.AsianGreatBustard.org). The project, begun in 2006, is the largest research and outreach effort on Central Asian Great Bustards thus far. The program is expanding scientific knowledge of poorly understood populations of the Great Bustard in remote Central Asia with an emphasis on gathering information with concrete conservation implications. It engages local people in the research process and promotes awareness of the species in local communities, especially through programs focused on schoolchildren.

**South Africa's bustards and korhaans** are in trouble, with six of the country's ten species listed in "The Eskom Red Data Book for Birds of South Africa, Lesotho and Swaziland". Populations of Ludwig's Bustard and Denham's Bustard are in decline due collisions with the cables of power-lines. Another bustard in trouble is the South African endemic blue Korhaan. It is severely threatened by afforestation, crop farming, overgrazing, burning, urbanization and mining. The white-bellied Korhaan is threatened by human population pressure and inappropriate farm management. A Bustard Working Group has been formed under the auspices of BirdLife South Africa. The group has several aims, but focuses on disseminating information about bustards to the relevant authorities and stakeholders, prioritizing research needs, and determining urgent conservation interventions.

# ACKNOWLEDGEMENTS

## Thank you to Phoenix Zoo for their role in Kori Bustard Sustainability

For the past several years, Phoenix Zoo has been providing an incredible service to the kori SSP by taking in young birds and holding them until they can be placed in permanent homes. This allows the SSP to continue to breed birds that cannot necessarily be immediately placed. Receiving and shipping koris is a big ordeal and Phoenix Zoo is to be congratulated and acknowledged as a major supporter in kori bustard sustainability. Thank you Phoenix!!



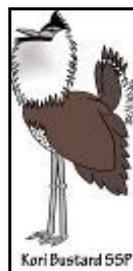
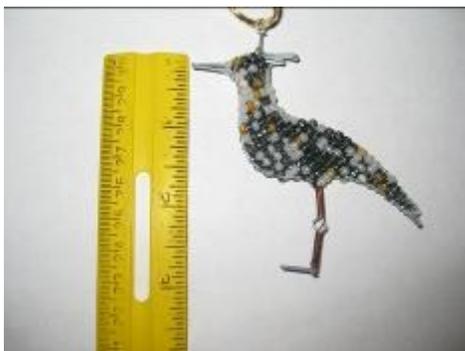
## Free Kori Bustard Feathers, John McLain

Thank You. 2012 has been the best year yet as far as giving the Kori feathers away. Many folks are enjoying these feathers for tying flies that never dreamed they might ever see or touch one let alone have plenty at their disposal. I can't thank the people involved enough for making this possible. For me it's almost like being Santa Clause all year long. We continue to raise funds for the Kori SSP even during the difficult economic times we've seen recently. Not as much as I'd like but we have managed to fund some small projects along the way. I do know the program has had a huge impact on the "Black Market" Kori feathers formerly traded in. They are still occasionally sold on eBay but most sales are outside the USA. The prices prior to this program were staggering. Single feathers sold for hundreds of dollars each, now they often go unsold or at a mere pittance of what they once were. We can't control the world market but we sure have changed it. I can always use feathers so please continue to collect any molted feathers as none go to waste. If anyone has any questions please contact me John@FeathersMc.com.



Don't forget the Kori Bustard SSP sells unique items not found anywhere else including keychains and mini beaded statues made in Zimbabwe.

For details, contact Sara Hallager: [hallagers@si.edu](mailto:hallagers@si.edu)





***That's "the end" for Volume 10 of  
The Gompou. We are already accepting  
submissions for next year's edition. Email  
muckrat34@aol.com or  
hallagers@si.edu  
for submissions or more information***

