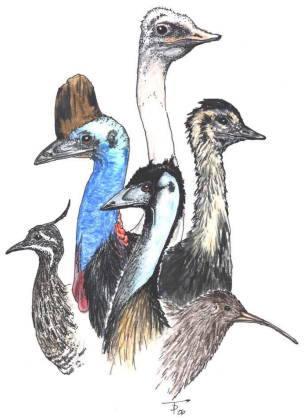
The Ratite Review

THE AZA STRUTHIONIFORMES TAG'S ANNUAL NEWSLETTER



Sunny Days at the Staten Island Zoo

by Marc Valitutto, VMD, General Curator & Veterinarian, Staten Island Zoo

Photo courtesy Marc Valitutto

On May 15th, 2014, popular Sesame Street characters, Murray the Monster and his little lamb, Ovejita, came to visit the Staten Island Zoo, a place "where the air is sweet." Since Big Bird had recently had his nest usurped by Minnie Mynah, they were interested in learning all about the variety of avian species exhibited at the zoo. During their journey the two were introduced to several friendly neognath neighbors including, bald eagles, kestrels, and a sun conure. They even came face-to-face with a white-faced scops owl, which Murray came prepared to handle, donning a custom-made (four-fingered) leather glove.

Following their fleeting encounters with the flighted, Murray and Ovejita spent some quality time getting to know two of the Staten Island Zoo' s ratite species, the emus and the ostriches. Aside from a few curious pecks at his "fur," the hand-raised emus were hardly impressed with Murray, allowing the filming to proceed without incident. Prior to meeting Nia the female ostrich, several precautions were put in place to make "everything A-OK." Neo, her mate, was shifted into holdings and police barricades stationed within the exhibit to contain the film crew. Nia was given a respectful birth by all despite the generally calm demeanor typical of most captive female ostriches. Nia remained poised, attending to the bowl of corn provided by her keeper, Alex Carr, virtually ignoring the nearby presence of over 15 film crew pointing cameras and angling boom microphones. To the delight of onlookers, in a surprise twist Murray introduced us to an "even bigger bird" at the close of the segment. Big Bird made his grand entrance, and peering down at Nia he exclaimed "hello there, *little* ostrich!"

Photo Courtesy Marc Valitutto

Brief though they were, the filming of these segments took a total of 14 hours, and involved the participation of the entire zoo staff; even the rheas were afforded some screen time. The production team was respectful and generous with their time, being commendably patient with the fan club seeking "selfies" and physical interaction with their childhood favorites. While Sesame Street is an iconic New York City staple, it is a rare opportunity to host these internationally recognized characters. For this reason, when approached by the show's producers, the Staten Island Zoo's administration eagerly agreed to allow them the use of our institution for filming. The staff as a whole considers this event to be a coup for conservation efforts, as it brings much needed attention to the zoo's new ratite exhibits, which were designed to educate visitors about these amazing birds. Through Sesame Street, a show beloved the world over, the Staten Island Zoo was able to project its conservation message directly into the living rooms of children (and adults) worldwide.

Photo Courtesy Steve Yensel

The Staten Island Zoo ratite segments were featured in Sesame Street Episode 4512, titled "Big Bird Loses His Nest," which premiered on 21 November 2014.

Out and About with Ostrich

Abilene Zoo Conducts Standing Sedation on Ostrich

by Denise Ibarra, Mammal Keeper III

In October, the staff at Abilene Zoo performed a standing sedation procedure on one of their female ostrich. Veterinary staff needed to do further diagnostics of progressive osteoarthritis of both tarsi. With keeper staff assisting in supporting the ostrich, vet staff was able to conduct radiographs, ultra sounds, and take blood.

http://www.birdlife.org/worldwide/news/Red-List-for-birds-2014

More than 350 newly recognised bird species have been assessed by BirdLife International for the first time on behalf of The IUCN Red List of Threatened Species. Worryingly, more than 25% of these newly recognised birds have been listed as threatened on The IUCN Red List - compared with 13% of all birds - making them urgent priorities for conservation action. The first of a two-part comprehensive taxonomic review has focused on non-passerine birds – such as birds of prey, seabirds, waterbirds and owls – and has led to the recognition of 361 new species, that were previously treated as 'races' of other forms. The new total of 4,472 non-passerines implies that previous classifications have undersold avian diversity at the species level by more than 10%. "Put another way, one tenth of the world's bird species have been flying below the conservation radar", said Dr Stuart Butchart, BirdLife's Head of Science. Until now, only one species of Ostrich had been recognised and was assessed as Least Concern on The IUCN Red List. However, Somali Ostrich Struthio molybdophanes, which is found in Somalia, Ethiopia, Djibouti and Kenya, is now recognised as a distinct species and listed as Vulnerable. Its population is thought to be in rapid decline because of hunting, egg-collecting and persecution, and its status could worsen if action is not taken soon. "This species highlights both the need for improved knowledge of the world's birds and the need for conservation action in some of the most challenging parts of the globe", said Andy Symes, BirdLife's Global Species Officer.

Ostrich Conservation Status

Ostrich Struthio camelus IUCN status: Least concern, population decreasing

Somali ostrich Struthio molybdophanes IUCN status: Vulnerable, population decreasing

Update– January 2015

by Sheri Horiszny, Santa Barbra Zoo

Confiscated ostriches at UWEC in Entebbe, Uganda

Conservation is not always glamorous, and sometimes it consists mostly of working at your desk and trying RE-ALLY hard to be patient. That was the theme of 2014 for the Care for Karamoja project. We drafted a Memorandum of Understanding (MOU) between Uganda Wildlife Education Centre (UWEC), Uganda Wildlife Authority (UWA) and Care for Karamoja (C4K) which we need in order to move forward with a census of ostriches and giraffes in Kidepo Valley National Park. The MOU should also allow us to move forward with genetic sampling to finally solve the mystery of which subspecies, *Struthio camelus camelus* or *Struthio camelus massaicus*, is native to the region. The MOU is in the review process, and we hope that it will be signed, and permits obtained, in time to complete a census in 2015.

Photo by Sheri Horiszny

For those of you who are new to the project, C4K is a conservation project aimed at improving the lives of endangered wildlife and over 785,000 food insecure people in the northeastern corner of Uganda. C4K provided an incubator and hatcher to facilitate a program designed to train local farmers to raise ostriches in an attempt to create additional revenue and protein sources, and thereby reduce poaching pressure on giraffes, ostriches and other wildlife in the area. You can learn more at www.care4karamoja.org.

At UWEC, the facilities team worked hard to complete the room housing the incubator and hatcher in 2014. The work included adding windows, paint, power and lights, but the door also had to be made larger to get the incubator and hatcher into the space!

Photos by Uganda Wildlife Education Centre

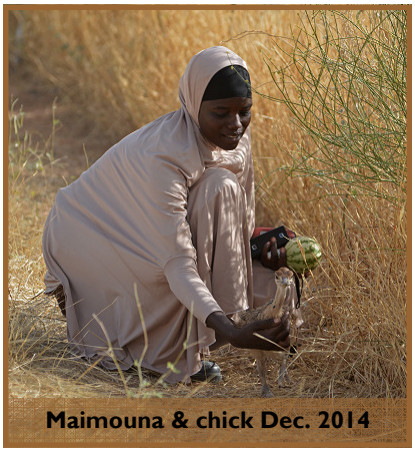
By July the units were up and running, and a 10-egg test was performed. Unfortunately, the first round of eggs did not hatch. But a new group of eggs is now in the incubator, so we hope to have chicks by late February. Here, Dr. Julius Kasigwa places the eggs for the first test run of the incubator:

Photos by Uganda Wildlife Education Centre

Please "Like" us on Facebook to follow our progress, and (we hope) to see photos of hatched chicks: www.facebook.com/CareForKaramoja

Project Goals

SCF's North African Ostrich Recovery Project aims to provide the framework, resources and technical support to restore a highly-adapted desert race of ostrich in Niger.


Maimouna & chick Dec. 2014

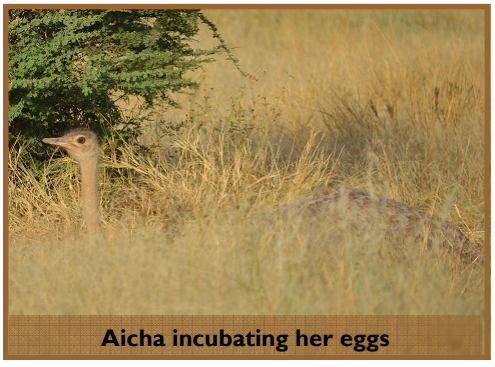
In 2007, the Sahara Conservation Fund (SCF), the AZA Ratite Taxon Advisory Group and a local Nigerien NGO called CERNK partnered on a groundbreaking effort to save the endangered North African ostrich and aid its recovery in the West African state of Niger. The long-term goal of the Ostrich Recovery Project is to reintroduce and establish self-sustaining populations of ostrich back into the wild. This is a multi-faceted program including: captive-breeding and reintroduction, development of a model participatory, multi-partner conservation initiative, establishment of a national ostrich breeding facility that will serve as a platform for building local skills and capacity for husbandry and conservation, improved environmental and conservation education and awareness, and catalytic support for other endangered species and environmental issues.

Achievements in 2014

At the end of 2014, the breeding center in Kellé was hosting 5 adult ostriches including 2 reproductive pairs, 7 juvenile ostriches aged 10 months and 5 one-month old chicks. This year was very productive and can be considered as a major milestone for the project on the way to reintroduction. Thanks to better management and surveillance, strong motivation, better support at local and regional levels, great improvement in communications thanks to Thuraya satellite phones, and the unstinting support of our partners and donors. Good choices were made at the right time, and the project can envisage moving forward towards translocation of ostriches to the pre-release site of Tilala, nearby to the breeding center.

Ostrich Handling & Site Management

For the last 3 years, the ostrich pair of Aicha and Julien produced several eggs every year but none of them hatched. We consequently decided to pair Aicha with Moustapha, a younger male, just after the end of the last breeding season. The local staff spent many hours during the first days watching their behavior in order to be sure the two birds were getting used to the new situation. Quickly, the male started to display at the beginning of the new breeding season and the female responded positively. Finally, Aicha laid 9 eggs but only one was fertile and hatched. The other eggs were examined after 60 days of incubation and there were no embryos inside. The chick from this new couple is doing well and we hope the rate of fertile eggs will increase next season.


Aicha incubating her eggs

The other breeding pair, Aoulaye and Maria, had another relatively productive breeding season, with 8 eggs laid, 4 of which hatched, and the chicks now growing up rapidly.

Increased efforts to prevent livestock from entering and grazing on the grounds of the breeding center, coupled with good rainfall in August, have produced a rich crop of natural food, including wild watermelons and acacia pods, which have been collected by the staff. These natural foods are highly appreciated by the ostriches and may have played an important role in the successful breeding season.

With the great vegetation cover due to the good rainfall, it was crucial to make fire breaks in the center to protect it from wildfires, something of high risk during the cooler months following the rainy season because of the dry grass and strong winds, which also correspond to the beginning of the new breeding season. Wildfires can generate a lot of stress for the birds and seriously compromise the chances of reproduction.

The other source of stress for the ostriches is disturbance from encroachment by local herders and their cattle. To tackle this issue, the perimeter fence has been completed and strengthened with barbed wire and fencing made from stems and branches of a local bush *Leptadenia pyrotechnica*.

Lastly, the site manager, Maimounatou, and her two staff had the idea of establishing a small vegetable garden for lettuce, cabbage and squash. These are used to complement the ostriches' diet and are particularly appreciated by the chicks and the breeding pairs looking for fresh green plants during the dry season.

Public Awareness and Award

The annual celebration Arbor Day (la *Fête de l'arbre*) has been organized for the first time in Kellé on the 3rd of August. This an important celebration in Niger and several regional authorities, including the Prefect of Gouré, the Mayor of Kellé and the Director of Environment were present and gave a testimony of satisfaction to Maimounatou Ibrahim, the site manager, for the great job carried out so far. The decision makers pointed out the need to support such a good initiative and the local forester of Kellé will now be in charge of the surveillance and planting local natural fencing all round the site. It is important to underline the interest raised by the breeding center at a regional level, which is now fully supported by the local and regional decision makers.

Maimouna's Award, August 2014

Main Challenges for 2015

Thanks to the support of San Diego Zoo, St Louis Zoo and the Vogel Park, the site manager will go to Walsrode in Germany, at the end of March to attend a 2-month training course in incubation and ostrich care.

Solar power equipment will be installed to supply power for a small building on site, where the project will have an office, a meeting room, storage rooms, and the incubator room. Power will also supply a water pump for the borehole to be drilled and located at the center.

Strengthening the southern perimeter fence with barbed wire and dried plants and stabilization of the embankment near the western enclosure, damaged by heavy rainfall, will also be carried out.

Ostrich chicks, November 2014

If we have same success during the next breeding season, we will have quadrupled the number of birds by the end of 2015 by comparison with beginning of 2014. An exchange of 3 young birds aged of 3-6 months will be carried out between two other ostrich holdings (Iferouane and Mainé Soroa), partners in the national conservation strategy for this species. This will increase genetic diversity of the overall flock, something absolutely needed to avoid inbreeding.

With the perspective of translocating birds to the Tilala pre-release site within the next couple of years, a campaign of awareness raising will be carried amongst the famers and herders living and working in the vicinity of

Tilala and Kellé.

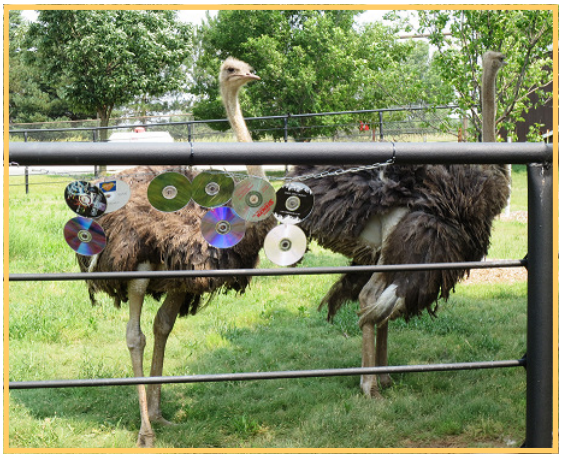
Efforts will of course continue to raise funds in support of all the activities required breed and to reintroduce North Africa ostriches into the wild within 5 years. Thank you all for your generous support!

Acknowledgements

From 2011 to the present, this project has been made possible through the generous support of the following people and institutions: St Louis Zoo, Smithsonian's National Zoo, Columbus Zoo & Aquarium, Dickerson Park Zoo, Fort Wayne Children's Zoo, Phoenix Zoo, San Francisco Zoo, Omaha's Henry Doorly Zoo, Zoo New England, Sacramento Zoo, Fresno's Chaffee Zoo, Disney's Animal Kingdom, Dallas Zoo AAZK, Audubon Nature Institute, North Carolina Zoological Park, San Diego Zoo Global, Toledo Zoo, West Texas AAZK, AAZK Lion Country Safari, Milwaukee County Zoo, Riverbanks Zoo AAZK, Zoo Miami, Busch Gardens, AZA's Ratite TAG, The Living Desert, Zoo Atlanta, Marwell Wildlife, Woodland Park Zoo, Hogle Zoo, Tulsa Zoo, Safari Enterprises, Windermere Elementary School, Thuraya, Bill Houston, Michael Maunder, Sara Hallager, Mike Bossier, Randy Cremmins, Peter Black, Tim Woodfine, Pierre Comizzoli, Roseline Beudels-Jamar, Thomas Rabeil, Steven Monfort, Karen Sausman, Mark Stanley Price, Larry & Tony Johnson.

Enrichment

How To Enrich the Largest Living Bird



Ostrich are native to Africa inhabiting the open dry grasslands. They are nomadic, moving throughout the day in search of readily available food. They have excellent eye sight and acute hearing. Males can stand at nearly 8 feet tall and weigh between 350 – 400 pounds. Ostrich are the only bird with two toes. They can run 40 miles an hour and use their long legs and strong feet to kick at predators. Captive Ostrich enjoy various forms of enrichment. They are very curious and enjoy pecking at shiny items. Mobiles can be made up of old CD's. Hanging colorful hard plastics, such as baby toys in their inside stalls or metal objects that make lots of noise like a cowbell, are easy for keepers to gather up and use. Be aware that

ostrich may ingest any object that they can swallow. Enrichment items need to be large enough to prevent this and closely monitored for signs of breakage. As with most birds Ostrich enjoy a good shower. A nice fine mist starting from their feet and working up will result in a soaked happy bird in no time. A dust bath or sandy area where Ostrich can lay down and spread their wings is also a great way to enrich them while they are on exhibit. Food enrichment is always a good choice. Small items such as peas or corn niblets can be added to their diet. Browse and other leafy greens can be hung on caging or on exhibit for natural foraging behavior. Floating small apple pieces in a water bowl or trough can also be engaging. Training is also another great way to enrich these birds. Working safely around these giants is a valid concern. Take time to learn your individual birds' behavior and by working slowly Ostrich can be trained for many voluntary medical situations, such as scale training, blood draws and ultrasound.

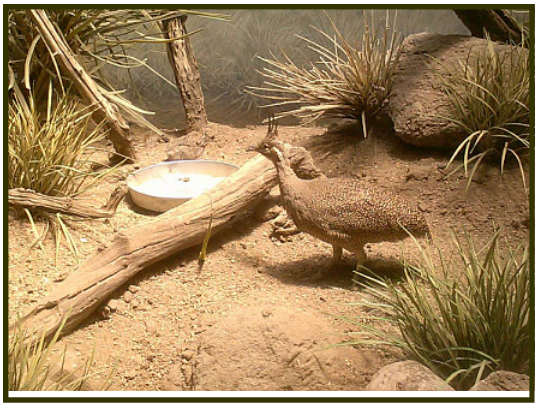
Dallas Zoo AAZK Chapter Supports Ostrich in 2014! By Russell Pharr, AAZK President, Dallas Zoo

This year, we chose to highlight the ostrich as our featured conservation species, and we promoted ostrich conservation at a number of events, including the zoo's Homeschool Day, our Bowling for Rhinos and Sailing for Rhinos events, and our Labor Day Book Sale. We have also voted to send a donation a donation of $500 raised during the book sale to the Care for Karamoja ostrich project in Uganda. Our 2014 chapter t-shirts also featured an ostrich along with a rhino.

Tinamou Tracks

Bronx Zoo Hatches Four Elegant-crested Tinamou by Patti Cooper, Senior Keeper of Ornithology

The Bronx Zoo holds 5.2 elegant crested tinamou in a natural scrubland exhibit. In June, a 10-year old male and his 1-year old offspring began incubating eggs in two separate nests, and the remaining 3.2 birds were removed from the exhibit. The first chick hatched from the young males nest on June 20th, but the male didn't leave the nest so the chick was pulled to a howdy, and keeper staff began hand-raising. A second chick was found deceased under the male later that day. The next day, the young male deserts his nest, his remaining 3 eggs are pulled to the brooder, and he proceeds to push his way into the older males nest. He is pulled and placed in the howdy with his chick. He appears very nervous and paid no attention to the chick, so he was removed, and the chick was moved to the brooder to be raised with an additional hatched chick from his clutch. Once back in the exhibit, the younger male continued to push his way into the older males nest, causing him to abandon the nest. The two hand-reared chicks are then introduced to him, but he is aggressive towards them, so they are again pulled back to the brooder. In the beginning of July, three additional chicks hatch under the younger male. One wanders from the nest and is aggressed by the older male. At this point, he is removed from the exhibit, and no longer participates in breeding. Two days later, an additional deceased chick is found under the remaining younger male in the nest along with three infertile eggs which are pulled. Once the male leaves the nest, one of the chicks cannot keep up and is pulled to the brooder. A few days later, the three hand-reared chicks are introduced back into the exhibit, but the male only takes the one pulled a few days before. He continued to raise the two chicks, while keeper staff pull and raise the other two. This raises the question, has anyone successfully had two males raise chicks in the same exhibit? Is there something we could have done differently that could have proved successful?



Emu Encounters

Fossil Rim Wildlife Center Hatches Three Emu

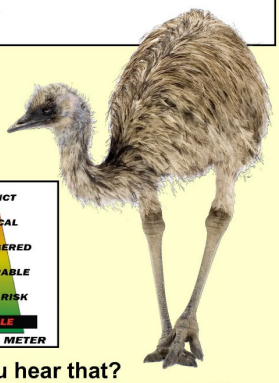
Iron Man

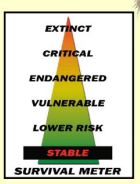
Beast and Olivia

Big Birds

Emu
Dromaius novaehollandae

- Found in woodlands, grasslands and arid shrublands in Australia.
- Feed on seeds, fruit, flowers, plants, insects and small vertebrates.
- Nomadic; travel long distances in search of food and water.
- Found in loose flocks, small family groups or singly.
- Taller than cassowaries.
- Tail feathers are stiff and can be rattled against each other to startle intruders.
- Wild emu populations are considered stable.

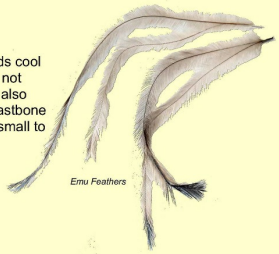




Do you hear that?
Both emus and cassowaries communicate with low booms instead of a typical bird song. The emus at the Virginia Zoo are very vocal, and if you listen carefully, you may hear them boom!

Feathers without flight
The shaggy hair-like feathers keep the birds cool and protect their skin, but the feathers are not shaped for flying. Emus and cassowaries also lack flight muscles attached to a large breastbone for support, and their wings are much too small to lift their heavy bodies.

Instead of flying, emus and cassowaries use their powerful legs and strong feet to run—up to 30 miles per hour!



Emu Feathers

Emu Egg

Daddy daycare
Female emus and cassowaries lay eggs in a simple ground nest and then move on, leaving the males to incubate the eggs alone for up to 60 days. During this time, the males may lose up to a third of their body weight. Once the eggs hatch, these doting dads teach and protect the youngsters, who may remain with their father for over a year. Females have no role in caring for the chicks.

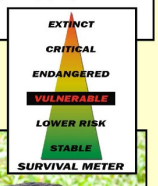
Can't find a cassowary?
When research is in progress, the cassowaries may be off exhibit. Look closely at the back fence to see the cassowaries in their "behind-the-scenes" holding area.

Virginia Zoo Spotlight
Species Survival Plan

Cassowaries are not common in zoos and are difficult to breed. The Virginia Zoo participates in a Species Survival Plan, along with other zoos, to study cassowary behavior and develop best practices for breeding and raising these birds in captivity.

Southern Cassowary
Casuarius casuarius

- Found in the rainforests of New Guinea and northern Australia.
- Feed mostly on fruit, but will eat insects, fungi and small vertebrates if available.
- Solitary.
- Heavier than emus.
- Zoologists are unsure of the purpose of the casque on the cassowary's head. It may be used for making or sensing sound, protection, or as an indicator of health and status.
- Wild cassowary populations are at risk due to habitat loss and invasive species.



Sign from Virginia Zoo

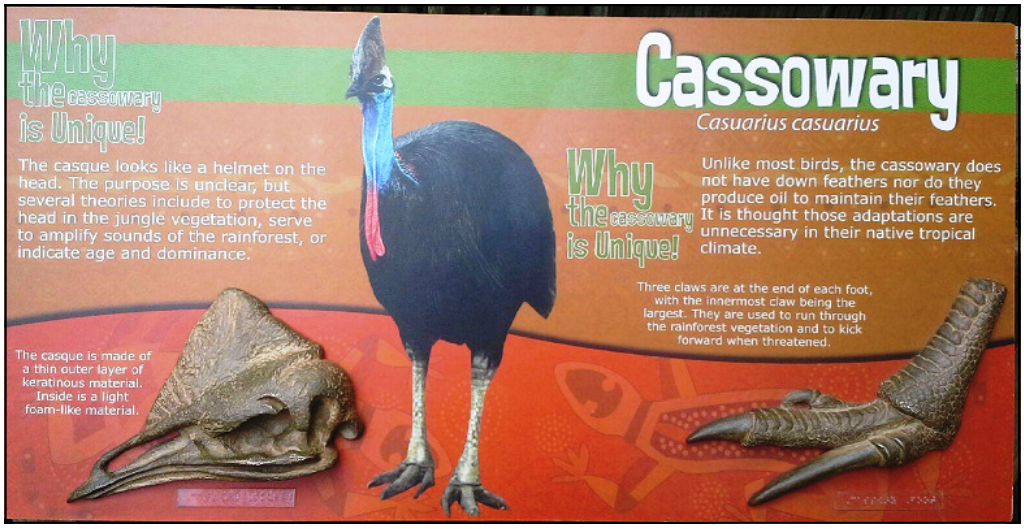
Catching Up with Cassowary

Working to Save Queensland Cassowaries

by Carrie Brooks, Birmingham Zoo

2014 was a big year for the Southern or Double-Wattled Cassowary (Casuarius casuarius) in Australia. Rainforest Rescue launched the **Save the Cassowary** campaign in March with the participation of government organizations, business partners, Aboriginal corporations, universities, non-government organizations and over 20 zoos. This campaign is designed to increase attention to the plight of the Southern Cassowary, of which it is estimated that less than 1,000 remain in the Wet Tropics of Australia. Due to the extremely low population in Australia, the government has listed it as an endangered species while the IUCN still lists Southern Cassowaries as Vulnerable. The main focus of the campaign is the raise funds for Rainforest Rescue's cassowary conservation programs in far northern Queensland. These include purchasing rainforest land of high conservation value which are at risk of development, restoration of vital cassowary habitat including creation of corridors between existing forested areas, supporting the Garners Beach Cassowary Rehabilitation Centre, as well as cassowary population research. An area of particular attention is the care of 3 orphan chicks. It is estimated that they will require care for about 12 months before they can be released back into the wild. Funds from the Save the Cassowary Campaign and other donations are helping support the care of these chicks which is approximately $29 per day for each bird (including staff, vet care, food and other necessities). With less than 1000 cassowaries in the wild, each bird is important. If you would like more information or to get involved as an individual or an organization with the Save the Cassowary campaign and other projects, please visit Rainforest Rescue's Save the Cassowary website at: http://savethecassowary.org.au/about/save-the-cassowary-campaign/

As a local connection, the Birmingham Zoo will soon be joining this campaign. As part of a Zoo-wide grant, I have been given the opportunity to travel to Australia to meet with the Rainforest Rescue team and see the campaign in action at 5 zoos. In my travels I will also visit the Garners Beach Cassowary Rehabilitation Centre and see the orphan chicks in person. I will be bringing my knowledge back to Birmingham to educate our visitors about the cassowary and help raise funds for Rainforest Rescue. More details about the campaign and cassowaries in Australia will be forthcoming.



Sign from Blank Park Zoo

A Curious Case of Cassowary: How the Staten Island Zoo Brought the 'World's Most Dangerous Bird' Back to New York City

By Javier Alvarez, M.A., Avian Collection Manager, Staten Island Zoo

Kiki in her new home

At some point in his or her young life, it seems every child is destined to enter what might be termed the fascination-with-dinosaurs phase. Some never grow out of it, and that is a credit to them, and a boon for our continued understanding of what these magnificent prehistoric creatures actually were. In fact, modern paleontology informs us that "terrible lizards" (or *dinosaurs* translated from the Latin) is perhaps the most unfortunate misnomer ever applied to any one group of organisms; not only because dinosaurs were not lizards, but because they led far more complex lives than that of rampaging monsters. I am reminded of this very notion when I hear the cassowaries (three *Casuarius* sp.) collectively referred to as "the world's most dangerous bird."

Cassowaries are potentially dangerous, of course, but the same is true of animals with far more innocuous reputations (e.g., pandas), and their ornery dispositions aside, cassowaries are fascinating birds. Physically, they are perhaps the most fitting example of a living dinosaur descendant. All birds may share this evolutionary heritage, but it is the cassowaries with their imposing flightless bodies, powerfully built legs, and bare heads and necks strikingly colored in blue, red and sometimes yellow, that remind us most of their prehistoric progenitors. A prominent bony protuberance atop the head, the casque, and a dagger-like claw on the inner toe, rounds out a rather extraordinary appearance. Behaviorally, they are no less remarkable, being one of the few animal species that present paternal care of offspring; a female will lay her eggs in the nests of multiple males, and it is they, daddies or no, who assume all incubation duties, and ultimately rear and protect the chicks.

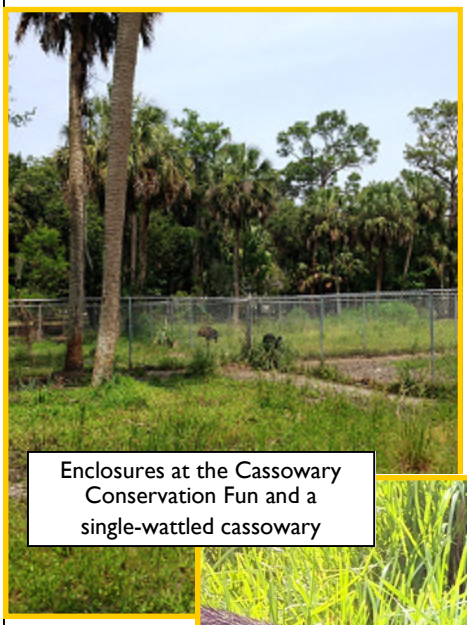
While today's internet may make the cassowary as "accessible" as a street pigeon, there is something to be said for experiencing the real thing. Nothing can inspire conservation efforts as much as coming face-to-face with a living, breathing representative of a species, and therein lies the main impetus for the Staten Island Zoo's mission to bring cassowaries back to New York City. The idea was hatched (pun very much intended) in late 2012, by Dr. Marc Valitutto, the zoo's curator and veterinarian, as part of a larger campaign to exhibit the four largest ratites at the zoo and establish what is now Ratite Row; a decidedly ambitious undertaking even by the standards of the largest zoos. Not surprisingly, the cassowary proved to be the last and most difficult acquisition, and it is now the crown jewel of this collection within the collection, which also features 2 emus, 2 greater rheas, and a breeding pair of ostriches.

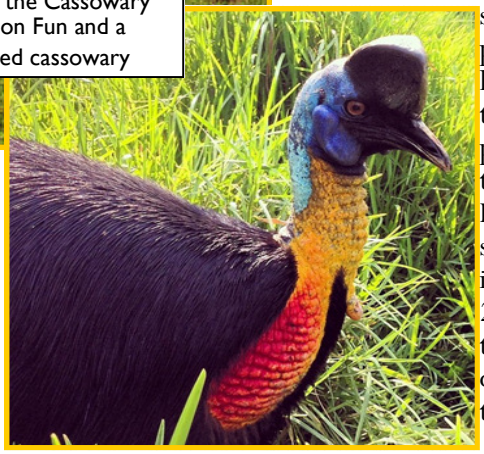
The next generation of cassowaries awaits hatch day in an incubator at the Cassowary Conservation Fund

To work with an animal the likes of a cassowary, it is probably best to start with a young specimen. Unfortunately, the Southern cassowary (*Casuarius casuarius*), the only species presently held in AZA-accredited institutions, has proven to be a less than prolific breeder in captivity. Young and old, the AZA population numbers only about 48 individuals. So, where to go for a chick? Thankfully, in 2013 the San Diego Zoo's Nicole LaGreco, program leader of the Southern Cassowary SSP, made a fateful suggestion, when she recommended inquiring with reputable private breeders such as Dr. Scott Snedeker and Glenn Hood of the Cassowary Conservation Fund in Fort Pierce, Florida. More than your average aviculturists, these men keep two breeding pairs of *C. casuarius* with an additional four to be established in the near future. In addition, they are in possession of the only known captive specimens of *C. unappendiculatus*, the single-wattled cassowary, in the whole of North America. To date, Snedeker and Hood have produced over 20 southern cassowary chicks, and one of these, a year-old female, was made available to the Staten Island Zoo.

In the Fall of 2013, an online fundraiser to finance the acquisition of a cassowary was launched via the international crowdfunding site Indiegogo, with Dr. Valitutto sharing his own unbridled enthusiasm with potential donors by professing, "I am so personally excited about this! I absolutely love sharing new experiences with people and just know that this will inspire many visitors to take action to help the cassowary in the wild." The fundraiser proved to be an almost immediate

success, and by November of that same year the 10,000 USD necessary to acquire the young female were raised, thanks in large part to the generosity of the Dallas World Aquarium, and its director, Daryl Richardson. With funding secured, it was time to address in earnest the logistics of bringing in and maintaining what is now the only cassowary in the Northeastern United States. A 2800 sq ft space had already been reserved for the cassowary adjacent to its casuariform cousins, the emus, to form what would become the Australasian stretch of Ratite Row. The land here is naturally sloped with large trees near the top and a gravelly dirt bed running down and across the fence-line at the base. With topographical enhancements in the offing, such as the planting of low growing vegetation and installation of a semi-permanent water source, this area is set to be transformed into a coastal habitat exhibit. Cassowaries may inhabit dense forest, but not uncommonly their foraging trips do bring them down to the shore, as many ill-advisedly taken videos posted on Youtube will show. Like any U.S. zoo above the Mason-Dixon (and certainly a few below it) the Staten Island Zoo has to contend with the incompatibility of tropical fauna and temperate winter climes. For the cassowary, a large custom-built holding was erected within the off-exhibit area which provides warm shelter, while allowing the occasional foray into the outdoor pen during kinder winter days. Transporting the world's second largest bird species (only the ostrich has greater mass) is no simple task, and at just one year the female cassowary was already tipping the scales at 60 lbs. Fashioning an appropriate crate requires the skills of a trained carpenter, like the Staten Island Zoo's Joe Donnelly, who followed husbandry manual guidelines to construct a large box of reinforced wood, complete with turf flooring to afford the bird ample protection underfoot. On May 23, 2014, just days after its completion, the box along with Dr. Valitutto, photographer Steve Yensel, and the author, piled into a decidedly cramped van for the 32-hour redeye trip down-country to the Florida home of the Cassowary Conservation Fund. Incredibly, "Operation Cassowary" was coming to fruition. The 9-acre Cassowary Conservation Fund sits in what is quite literally a tropical wilderness; one cannot help but wonder if cassowaries would become invasive there if not for the secure enclosures Snedeker and Hood had commissioned to contain them! A tour of the facilities included a walkthrough of their incubation/brooder room wherein sat an incubator housing an impressive number of giant green eggs, and a meet-and-greet with their adult single-wattled cassowary (across a fence, of course). Dr. Valitutto and Co., however, were there to pick up the Staten Island Zoo's new southern cassowary and it was "Kiki," as the staff has since named her, who was the highlight of the tour. With her endearing personality belying her as yet drab sub-adult colors, Kiki would indeed make a fine addition to the zoo's growing collection. Snedeker and Hood were gracious hosts, sharing as much of their knowledge as time would permit, and offering the use of their guest house for the night. By early next morning, however, it was time to crate a cassowary for the trip back to New York City. Despite her year-old frame, Kiki demonstrated then why cassowaries are best handled with due caution, giving her would-be captors a full workout. In the end, all went as planned with no injuries to report, and in relatively short order three men and a baby (cassowary) were back on I95 headed for home. The Staten Island Zoo is known as New York's "biggest little zoo," a moniker that now references its dedication to grander conservation goals as much as it does an unexpectedly diverse animal collection. To address these goals it boasts a number of animals (e.g., binturongs) that serve as ambassadors for their species and the imperiled habitats from which they hail. Kiki the cassowary will be the first bird to serve in this capacity, though certainly not the last. Shared with the city's denizens through a developing exhibit, it is the hope of the Staten Island Zoo's committed staff that she will inspire a willingness to contribute to the conservation of her wild conspecifics and to the protection of tropical forests in northeastern Australia and New Guinea, a biodiversity hotspot.





Enclosures at the Cassowary Conservation Fun and a single-wattled cassowary

Save the Cassowary campaign update

By Monique Ryan

Save the Cassowary is an initiative of Rainforest Rescue. Rainforest Rescue has been protecting and restoring rainforests in Australia and internationally since 1998. They achieve this by purchasing and protecting the biodiversity of high conservation value rainforest, and by re-establishing rainforest through planting, maintenance and restoration. The Save the Cassowary campaign was implemented to increase awareness of the importance of the endangered southern cassowary – the rainforest gardener – and their importance in rainforest's ecological functionality.

Stage 1 completed

Stage 1 of the Save the Cassowary campaign was launched in March 2014. This involved a media awareness campaign which reached over three million people and interpretative signage installed in 19 partner zoos and wildlife sanctuaries across Australia that have cassowaries.

Stage 2 ongoing

Stage 2 of the campaign has a stronger fundraising focus to enable Rainforest Rescue to deliver habitat restoration in the Daintree and Mission Beach and co-manage the Garners Beach Cassowary Rehabilitation Centre where three orphan chicks are currently in care.

Restoration of essential cassowary corridors

The Daintree:

During 2014 Rainforest Rescue completed restoration of two properties in Cow Bay, Daintree – properties that are known cassowary habitat.

WHAT WAS ACHIEVED:

- 40 tonnes of debris removed - including sheds, cement slabs, tyres, caravans, water tanks and water tower
- 4,975m2 of land weeded
- 1.4 hectares of land planted with rainforest seedlings grown in Rainforest Rescue's nursery
- 1,764 rainforest trees planted
- Equivalent of 31 days spent removing debris, weeds and oil palms

30 volunteers turned out to help plant 2000 trees

20,000 seedlings grown in the nursery each year

Mission Beach:

The Djiru Native Title Land at Mission Beach was choked with water weeds, guinea grass, lantana and Singapore daisy, and surrounded by urbanisation and development. The land was prioritised for restoration after it was identified as key

WHAT WAS ACHIEVED:

- Removal of invasive Singapore daisy that had clogged the creek and prevented native species growth
- 1,500 rainforest trees planted
- Seed collection of cassowary food trees to be grown in the Girringun nursery
- Training of Djiru people – plant identification, seed collection and restoration and propagation techniques
- Wongaling Creek flowing again

Before weed and invasive species removal

After weed removal and the creek is now flowing again

Caring for cassowary orphans

Three orphan cassowary chicks are in care at Garners Beach Cassowary Rehabilitation Recovery Centre at Mission Beach. Two of the chicks have been in care since 11 October when they were found wandering down a road in south Mission Beach without their father. It is believed he was killed in a dog attack. The third chick came into care on 16 November when it was approx. one month old after being struck by a vehicle in Etty Bay. The chick was initially unable to walk, and was found to have a fractured tailbone. Under the care of EHP rangers and the Tully Vets its condition improved steadily and it is now able to walk, and has been transferred to the Centre for ongoing care. All three chicks are steadily improving and their appetite is growing daily! It is expected they will be in care at the Centre for approximately 12 months before they can be returned to the wild.

These chicks are the future of the endangered southern cassowary population

All costs associated with raring and rehabilitating these chicks (and all birds taken into care at the Centre) is funded by Rainforest Rescue – this includes food, vet bills, carer costs and the Centre's maintenance.

It costs $36 to feed and care for one bird for one day. Please support the rehabilitation of these chicks so they can return to the wild.

Donate to Rainforest Rescue's Save the Cassowary fund at

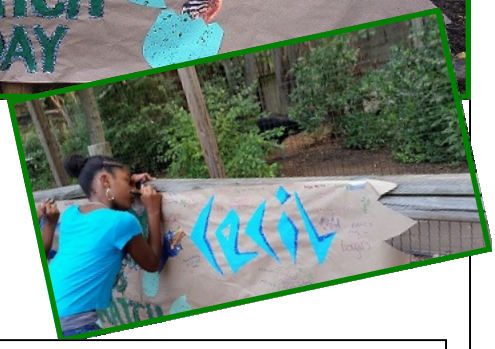
http://savethecassowary.org.au/act-now/support-us/

Cecil's Corner

What do you do when your favorite Cassowary turns the

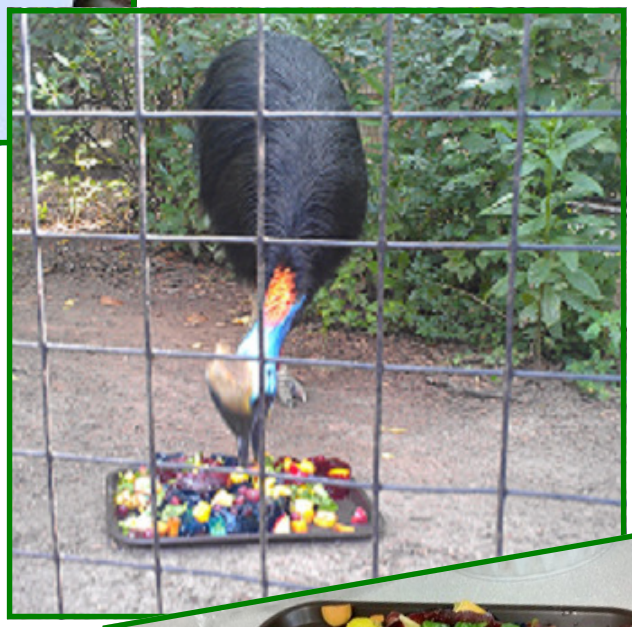
big 3-5?

Throw a hatch day party of course!



Guests got to sign his Hatch-day banner!

Color at the Cassowary coloring station!



And there was a giant fruit and Jell-O cake for the big man himself!

35!

Nashville Zoo Opens New Cassowary Breeding Facility by Shelley Norris

Sy exploring his new home
photo credit: Aimee Stubbs

2014 was an eventful year for Cassowary at Nashville Zoo. The Zoo welcomed 1yr old male "Wren" and 3yr old hen "Marge" to a new breeding facility completed in May. "Sy", the Zoo's 3yr old resident male, was the first to explore the new breeding area.

The facility has an Australian coastal theme, complete with a "beach shack" holding and showers to cool off on hot days. Sy especially loves napping by his surf board . There are four large yards , two of which can be viewed by the public. Sy and Marge are now in adjoining yards getting to know one another. Little Wren is growing up in one of the private yards.

Wren wowing our guests
Photo Credit: Aimee Stubbs

Marge in the training chute
photo credit: Kristi Ness

The holding consists of three stalls that the birds can be rotated through, as well as a training chute. (See page 16). Marge mastered getting weighed in the chute in two days. I believe she is trying to give Cecil some competition for Cassowary of the Year!

A training crate will be added to the chute to accommodate training more behaviors and we are setting up a camera system to record Sy and Marge's love story. We hope to share more of our Cassowary family with you in the future.

Nashville Zoo**Breeding Facility Layout**

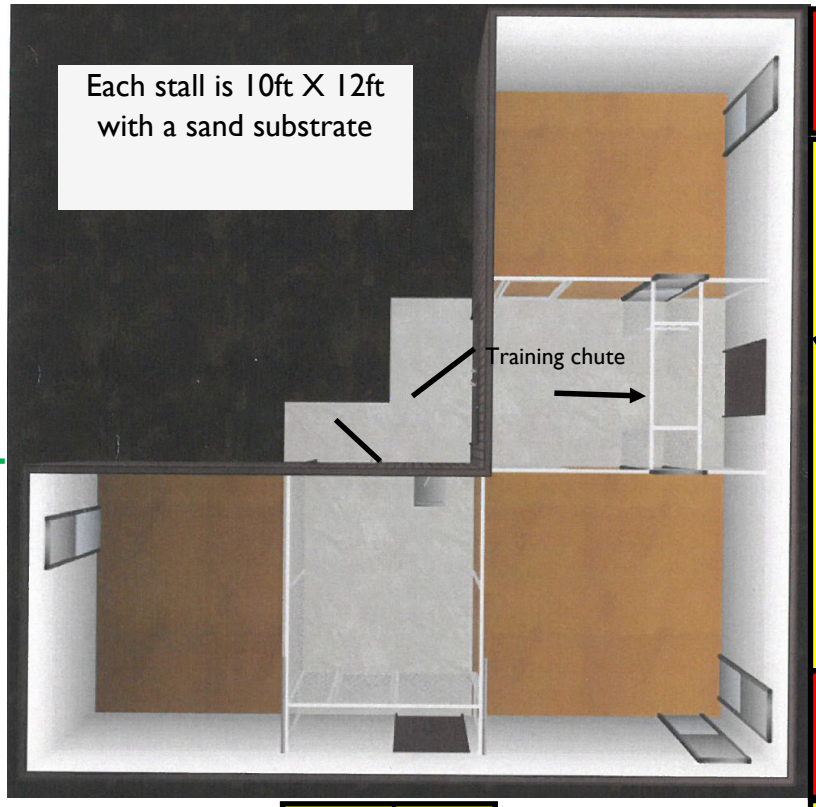
Shift Gate

Keeper Door

Keeper Area

Bird Chute

Perimeter Fencing



Yard 1– 70’ x 60’

Yard 2 - 80’ X 40’

Yard 3 - 70’ x 40’

Yard 4 - 70’ x 40’

Southern Cassowary Research in the Daintree, North Queensland, Australia

By Wren McLean, BA EnvSc, Dip CLM

The southern cassowary (Casuarius casuarius johnsonii) is listed as an endangered species by the Australian government (Environment Protection and Biodiversity Conservation Act 1999). The Wet Tropics population, from Townsville in the south to Cooktown in the North, is also listed as endangered by the Queensland government (Nature Conservation Act 1992). There are many gaps in knowledge for the southern cassowary that impede its conservation. The Daintree coast is one of the six priority regional cassowary management areas and although some extensive surveys were conducted between 1992 and 1998 (Chrome and Moore 1993, Moore and Moore, 1998), to date nothing has been published about the Daintree population, thus a subpopulation that is vital to the overall conservation of the species has been largely overlooked. This study was conducted from mid-April to mid-May and from late June to early September 2014. These dates correspond with a lean fruiting period in the rainforest (Chrome 1975, Bradford et al 2008).

Research Objectives:

1. To conduct repeated sign surveys and camera trap surveys on 31 transects sites to assess detection probability and occupancy rates

2. Assess fallen fruit diversity and abundance between April and September, 2014

3. Conduct dietary analysis of seed species identified in scats

4. Test the effectiveness of lures at camera trap photo points

Figure 1: A cassowary sited regularly during the study in Coopers Creek catchment, Daintree, Nth Qld.

Study Site:

The rainforests of the Wet Tropics in Northern Queensland are considered some of the oldest on earth, representing an estimated 415 million years of evolution (United Nations Education Scientific Cultural Organization). Declared as World Heritage in 1988, the Daintree rainforests support over 3,000 vascular plant species, 663 species of vertebrate animals and over 587 insect species, with exceptionally high rates of endemism found in both flora and fauna (Stork and Turton 2009). Measures to restrict development in the Daintree region have been implemented in the past and consequently, the area has retained significant lowland coastal vegetation with substantial connectivity to upland rainforests. Past cassowary surveys in the Daintree have been informed solely by sign surveys (footprints, sightings, vocalizations and scats). The quantity of sign detected however has been shown not to have a significant relationship with the abundance of birds present at a site (Westcott 1999).

Figure 2: Transect site locations on 35km nth south study area from the Daintree river in the south to Melissa creek in the north.

Results to Date

Data Analysis and thesis submission is due to be completed by mid 2015 and a follow up article will be gladly provided to Ratite TAG for a future edition.

1. Transects of 700m length were each surveyed 4 times. Cassowaries were detected on all 31 sites, several transects had as little as one sign but many sites yielded multiple sightings, signs and camera trap images of cassowaries. Occupancy modelling will be undertaken using the wildlife software 'Presence' which will integrate numerous co-variates such as habitat parameters, disturbance levels, transect stratification, seasonal variations and food resources as well as accounting for missing observations.

Individual identification of birds will be attempted using camera trap images to determine the minimum number of birds photographed during the study.

2. Each fruit fall encountered along a transect was identified and quantified with 203 recordings of 40 species of fruit found.

Figure 3: A pair of cassowaries attracted to red lures at Noah Creek, Daintree, Nth Qld.

3. 78 scats containing 60 different species of fruit were analysed. 37 of these were identified to species level, 3 to genus level with 21 remaining unidentifiable.

Fourteen species, occurring more than once, in both scats and on forest floor were matched and the biomass (seed and fruit pulp) of these top 14 were calculated to compare fruit resource use to fruit resource availability during the lean season.

4. Lures or no lures were randomly allocated to 29 transects for the 20-day camera trap lure experiment. Two sets of lures (painted buoys threaded on wire and attached to the trunk of trees) one red and one blue were set up in view of cameras on 15 of these sites. 14 sites had no lures in front of cameras. Colour choice was considered valuable secondary information in this experiment. Although raw results of the experiment are looking promising they have not yet been subject to statistical analysis.

Prior to lures being set there had been no cassowaries detected in this area. This coastal site, which was characterised by an open understorey with a sandy, heavily leaf littered substrate made detection of footprints or any regular travel routes difficult.

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Time for Training!

Brevard Zoo Cassowaries Get Their Shots:

Training Southern Cassowary for Voluntary Injections in a Protected Contact Environment

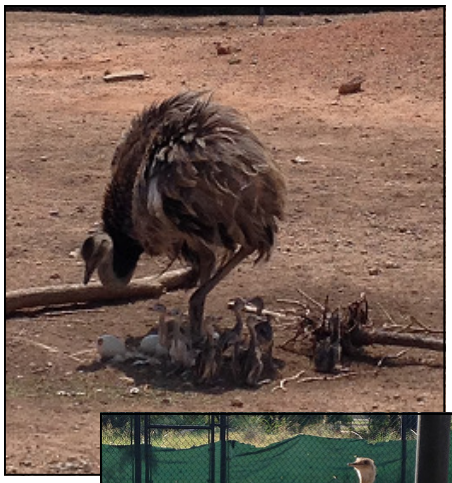
By Ellen Dreyer, Brevard Zoo

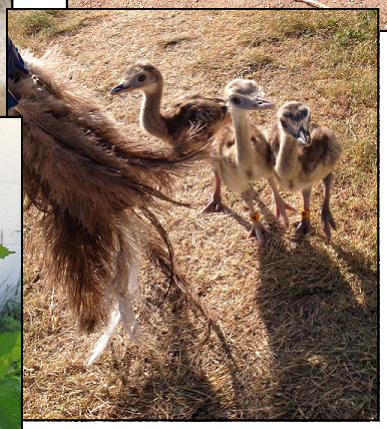
An outbreak of encephalitis last fall prompted Brevard Zoo curators to make a not so simple request of the Austral/Asia keeper team – train both cassowaries in their care to voluntarily stand still to receive vaccines against the deadly disease. The keepers eagerly accepted the new assignment and set out to train the new behavior. Both cassowaries were already trained to target, step on a scale, shift into the barn, and recall when asked and each had a strongly established whistle bridge that made the process much quicker. The two birds have very different personalities and required different training approaches. Ginger, the female, is more cautious and prefers to stay in one spot while training. Sydney, the male, is usually flighty and jumpy. The initial training sessions focused on positioning the cassowaries along the fence so the vet could give them the injection in the appropriate spot. But, the lining up behavior was difficult to shape because both preferred to touch the target facing the keeper rather than from the side. No matter where the target was placed or when they were bridged, the cassowaries would not approach from the side. However, keepers knew that when they walked along the fence Sydney would turn and follow them before turning back to face the person. To achieve the line up behavior, the trainer began targeting Sydney on one side of the fence then walking forward a few steps and quickly targeting him again. He was only bridged when he touched the target and stayed sideways. He soon caught on that he would not be rewarded if he tried to face the trainer. A verbal cue of line up was paired with a visual cue of swinging an arm while the initial target was faded. Sydney mastered lining up but Ginger stalled because she would not follow keepers like he did. By positioning her step by step using the target, she would slowly move into position. For Sydney, the next step was introducing a bamboo pole to simulate an injection pole. He initially backed away when the pole was put through the fence but soon positive reinforcement won and he allowed his side to be touched by the bamboo pole without moving while he was reinforced. Finally, an injection pole and blunted needle was used to desensitize him. When the day came to give the injections, Sydney lined up and the vet was able to easily inject him while he was reinforced with fruit. Right after, he was given the cue to line up again and he immediately did. Our entire team was thrilled with the results. Ginger was also injected though she was not as cooperative as Sydney. She had been examined by the vet recently so that may have been a factor in her less than enthusiastic behavior. She did come over to the trainer when asked to target and our veterinarian was able to give her the injection with relatively little stress. However, her trainers are looking forward to her next set of vaccines because she has been lining up well since then.

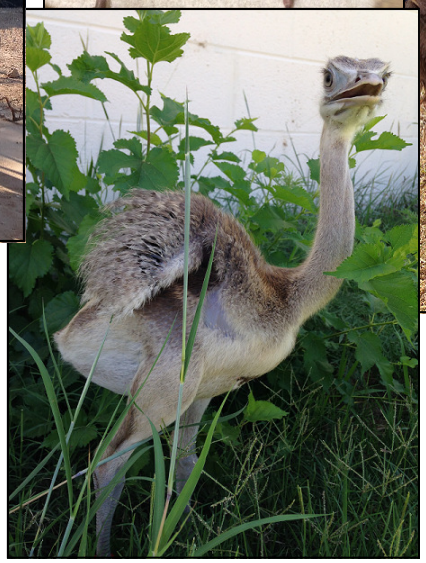
Voluntary injection training has now expanded to the other ratites in the Austral/Asia section – our emus! Stay tuned for an update on their progress. As for our cassowaries, trainers are hard at work desensitizing them to a brand new scale.

Running with Rheas

Abilene Zoo Hatches SIX Greater Rhea Chicks!



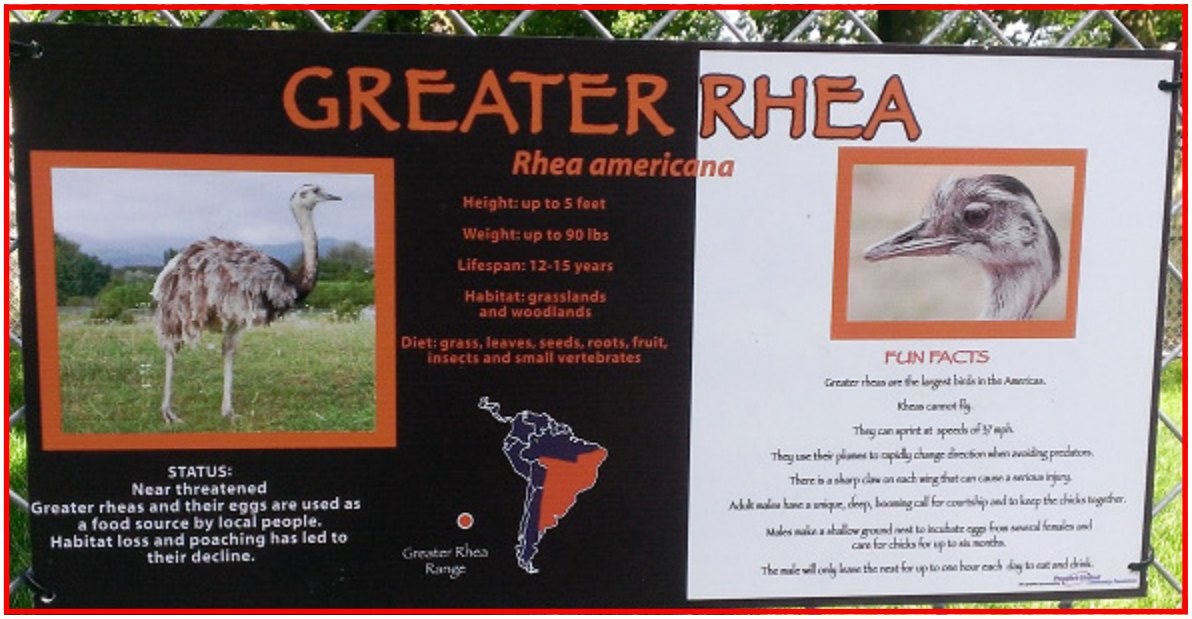




Three parent reared!

Three hand reared!

Pictures Courtesy of Denise Ibarra



Rhea sign at Beardsley Zoo

Soaring Flightless: Training Ratites at the Staten Island Zoo

Javier Alvarez, M.A.
Avian Collection Manager
Staten Island Zoo

with Kate Karpuk, Deanna Romanello, Jaime Squeri, Emily O'Donnell, Jenna Pantophlet, Alex Carr

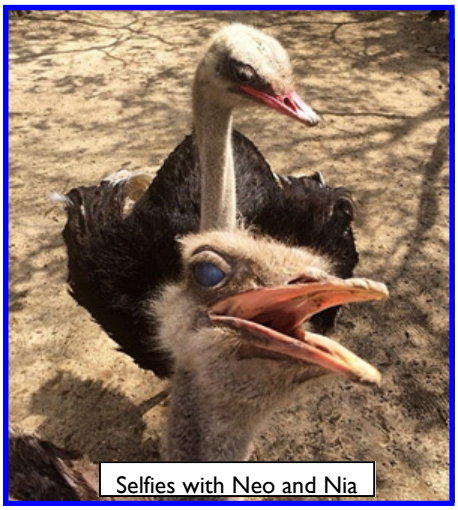
An overarching goal of animal training is to ensure safe interactions between keeper staff and their charges by establishing a reciprocity of trust between them. In the case of potentially dangerous species, this notion assumes even greater significance. Having already established successful training programs with its Amur leopards, for instance, the Staten Island Zoo has now begun to do the same with its ratites, including Kiki the cassowary. Ratites may be flightless by definition, but in their ability to pick up on trained behaviors they have surely shown their flighted brethren how to really soar. Children's Center assistant manager, Kate Karpuk, and her staff began working with Bill and Lynn, when these emu brothers were just 2 months old. The two were brought as recent hatches to the zoo's nursery and collectively hand-reared in order to promote their tractability, which has undoubtedly facilitated much of their training. Nevertheless, the Children's Center staff has worked intensively to train Bill and Lynn to accept situations that would seem most unorthodox to a puppy (at first), much less a giant flightless bird from Down Under. Given the paucity of information on ratite training, the staff took to the internet to review the available literature on emu behavior, and ultimately used the information gleaned to guide their development of a training program. Mindful of the fact that success would hinge on consistency and goal-oriented planning, a number of brainstorming meetings were held to draft a behavior paradigm which everyone involved could agree upon and willingly adhere to. Inspired by the tongue-in-cheek notion of "training with dinosaurs," Kate and her staff have worked as a team day in and day out to literally harness Bill and Lynn's full potential as program animals. Even the most ambitious ventures can have the simple beginnings, and so it was that the training of emus at the Staten Island Zoo began with just a square piece of cardboard. Wrapped in green construction paper and decorated with colored circles and sparkles, the cardboard square was a magnet for Bill and Lynn's inquisitive nature. While at first they merely pecked at it, with systematic (food) reinforcement by the staff this soon became a stationing device. In the year and 4 months since the square was first introduced, the Staten Island Zoo's emus have been trained to target, and to accept manipulation of their legs and most incredibly the placement of harnesses on their bodies. Today they even permit their keepers to walk them around the zoo on leads, with relative ease. Training a near 100-lb bird to accept walks takes patience and elicited cooperation, a gentle touch along the opposite flank, for example, to direct the animal left or right. The lead, on the other hand, is almost always held slack as any tugging usually results in the emu resisting and pulling in the opposite direction. In this case, one might say a bird is a bird is a bird, as the latter is surely a triggered predator-escape response resulting from perceived restraint. With light coaxing and ample reinforcement, sometimes in the form of a reassuring word, Bob and Lynn walk outdoor pathways and indoor areas alike, often navigating through crowds of visitors as they go. And like any big city resident they even ride elevators! Training the emus to ride elevators was necessary in order to use these impressive birds for education programs held in the Staten Island Zoo's lower level auditorium. Once more, the Children Center staff held meetings wherein a shaping plan was developed delineating the series of steps necessary to achieve this seemingly ambitious end goal. In short, these were:

Keeper Jenna Pantophlet and Keeper Katelyn Harley walking emus Bill and Lynn on harnesses.
Photo credit: Jenna Pantophlet.

1. Walking them into the building
2. Getting them to stand patiently at the elevator doors
3. Accustoming them to elevator doors opening before them
4. Walking them into the elevator
5. Getting them to be comfortable in an enclosed space, i.e., inside the elevator
6. Taking them down one floor
7. Walking them into the auditorium

These subsets of goals were precisely defined, and by employing appropriate levels of patience and guidance -neither bird was coerced into anything it was uncomfortable with -Kate and the other keepers have achieved success. Staten Island Zoo visitors are often awestruck at the sight of emus walking the zoo grounds, and their reactions remind everyone that the emus and their human caregivers have *together* accomplished something truly unique.

Despite the species' reputation, keeper and trainer Deanna Romanello has made similar strides with the Staten Island Zoo's southern cassowary. In this instance as well, progress is as much the result of fostering a bond between human and bird, as it is of Kiki the cassowary's natural intelligence; the cassowaries are perhaps the most accomplished of all ratites in this regard. Kiki has shown an aptitude for acquiring learned behaviors in the context of a training regimen developed by Deanna in conjunction with the animal training department. Learning to target serves as a gateway to mastering other, more complex forms of training, and for the cassowary, this began with a dual process of desensitization to the target pole and the clicker sound, respectively. By affixing a preferred food reinforcer (e.g., grape, mouse) to its end, she was ultimately encouraged to contact the target pole while being "clickered." Soon thereafter, the newly indoctrinated 1-year-old was off and running, or at least she would have been, had she not been preoccupied with learning to station at a 12 " x 12 " cardboard square. Stationing behavior is integral to veterinary assessments of animals not readily handled or restrained, and already the training process is being adapted to facilitate getting weights on the fast-maturing Kiki. Presently, Deanna is working intensively to get her to accept stepping onto a scale, by using square contraptions of increasing size and height to systematically approximate the dimensions and feel of the actual scale until which time the latter can be introduced. In this respect, Kiki appears to be more averse to novel stimuli than, for instance, the zoo's ostrich pair, perhaps evidencing species differences in overall responsiveness. By simply placing straw atop the scale and luring the birds with grapes, ostrich keepers Alex Carr and Emily O'Donnell had Neo and Nia standing for weights in relatively short order. And of course, the sock-over-the-head strategy works marvels for getting ostriches under control, while one would be ill-advised to try such foolery with a cassowary. As for Bill and Lynn, the aforementioned emus; they all but ignored Sesame Street 's Murray Monster when filming segments for the iconic show on grounds…'nuff said. Deanna also hopes to have Kiki transfer her stationing behavior to a feeding station to be installed within her holding, wherein the delivery of vaccines (or injectable medications) can be carried out with greater ease and minimal stress to the bird. Of course, there was also much work done to get this curious-yet-wary species to tolerate prodding with increasingly sharper objects in the first place, i.e., from blunt pole to syringe needle. It is worth noting that all of the Staten Island Zoo's ratites, including the rheas, have been successfully vaccinated, due in large part to varying degrees of trained tractability. Interestingly, the greatest training challenge has come in getting the cassowary, a far-ranging species in the wild, to enter her indoor quarters. However, by exercising continued resolve and patience, Deanna has managed to get Kiki comfortable in her holding, as well. Kiki and her keeper enjoy a close rapport that for the time being precludes the need for barriers between them. While this relationship may change with the cassowary's maturation and its attendant changes in "personality," the fact is that through training sessions Deanna and Kiki have learned enough about each other's motivations and intentions to, at the least, preserve a reciprocal working relationship that will benefit both in the future.



Selfies with Neo and Nia

Senior Keeper Alex Carr and Supervisor Cathy Eser moving Neo, our male ostrich to his new exhibit – hooded with a sweatshirt sleeve. Photo by Marc Valitutto

Running with Rheas

Greater rhea chick, Phoenix Zoo. Photo by Tara Sprankle

Male and female greater rhea incubating a clutch of eggs at Smithsonian's National Zoo. The birds are siblings and the female would occasionally incubate the eggs along with the male who allowed her to sit.

Photo by Sara Hallager

Rhea Conservation Status

Greater rhea Rhea Americana IUCN status: Near Threatened, population decreasing

Lesser rhea Rhea pennata IUCN status: Near Threatened, population decreasing

Puna rhea Rhea tarpensis IUCN status: Near Threatened, population decreasing

Keeping Up With Kiwi

Brown Kiwi SSP Update and Other Tidbits

By Kathy Brader, Smithsonian National Zoological Park

Over all, the kiwi year of 2014 was good one with the extra special news that the pair of kiwi at Frankfurt that was imported in from New Zealand in 200 produced two chicks, a male and female and they are doing great. Both will be hitting a year in March, congratulations to the Frankfurt staff for this accomplishment. We have added two new zoos this year. Zoo New England took the kiwi (male and female) from Memphis who sadly pulled out this year. I would like to thank the Memphis bird team for all their support over the past few years and for raising a kiwi chick from an egg that came from Columbus Zoo. Ziln Lesna in the Czech Republic has joined the European zoos by welcoming the male that was held at the Antwerp Zoo. The population stands at 51 birds. W are slowly growing and are still interested to hear from anyone that would be interested in having kiwi at their institution. I was thrilled to get to back to New Zealand this past year and was honored by receiving my Order of Merit from the New Zealand government for my contribution to helping the kiwi program overseas. I was truly humbled by this amazing turn of events. The ceremony was held at the Government House in Wellington and is presided over (with much pomp and circumstance) by the Governor-General of New Zealand the Right Honorable Sir Jerry Mateparae (who is the personal representative of New Zealand's Head of State, Queen Elizabeth II). It was all such an amazing ceremony and to be selected for this honor as an American is something I could have never dreamed about. I owe part of this honor to all the kiwi holders who are such great supporters of the kiwi program, so I thank you. Part of my journey included meeting with several curators at the Te Papa Museum who are responsible for overseeing the care of the Kiwi Feather Cloaks, Kiwi Kahu. These are considered Taonga (treasure) to the Maori. It is hard to explain to people exactly how much our collecting kiwi feathers to send back to New Zealand means so much to so many folks over there. Besides our feathers being used to repair older cloaks, our feathers are available to be used in new projects. Due to the way the feathers that collected in New Zealand (and the way the Maori view ownership of these) there generally is a lack of feathers that can be distributed among weavers, especially for younger weavers. Also, any of the new projects made with our feathers means that the objects made with them (clothing, art) are easier for them to leave the country for either art shows or fashion shows held overseas. I was allowed to visit the storage room where hundreds of Kiwi Kahu is stored. I was only allowed to photograph a couple of objects (you must have permission from the owners). One of the Kiwi Kahu was a lovely large one that is used to drape over coffins of returning Maori for burial in New Zealand. Ms. Awhina Tamarapa is the head curator at Te Papa that curates the kiwi feathers. She kindly showed me behind the scenes to view the cloaks stored there.

I attended my first Kiwi Hui: the 2 day annual meeting for all things kiwi. Generally besides updates from all around the islands of different kiwi programs, there are talks on ongoing kiwi research projects and several on every ones favorite subject Pest Control! These annual events are sponsored by Kiwis for Kiwi and the Department of Conservation and free to the attendees. They are switched every other year from the North Island to the South Island and I would highly recommend that anyone who has an avid interest in kiwi and meeting with some of the amazing folks who work with them to attend a Kiwi Hui. I also would like to add my thanks to the Toledo Zoo who donated $5000.00 to Kiwis for Kiwi (the largest non-profit kiwi foundation) who underwrite everything from pest control to Operation Nest Egg and everything in between. I know the folks there were grateful and so am I!

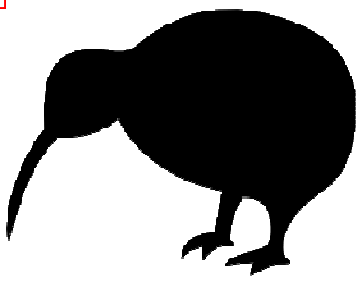
Below is the link to all things Kiwi. Whether you are looking for New Zealand updates or where to find different documents this page will direct you where to go: http://www.kiwisforkiwi.org/resources/

The Kiwi Feather Program

This is our fourth year and fourth delivery of the collected kiwi feathers. On January 22nd, 2015 I met up with Ambassador Mike Moore at the New Zealand Embassy in Washington DC. Ambassador Moore wanted me to pass along his personal thank you and also the thank you from the people of New Zealand for all of the feathers collected and sent back as a gift to people of New Zealand. This year was our biggest donation ever, we managed to fill two boxes! Again I offer my personal thank you to all the folks who collected all those small fluffy kiwi feathers!

Update on the Kiwi Boys of the Columbus Zoo by Dana Lintner

This Spring the kiwi at The Columbus Zoo and Aquarium will be turning four years old. Where does the time go? Ariki (oldest) and Toa reside together at the zoo while their younger sister is at the Bronx Zoo. The boys are on exhibit in the Nocturnal Building in the Australia and Islands region. They are distinguishable by their size difference. Toa takes after his mom being slightly larger than his older brother. Ariki's sweet disposition and ability to be handled comes from his dad. This past fall they changed exhibit location and obtained a new specific. They now reside with a male Tawny Frogmouth "Archie". They are getting along wonderfully. Archie realizes he has cohabitants but Ariki and Toa don't seem to mind. Here's to another great year and looking forward to year number five.



Photos by Grahm Jones at Columbus Zoo and Aquarium

Kiwi Conservation Status

Northern brown kiwi Apteryx australis IUCN status: Endangered, population decreasing

Keeper Tracks: Ian Shelley of Salisbury Zoo

I don't know when I decided to become a zookeeper. I assume that it happened at some point so early on in life that it's lost to memory. However, I do remember my first day working in a zoo. I was all of 14 years old, a junior keeper at the Maryland Zoo in Baltimore, a high school freshman suddenly surrounded by every kind of animal I could imagine. A big surprise came during my first week as I was cleaning the African Watering Hole exhibit and felt my foot bump against something smooth and hard. It was an ostrich egg, the size of my head. I was hooked on ratites from then on.

The egg in question was infertile and abandoned, so I decided to blow it out for our zoo's education department. It was then that I learned that – unlike wines or cheeses – ostrich eggs do not improve with age.

In the years that have passed, I've worked with many different kinds of animals, but ratites have always fascinated me. They're just so different from what most people think of when they think of birds – massive, flightless, bold, inquisitive. When I clean the rhea exhibit at the Salisbury Zoo, our female usually troops behind me, craning her neck to inspect the wheelbarrow, removing any contents that she finds interesting and running off with them. The male generally ignores me… unless he's feeling territorial, in which case he decides not to.

Very few people grow up to have the exact job that they dreamed of having as a child. I've only ever wanted to take care of animals in a zoo, and consider myself immensely fortunate that I am able to do so. A day spent with rheas is never a wasted day.

Ian Shelley is a graduate of Cornell University, B.S. Animal Sciences, and George Mason University, MAIS Zoo and Aquarium Leadership. He has worked at the Salisbury Zoo since 2012.

Odds & Ends About the TAG and Our Feathered Friends

ASAG

Avian Scientific Advisory Group

Check out
http://aviansag.org/Fact_Sheets/Ratites/Ratite_TAG.html
for fact sheets on ostrich, emu, southern cassowary, greater rhea, elegant crested tinamou and brown kiwi

Eastern Equine Encephalitis in the Southern cassowary (*Casuarius casuarius*)

Amanda Guthrie, DVM, DACZM Virginia Zoo, Norfolk VA

Eastern Equine Encephalitis (EEE) is an important cause of encephalitis in horses and humans. EEE is an arbovirus in the genus Alphavirus, family Togaviridae and is endemic to the Eastern United States. The disease is not typically fatal to native birds in endemic areas, but is highly fatal in horses, humans and exotic birds. EEE is maintained in a cycle between avian hosts, most commonly passerines and columbiformes, and the *Culiseta melanura* mosquito.

In North America, EEE is not typically highly pathogenic in native birds, but mortality has been reported in a native great egret and birds in the orders Gruidae and Icteridae. In particular, whooping cranes experience high mortality from EEE. A variety of introduced and domestic species of birds including ring-necked pheasants, Pekin ducks, rock doves, emus, ostriches, chukar partridges and house sparrows have experienced morbidity and mortality from EEE. Additionally, outbreaks of EEE infections have been reported in captive emu, whooping cranes and African penguins.

In July and August 2014, four cassowaries at the Virginia Zoo in Norfolk experienced rapid mortality from EEE infection. Two 27-day old chicks were found dead unexpectedly with no premonitory clinical signs. The remaining chick exhibited weakness, lethargy, mental obtundation and respiratory difficulty before dying within 12 hours despite aggressive medical therapy. Two weeks later, the dam of these three chicks, a 23 year old, died approximately 48 hours after first exhibiting inappetance and lethargy which quickly progressed to dehydration, respiratory difficulty, recumbency and neurological signs including ataxia and seizures.

Common pathological findings, in each of these cases, included inflammation of the brain, lungs, liver, kidneys and blood vessels. Fluid in the coelomic cavity and diarrhea in the intestines were also common findings. EEE was confirmed in each of these cases through the use of PCR on brain tissue; there are readily available blood tests that can be used to test antibody titers in living birds to determine if they have been exposed to the EEE virus or are experiencing active infection.

The current recommendation is that chicks be vaccinated with a killed polyvalent equine encephalitis vaccine (Vetera® EWT+WNV, Boehringer Ingelheim, Vetmedica, Inc. MO 64506) at 2,4,6,8, and 10 weeks of age and receive a booster annually prior to the active mosquito season. Unvaccinated adults should receive a vaccine and then a booster, one month later, prior to the active mosquito season and then be boostered annually.

Cassowary Conservation Status

Southern cassowary Casuarius casuarius IUCN status: Vulnerable, population decreasing

Northern cassowary Casuarius unappendiculatus IUCN status: Vulnerable, population decreasing

Dwarf cassowary Casuarius bennetti IUCN status: Near Threatened, population decreasing

Ratites in the News in 2014

Scientists reveal new picture in the evolution of flightless birds
http://www.sciencedaily.com/releases/2014/05/140513175207.htm

a new study has clarified the evolutionary relationships of the bird taxon Palaeognathae, which includes flightless birds (ratites) and South American tinamous. The research team analyzed DNA from the extinct little bush moa (Anomalopteryx didiformis), Chilean tinamou (Nothoprocta perdicaria), and emu (Dromaius novaehollandiae), and compared them with available DNA sequences from ostrich (Struthio camelus), elegant crested tinamou (Eudromia elegans), four bird species in the sister taxon Neognathae, and the green anole lizard (Anolis carolinensis). The data provide convincing evidence that tinamous are most closely related to the extinct moa, confirming that flight was lost independently in ratite lineages. Similar morphological characteristics found in ratites appear to have evolved independently, probably as an adaptation to a cursorial, "on-the-run" lifestyle.

Also see Why Fly? Flightless Bird Mystery Solved, Say Evolutionary Scientists
http://news.nationalgeographic.com/news/2014/05/140513-flightless-birds-ostriches-moas-evolution-science/

Why Did New Zealand's Moas Go Extinct?
http://news.sciencemag.org/biology/2014/03/why-did-new-zealands-moas-go-extinct

For millions of years, nine species of large, flightless birds known as moas (*Dinornithiformes*) thrived in New Zealand. Then, about 600 years ago, they abruptly went extinct. Their die-off coincided with the arrival of the first humans on the islands in the late 13th century, and scientists have long wondered what role hunting by *Homo sapiens*played in the moas' decline. Did we alone drive the giant birds over the brink, or were they already on their way out thanks to disease and volcanic eruptions? Now, a new genetic study of moa fossils points to humankind as the sole perpetrator of the birds' extinction. The study adds to an ongoing debate about whether past peoples lived and hunted animals in a sustainable manner or were largely to blame for the extermination of numerous species. "The paper presents a very convincing case of extinction due to humans," says Carles Lalueza-Fox, an evolutionary biologist at the Institute of Evolutionary Biology in Barcelona, Spain, who was not involved in the research. "It's not because of a long, natural decline."

Ancient DNA ends Australia's claim to kiwi origins
http://www.sciencedaily.com/releases/2014/05/140522141317.htm

Australia can no longer lay claim to the origins of the iconic New Zealand kiwi following new research showing the kiwi's closest relative is not the emu as was previously thought. Instead, the diminutive kiwi is most closely related to the extinct Madagascan elephant bird -- a 2-3 meter tall, 275 kg giant. And surprisingly, the study concluded, both of these flightless birds once flew.

Journal Reference: Kieren J. Mitchell, Bastien Llamas, Julien Soubrier, Nicolas J. Rawlence, Trevor H. Worthy, Jamie Wood, Michael S. Y. Lee, Alan Cooper. Ancient DNA reveals elephant birds and kiwi are sister taxa and clarifies ratite bird evolution. *Science*, 2014

Ratites in Mixed Species Exhibits

Large birds are increasingly being exhibited in mixed species exhibits with mammals, especially hoofstock. The EAZA Ratite TAG investigated the behavior of four species of large birds [emu, ostrich, rhea and marabou stork] with the goal to evaulate any negative impact of mixed species exhibits on their welfare. This study was coordinated by Paignton Zoo, UK, [Jo Gregson, Amy Plowman and students Natt Chaiwan, Courtney Stone, Lysette Keetman and Clare Schapira]

Methods

Observed 111 ratites in 35 enclosures in 14 zoos across Europe – [33 ostrich, 29 emu, 49 rhea]

- Single species exhibits
- Mixed with other birds only
- Mixed with mammals

Collected data on:

- General behaviour
- Space use
- Interactions (friendly, neutral, aggressive)
- Nearest neighbours (proximity to other individuals)

Primary findings

The study found no substantial effect of exhibit type on general behaviour or space use by three species of large ratite. All types of interaction observed were most frequent with conspecifics. Friendly interactions were also common between rheas and all other species. Aggressive interactions are rare for ratites but when they occur are mostly initiated by the ratite, although in the case of ostrich with giraffe, rhino and zebra initiation of aggression is about even. Ostrich, emu and rhea all maintain the closest proximity to conspecifics but also remain close to some species but at much further distances to others

Target species	Stay close to	Intermediate	Stay far from
Ostrich	Ostrich, eland, waterbuck	Giraffe, zebra, impala, lechwe, other birds	Blesbok, wildebeest, rhino, hippo, red river hog, guinea fowl
Emu	Emu	Wallaby, other birds	Kangaroo
Rhea	Rhea, vicuna, llama	Guanaco, alpaca, tapir, mara	Wallaby, deer, agouti

Conclusion

Welfare is an individual condition and will be affected by the specific enclosure, the other species and other individuals in the enclosure and the particular individual. In general, rheas are generally well suited to mixed exhibits with many other species. Ostrich and emu can be successfully mixed but some combinations work better than others

	Better combinations	Not so good combinations
Ostrich	Eland, red river hog, wildebeest	Giraffe, zebra, rhino, other birds
Emu	Wallaby	Other birds

This research did not look at injury rates. Incidences of aggression in this study were rare and none resulted in injury to any individual involved, however this does not mean there is not a risk of injury occurring. A new study is planned to investigate injury risk to ratites in mixed exhibits using zoo records. The authors would be very happy to include AZA data if members would like to contribute.

Struthioniformes TAG Recommendation: Duplicate study in AZA Zoos

Recommendations for EEE Vaccination in Large Ratites

Marc Valitutto, VMD

General Curator & Veterinarian; Staten Island Zoo

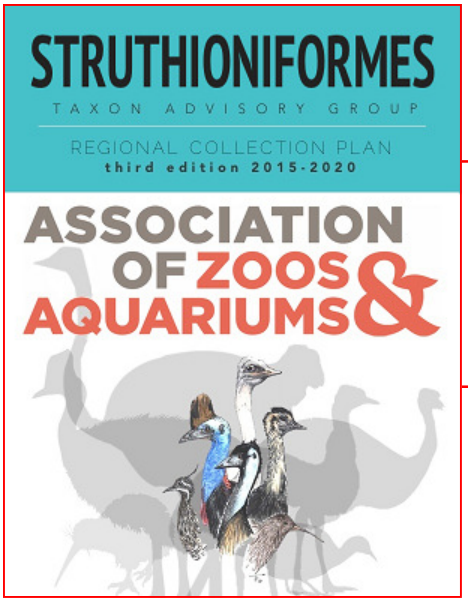
In the summer of 2014, four Southern cassowary (*Casuarius casuarius*) mortalities were reported in AZA zoos, each attributable to infection with eastern equine encephalitis (EEE) virus. Shortly thereafter, the Struthioniformes TAG Vet Advisors disseminated the following position statement respecting the vaccination of large ratites:

> The current literature in large ratites, e.g., rhea, cassowary and emu and ostrich, reports a sensitivity to eastern and western equine encephalitis, as well as West Nile virus. Based on the available literature and anecdotal success at various institutions, annual vaccination against eastern and western equine encephalitis, as well as West Nile virus (with a killed vaccine) is recommended, wherever practical, especially in known regions of endemism.
>
> Emu, ostrich and rhea chicks may be vaccinated starting at six weeks of age with one to two additional boosters, two to four weeks apart. Cassowary chicks may be vaccinated at two weeks of age and thereafter boostered every two weeks until a total of five doses have been administered. Adult ratites that have never been vaccinated may receive two injections administered two to four weeks apart, and annually thereafter. A combined EEE/WEE/WNV + tetanus killed equine vaccine may be used.

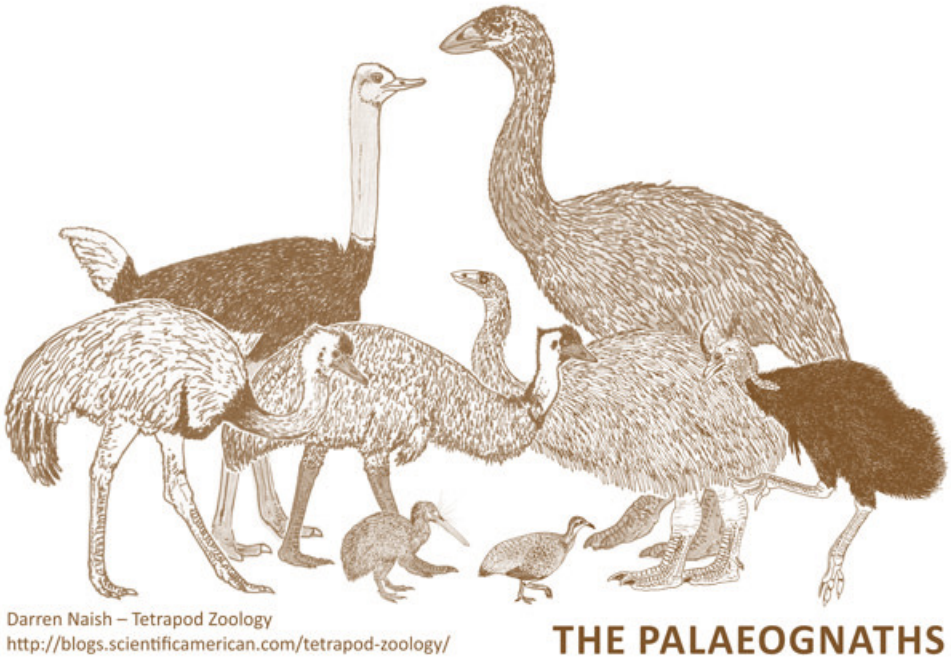
Responding to this statement, several institutions raised valid concerns relating to (1) necessity of vaccinations given probable seroprotection after natural exposure, (2) species sensitivity, and (3) impracticality of vaccinating large flocks and/ or intractable specimens. Naturally established seroprotection may certainly occur in regions wherein the EEE virus is endemic. However, the recent death of an infected but otherwise healthy adult cassowary, which had been held in such a region for several years, evidences the need for exercising preventative measures (e.g. vaccination, mosquito abatement). Many laboratories offer serological testing for antibody detection, although further research will be necessary to determine species-specific reference ranges for protective titer levels.

Any determination about the practicality of delivering the vaccine must derive from a compromise between management and veterinary objectives and should be based on thorough assessments of regional endemism and susceptibility. Many institutions maintain large flocks and/or untrained specimens of ratites which can make routine vaccination or blood sample collection impractical or unsafe. In such instances, the decision to vaccinate should be based on the given scenario for each institution. Additionally, vaccine costs remain a significant factor whenever monetary resources must be stringently managed. Cost should be weighed against the relative "value" of the specimen to the institution, as well as regional and worldwide captive management needs.

Until further information about encephalitis viruses in ratites becomes available, i.e., born of continued research, the Struthioniformes TAG recommends routine vaccination as earlier stated; and as with most arbovirus protection regimens, vaccination should precede mosquito seasons.



The 3rd Edition of the Regional Collection Plan is currently under review by AZA and will be published in spring 2015.



Palaeognath montage, featuring members of all recent lineages: ostriches, rheas, kiwi, emus, tinamous, moa, elephant birds, and cassowaries. Image by Darren Naish.

Thanks for reading our annual newsletter! If you have an idea for next year or are interested in writing a piece you can contact:

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or

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