The Ratite Review

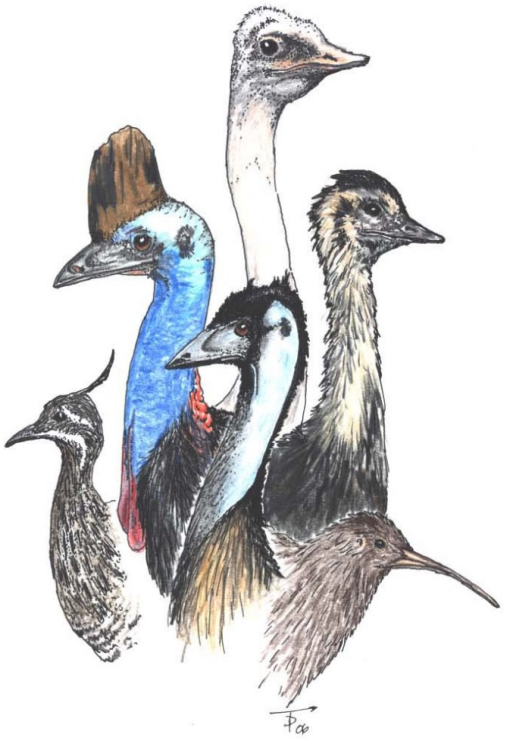
THE AZA STRUTHIONIFORMES TAG ANNUAL NEWSLETTER

2022

The Ratite Review 2022

Welcome to *The Ratite Review!*

The vision of the Struthioniformes Taxon Advisory Group is to engender appreciation of ratites and tinamous by raising awareness of conservation threats and helping zoo visitors and the zoo community better understand actions they can take to help conserve these species in the wild.



ASSOCIATION OF ZOOS & AQUARIUMS

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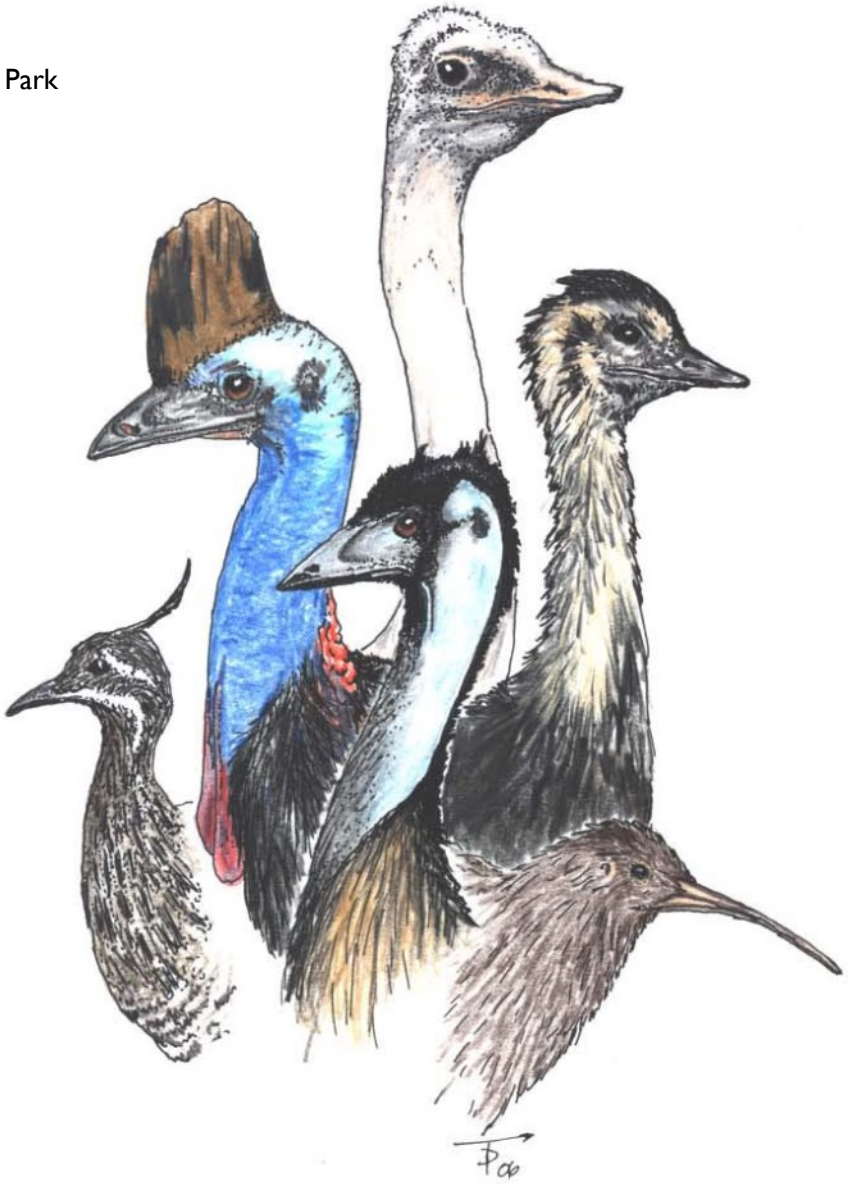


SSP Program Leaders

Brown Kiwi: Kathy Brader, National Zoo
Elegant-crested Tinamou: Kristen Clark, National Zoo
Southern Cassowary: Nicole LaGreco, San Diego Zoo

Species Champions

Emu: Kirby Pitchford, National Aquarium
Ostrich: Scott Tidmus, Disney's Animal Kingdom
Greater Rhea: Heather Anderson, National Zoo

Ratite Stickers!

Our custom vinyl stickers are available while supplies last by contacting Nicole at nlagreco@sandiegozoo.org.

Stickers are $3 each or all five for $12.

A perfect gift for that special ratite keeper in your life!

Support the TAG, buy a bag!

Check out our partner Wendy Barnes Design! You can support the TAG by going to *www.wendybarnesdesign.com* and purchasing any ostrich, cassowary, or kiwi product. 10% of sales on these products will go towards the Struthioniformes Taxon Advisory Group.

Be on the lookout for a new design coming soon!

TAG Welcomes New Education Advisor

Leigh Spencer, Education and Engagement Manager

Great Plains Zoo

The Struthioniformes TAG is pleased to welcome Leigh Spencer, our new Education Advisor. Leigh is the Education & Engagement Manager at the Great Plains Zoo in Sioux Falls, SD. She has worked in zoos for 19 years, beginning as a bird keeper and shifting her focus to education in 2008. Leigh has extensive training in interpretive methods and experience with a wide range of audiences.

With an education advisor now in place, the TAG steering committee recently approved a new, three-year education plan. This plan addresses three overarching goals: 1) increasing public awareness of the lesser-known species within the TAG, 2) improving perceptions of ratites both within the zoo field and with the public, and 3) inspiring conservation action on behalf of all of the species within the TAG.

Over the next three years, we will be working on several specific projects linked to these goals. The first big effort will be an awareness campaign. The initial awareness campaign will focus on ratites as an entire group, and Leigh will lead the development of campaign materials and seek out funding opportunities. We are aiming for a roll out of the campaign in early 2023.

We will also be working on a two-pronged approach to improve perception, one to promote enrichment ideas and the other to promote training. Members of the TAG, ratite keepers, and holding institutions may be asked to contribute to these projects by sharing their successes with ratite enrichment and training. We will also be seeking a few individuals who would be interested in being part of an enrichment committee, to help collect and review enrichment ideas and videos.

To help promote conservation, we will be developing some simple messaging that can be included in keeper talks, volunteer presentations, and similar existing informal programs. This will be distributed to holding institutions and ratite keepers, and training will be available on how to incorporate the messaging into existing presentations. As part of this effort, the steering committee will be creating a list of ratite conservation organizations to support. We are very excited to begin working on these projects in 2022!

TAG Welcomes New Enrichment Coordinator

Danielle Minkus, Senior Bird Keeper

Jacksonville Zoo & Gardens

I have been working with birds for about 7 years and have always been fascinated by the role enrichment plays in the zoo field and how it can be tailored to elicit certain behaviors. I am excited to take on this role because sharing enrichment ideas is such an easy and effective way to improve the welfare of our birds we care for, and it is a lot of fun! So excited to see what everyone comes up with this year!

Please send any pictures and articles related to ratite and tinamou enrichment to Danielle at minkusd@jacksonvillezoo.org

Emu Program Update — Thank you Monica!

Sara Hallager & Monica Halpin, Lead Bird Keeper

Zoo Atlanta

The Struthioniformes TAG would like to thank Monica Halpin, Zoo Atlanta for serving as the emu species champion from 2006 – 2021. During this time, Monica monitored the emu population within AZA, contributed information to four Regional Collection Plans, provided input into the Ostrich/Emu/Rhea Animal Care Manual (in prep) and answered countless questions about emu husbandry. Monica says,

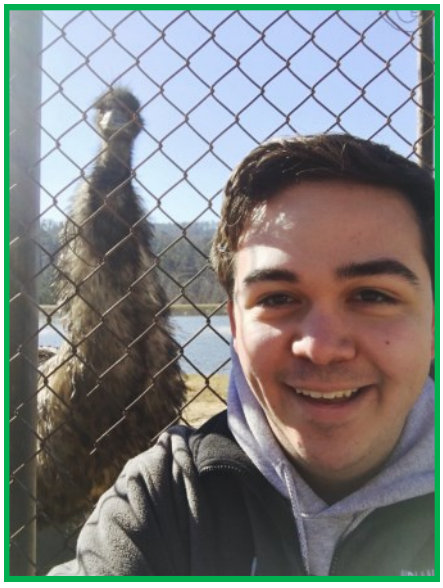
"I'd just like to thank the TAG for giving me the opportunity so early on in my career. I'd been a keeper for less than a year when I took on this responsibility and was able to learn so much so quickly about what TAGs are and how they work. Basically from the ground up! I've really enjoyed following the population of these spunky birds over the years and talking to colleagues from other institutions about them. They will forever hold a place in my heart and I have no doubt that Kirby will do a great job moving forward!"

On behalf of the AZA Struthioniformes TAG, **thank you Monica** for your service!

TAG Welcomes New Emu Species Champion

Sara Hallager & Kirby Pitchford, Aviculturist

National Aquarium



The Struthioniformes TAG is pleased to announce Kirby Pitchford, our newsletter editor and social media coordinator, has been chosen to take the reigns from Monica in the role of emu species monitor. In this role, Kirby will be the point person for emu questions within the TAG.

In an effort to gather information on the current population & to create a list of institutional representatives (for occasional updates, to survey and answer husbandry questions, and to facilitate the placement of birds) please send a current taxon report to *kpitchford@aqua.org*.

Monitored

Ostrich, *Struthio camelus sp.*

Monitored Species

74.194.107 at 92 U.S. institutions

Species Champion: Scott Tidmus, *Scott.A.Tidmus@disney.com*

Monitored

Emu, *Dromaius novaehollandiae*

Monitored Species

112.97.114 at 98 U.S. institutions

Species Champion: Kirby Pitchford, *kpitchford@aqua.org*

Yellow SSP

Southern Cassowary, *Casuarius casuarius*

SSP and International Studbook

24.23.6 at 28 global institutions

SSP Coordinator: Nicole LaGreco, *NLaGreco@sdzwa.org*

Monitored

Greater Rhea, *Rhea americana*

Monitored Species, Regional Studbook

24.56.2 at 17 U.S. institutions

Species Champion: Heather Anderson, *andersonH@si.edu*

Red SSP

Elegant-crested Tinamou, *Eudromia elegans*

SSP and Regional Studbook

25.10 at 12 U.S. institutions

SSP Coordinator: Kristen Clark, *clarkK@si.edu*

Yellow SSP

North Island Brown Kiwi, *Apteryx mantelli*

SSP and International Studbook

37.24 at 17 global institutions

SSP Coordinator: Kathy Brader, *braderK@si.edu*

Photos credits: brown kiwi, Columbus Zoo; elegant-crested tinamou, Carolina Aruda; southern cassowary, ostrich, emu & greater rhea, Scott Kayser

Training 0.2 Greater Rheas for Voluntary Injections and Radiographs

Katie Prinsen, Winter Quarters Keeper

Milwaukee County Zoo

Keeper Katie Prinsen training Rose for injection. Photo by Becky Gliniecki

Milwaukee County Zoo houses 0.2 greater rheas named Rose and Blanche. Due to the difficulties and risks of restraint, the rheas are trained for voluntary medical behaviors to obtain radiographs, blood samples, and receive hand injections. Free contact training takes place in an indoor and outdoor exercise area. Rose and Blanche were four months old when they arrived at the zoo and would typically avoid human interaction. Initial training began with using a bell recall to teach them to shift. When they were two years of age, time was spent with Rose and Blanche to get them to take food from keeper's hands. Next, they were target trained by placing a grape at the end of a plastic bottle and then given additional reinforcement after pecking the bottle. Grapes and watermelon work best as reinforcement, and a clicker is used as a bridge. Targeting was used to motivate Rose and Blanche to participate in training in the exercise yards.

Radiograph training takes place in the indoor exercise yard. Training began by placing food near a 3.5' x 3.5' plywood training wall and then getting Rose and Blanche desensitized to eating out of a hanging feeder near that wall. A new wall was then constructed specifically for hanging radiograph plates. This wall was made as a 1-inch peg board with adjustable shelves to hold a radiograph plate. Nylon hex bolts that do not interfere with the radiograph image are used to secure the shelves to the wall. The peg board allows the plate to be repositioned to obtain images of different parts of their body. Rose and Blanche were desensitized to the radiograph equipment by placing food near items that were constructed to look like the actual radiograph equipment, and by giving them time to explore the items on their own. Once reliably approaching the items, they were fed out of a hanging feeder next to the radiograph wall with the training items in place. The actual radiograph equipment was then introduced, and both rheas eventually would line up between the plate and the generator while eating out of the feeder. A 2x4 board is placed on the ground to help direct the birds to the right position next to the radiograph wall. The radiograph generator is placed on a stand in front of the radiograph plate, allowing the vet tech to hold the trigger six feet behind the generator. Having distance from the vet staff increased the birds' willingness to approach the radiograph area. After nine months of training, radiographic images were obtained.

Vet Tech Sheri Croce attempts voluntary blood draw on Blanche. Photo by Brooke Ferrell

Injection training takes place in the outdoor exercise yard. Blanche and Rose are more comfortable getting close to keepers in the larger outdoor space. Blanche allows keepers to stand next to her to work on desensitizing her to injection for vaccinations. Initially, one keeper would target Blanche while another would touch her lower leg muscles to desensitize for injection. After her continuing to react to touch, the training plan was changed to just let her continuously eat out of a bowl held by a keeper. Being allowed to continuously eat helped her stay focused on the reinforcement, and she stopped reacting to the feeling of the training needle poking her leg. Positioning Blanche along the chain-link fence prevents her from sidestepping. Rose is less accepting of human contact, so injection training takes place with a keeper on the other side of the chain-link fence. The plywood training wall is used to help position Rose along the fence so that her leg is reachable. While Rose eats out of a hanging feeder, a keeper works to desensitize her to the syringe. This past year, both rheas received hand injections voluntarily.

Blood draw training for Blanche is similar to injection training. During training, Blanche allows keepers to palpate and hold pressure on the medial metatarsal vein while she eats out of a food bowl. Blood draw training has been more successful in the fall, which is when she is the most food motivated. Future training plans include working on blood draw with Rose at the gate opening in the chain-link fence. A hanging feeder between two training walls will be used to position her at the opening. One of the walls will have a section cut out of it so her leg will be reachable for drawing blood. Having the barrier up between her and the vet staff will increase her willingness to participate.

After three years of training, Blanche and Rose went from avoiding keepers to now being eager to interact. Tour groups can even hand-feed them lettuce. Spending time with Rose and Blanche before shifting them onto exhibit has helped them become much calmer around people and new stimuli.

Blanche lines up for voluntary radiographs. Photo by Katie Prinsen

In Memoriam

Pearl the Ostrich

North Carolina Zoo Staff

Some weeks at the Zoo are harder than others. We are very sorry to announce that Pearl the Ostrich passed away in August 2021. While Pearl was under anesthesia, it was discovered that she had severe reproductive disease which carried a guarded prognosis. Unfortunately, the difficult decision was made to euthanize her. She was 19 years old and lived on Watani Grasslands for 18 years, after arriving at the Zoo as a one-year-old.

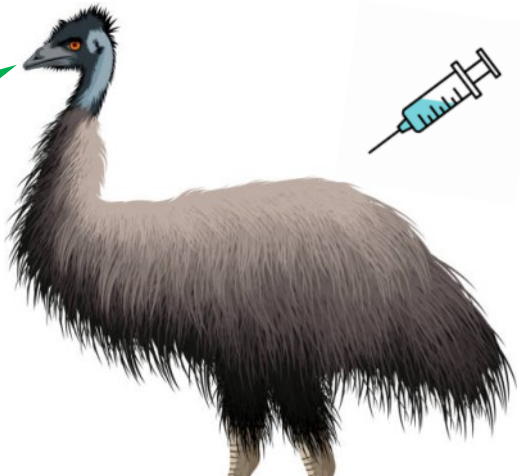
"Pearl was a bit of a diva! She had a sense for fashion and would often inspect the Zoofari crowds to pick out the earrings, watches, & cell phones she thought most flashy. She wasn't afraid to let keepers know if she didn't like our outfits - rain jackets, head bands, & puffy jackets were a hard pass for Pearl! She was a bird whose respect you had to earn, but once you did she showed you all her funny quirks, played grape games, & would let you warm your hands under her wings on cold winter mornings. She was special & will be greatly missed by all her adoring fans." - Keeper Jade

"This bird was truly one of a kind. Who'd have thought she would become one of the star attractions for our Zoofari. Winter was always a challenge since she had a dislike for our puffy coats. The sound of weed eaters attracted her like crazy & would make her flirty. She loved her grapes & for whatever reason took an affinity for Keeper Lane (pictured). Her presence will be missed, mostly." - Keeper Anna

Image Credit of Lane & Pearl: Nat Geo WILD

Humans aren't the only ones who need vaccines! Don't forget to vaccinate your ratites against EEE.

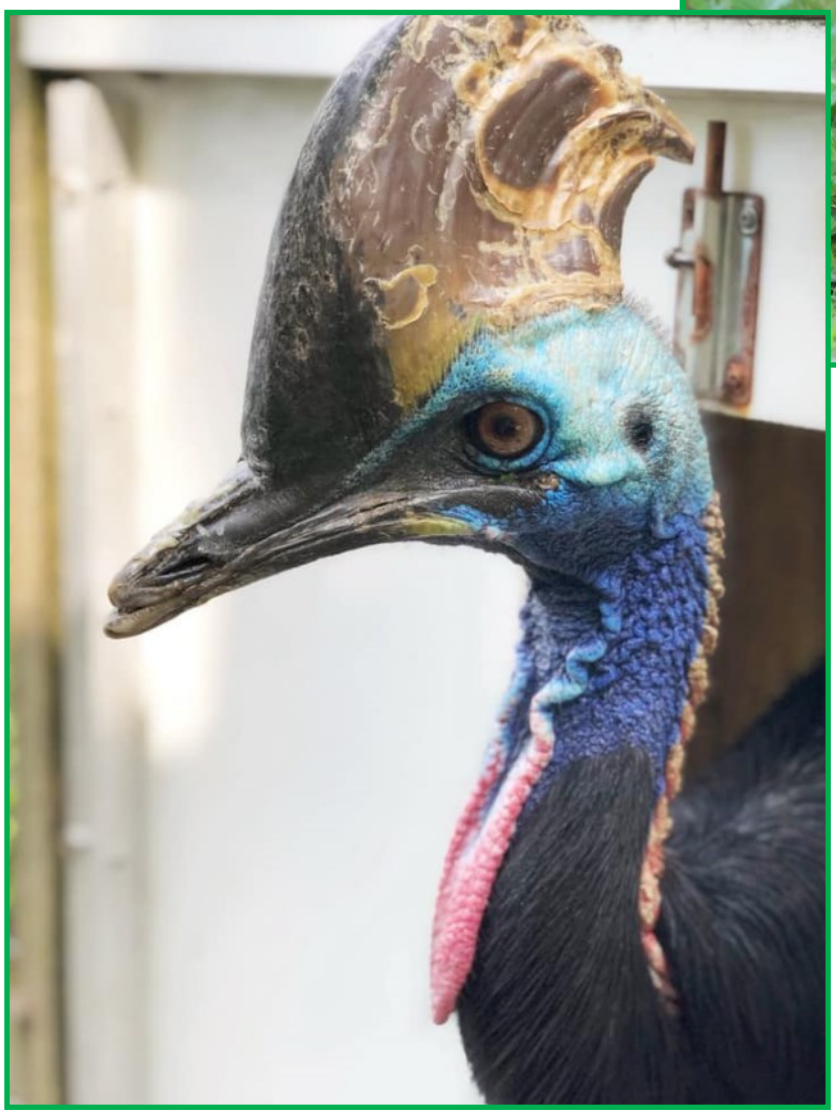
**Please consult with your animal health team for more information*



World Cassowary Day 2021

World Cassowary Day occurred on September 25th, 2021 and was celebrated by zoos, wildlife parks, and other conservation organizations all over the world. Many facilities took to social media to share facts, photos, and personal stories of their cassowaries to spread the conservation messages of this species and talk about the threats they face in their native range including invasive species, car strikes, and deforestation.

If you celebrate WCD 2022, please let us know for a chance to be featured in next year's edition.



Above: *Neo, formerly of Nashville Zoo, enjoying her new home at Detroit Zoo. Photo courtesy of DZS staff.*

Left: *Emil during a crate training session at Birmingham Zoo. Photo courtesy of Scott Kayser.*

Ratite Keeper of the Year

2022 Ratite Keeper of the Year!

Melaina Kincaid, Animal Keeper

Disney's Animal Kingdom

Melaina Kincaid has been working as a keeper for 24 years, working at Disney for the last 16 ½ years. She works with a variety of hoofstock and carnivores but her favorite are the ostrich she works with. She is the training advocate and has helped to lead the successful program that has allowed for voluntary medical procedures. The ostrich are trained for voluntary blood draws, injections, radiographs, ultrasounds, weights and even cold laser therapy. The training team is currently working to add syringe training in order to allow for oral medications to be administered. Melaina is working with members of her team to create a body condition scoring document for ostrich that can hopefully be approved for use by the TAG as well. She has a passion for travel and leads trips to Lewa where she has been able to observe ostrich in their natural habitat.

Top, above, and right: *Staff training with an ostrich to get weights and radiographs. Photos courtesy of Megan O'Brian.*

Rewilding Darwin's Rheas (*Rhea pennata pennata*) in Patagonia National Park, Chile

Cristián Saucedo G.[1], Alejandra Saavedra[1], Paula Herrera[2]

1 - Wildlife Director, Rewilding Chile, cristian.saucedo@rewildingchile.org

2 - Nature Tourism Coordinator Department, University Austral of Chile, paula.herrera@uach.cl

Introduction

The Darwin's Rhea (*Rhea pennata pennata*) is a large flightless bird that inhabits the steppes of Patagonia in Chile and Argentina. The species is categorized as least concern (LC) showing a wide distribution, but the population trend is declining in most of its range due to intensive farming, hunting and egg harvesting. All of these impacts have been identified as primary limiting factors for Darwin's rheas (IUCN, 2019). Recently, the northern Patagonia population of this ratite species has been listed in Chile as endangered, due to both the small population size and population fragmentation (MMA, 2018). Internationally, the species is listed in CITES appendix 2.

The Darwin's rhea recovery and conservation program in Patagonia National Park in southern Chile (47° lat. S) began in 2015, beginning with a remnant population of less than fifteen birds that remained in the wild. The long-term objective of this species conservation project has been to ensure the persistence of a viable wild population of rheas in the only protected area of the region. This is the first effort to rewild the species in suitable habitats in Chile. Along with the guanaco (*Lama guanicoe*), the endemic Darwin's rhea represents a significant proportion of native animal biomass on the Patagonia steppe (Figure 1).

Figure 1: Rheas and guanacos in the wild

Main Goals

- To avoid local extinction and reaching a minimum population of one hundred mature rheas in the wild.
- To double the range distribution of the species in the new National Park.
- To diversify the genetic pool of the local wild population through the addition of individuals from other wild and captive populations.
- To manage and breed a captive rhea population in a wild environment.
- To document social integration and subsequent reproduction of individuals released into the wild.

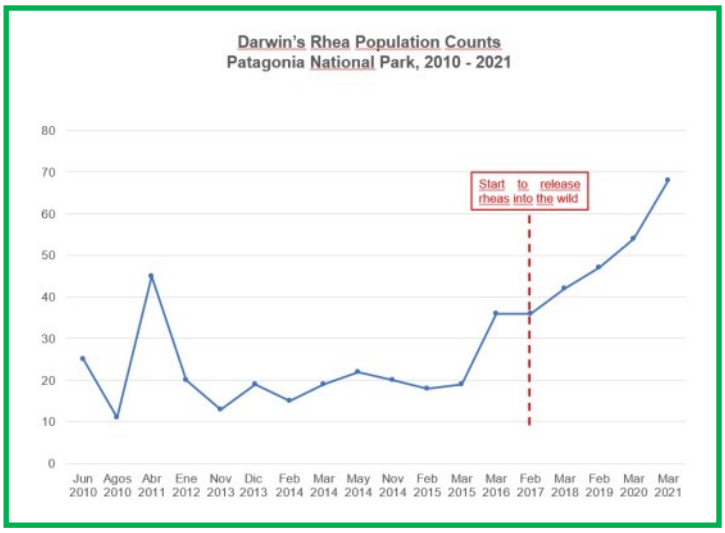


Figure 2

Success Indicators

- Wild rhea population surveys documented a small population of less than 30 birds between 2008 and 2015). An increase to almost 70 rheas (2018-2019) has been recorded in 2021 (Figure 2).
- Expand the current distribution of rheas in the national park by at least 30% (4,000 ha in total) of their former range.
- Use of at least three geographically distinct rhea populations as genetic sources for breeding and incubation in the management plan.
- Annual breeding success in captivity and employing artificial incubation during four subsequent seasons.
- Release of sixty – four rheas into the wild population (Figure 3). These birds were raised at the breeding center combined with a donation of eleven birds from an external breeding center in 2021 (Reserva Quimán). Maintain an annual mortality rate of less than ten percent. Rhea individuals demonstrate social integration from 2016 – 2021 and display reproductive behavior with wild birds (2019-2020).


CC-PAX

Reintroduction Stages

4.1 Feasibility

The early conservation actions developed focused on converting the traditional land use of the area from a fenced ranch to a proposed national park through the removal of 3,000 domestic sheep and associated dogs and fences which have been historically responsible for population fragmentation. In 2014, the first park wardens were established for rhea monitoring, and to control of threats such as poaching and egg collection.

A study of the available rhea habitat for the local area was conducted by experts from the University of Chile who concluded that large tracts of land with suitable rhea habitat remained (Estades, 2013). This provides a unique conservation and recovery opportunity that was enhanced by the proposal for an official designation of the area as a national park by the Chilean government. The local rhea population was also extremely small and isolated. Technical meetings and field work with species experts - Daniel Sarasqueta (Argentina), and Jürgen Rottmann (Chilean Ornithologists Union) - were organized to discuss the feasibility of establishing a rhea breeding center. One major difficulty identified was access to adult and mature breeding birds in captivity.

At the end of 2014, two orphaned rhea chicks were rescued by the Chilean border police. This triggered the Chilean wildlife authority (SAG) to authorize the creation of the breeding center for reintroduction purposes, the first wildlife facility of its kind in the district.

In order to maximize the success of the breeding program, a unique special aerial transport of ten rhea chicks from commercial breeders up north to Patagonia (covering 1,000 km in a single day) was organized by Fauna Andina and Rewilding Chile (Figure 4). The genetic origin of the chicks was from two Patagonia populations and they were tested for possible diseases by the health authorities.

4.2 Implementation

One major challenge has been the operation of the breeding facilities in a very remote and isolated mountain area in the park, which is very close to the Argentina border and is exposed to severe wind storms and heavy snow. Currently, the program infrastructure is highlighted by three features components: 1) Reproductive pens: 3,000 m^2, 2) Management and acclimation pens: 1,500 m^2 and 3) Pre-release pens: 72 ha. The first two areas have both perimeter fences and are electrified. They were constructed in rhea habitat. Native vegetation was utilized which allowed an important nutritional contribution for rheas grazing inside the pens, incorporating food-based supplements, pellet food, alfalfa hay, vitamin and mineral intake (Saucedo et al. 2019). After a forest fire during 2021 which affected the reproductive pen area, all the breeding, acclimation and pre-release activities was concentrated in a single area. Now, given the small number of birds for reproduction, we are considering to act as an acclimation and release area for birds provided by other breeding centers and work as a quarantine area for wild rheas translocated from Argentina to be released into the national park.

Information about the care, management and design of facilities for rheas with commercial purposes were available, but only under controlled conditions to maximize profitability. In this case, we made adaptations for the management of a captive population in a natural harsh environment that is exposed to natural wild predators and we used native rhea food complemented with food pellets.

During the first breeding season, artificial incubation and chick adoption by breeding males were attempted by taking advantage of excess eggs that were available (Figure 5). We also identified one wild healthy population of rheas located 300 Km north on private land that served as an egg donor and established a partnership with the local land administrator. This type of wildlife management that yields successful results maximizes the chances of adding eggs and subsequent rhea chicks to wild populations.

In captivity we decided to evaluate some methods for marking individual rheas, which was not an easy task. We initially used a simple Multi-Loc system and combined that with VHF transmitters fitted on the neck with acceptable results, but with a high rate of losses (Saucedo et al. 2018).

The wise involvement and education efforts for neighbors and local communities has been a permanent component since the early days of this initiative. This provided permanent local support by establishing a network of collaborators and partners.

Figure 5.

1.3 Post release monitoring

Park wardens were established in the area to develop regular patrols employing direct point counts to monitor the local rhea population in the wild. Population counts recorded less than 30 birds for 2008 – 2015, showing an increase to 45 – 50 birds during 2018 – 2019. As a consequence of fence removal and the release of 64 rheas during 2016 - 2021, the area of habitat used by the species increased to 4,000 ha, representing an increase of thirty per cent.

All released birds were marked with plastic collars, but less than ten per cent retained the mark for over three months, which affected the record of detailed individual data. Marking rheas for monitoring purposes represents an ongoing challenge. A new system of neck rings and some VHF collars are in place for 2022.

After three months in an acclimation enclosure of 72 ha, the released rheas in all cases were able to explore greater distances (3-6 km) into new habitats and interact with wild individuals. Potential positive breeding and mating behaviors have also been recorded in the wild for first time in August 2019.

Difficulties faced

- Limited access to incorporate adult captive rhea individuals into the breeding program.
- Remote environmental and access conditions which complicate the maintenance of operational infrastructure and optimal size.
- The access to a reliable marking and tracking system for released birds has been especially challenging.
- Unexpected impact of a puma predation event that killed 22 rheas in pre acclimation pens during the second reproductive season (2018). It forced the change in the design and height of electric perimeter fences (from 2,5 to 3,1 m).
- Difficulty to predict the expected annual results given the variability in number and sex ratios of breeders and chicks due to losses by trauma associated with climate events (storms).

Lessons learned

- Artificial incubation and easy adoption by male rheas (Figure 6) allow the diversification of genetic sources using eggs and chicks from other populations (captive and wild).
- Reduction of acclimation time for rheas in small pens at early ages (< 3- 4 months) reduces the risk of predation inside the pens and promote the development of skills to avoid predators.
- It is preferable to use soft release protocols covering a period of 2-3 months, to reduce habituation behaviors in captivity.
- Food supplementation is not necessary after release, since rheas prefer wild food over pellets.
- To encourage group associations over individual relationships in all rhea development stages (birthing, adoption, transportation, translocation and release).

Reasons for success

- Released rheas show positive social interactions with wild rheas and guanacos, which is a natural anti-predatory strategy between species (more vigilance and increase in escape distances). A significant restoration indicator of the ancestral relationship and an indicator of ground-breaking rewilding success (Figure 7).
- Increase of rhea population from less than 30 to almost 70 birds in Patagonia National Park.
- An increase in over 30% of the habitat range where the species is now present.
- The use of three geographically different population sources for breeders and eggs involved in the management and augmentation of the species to ensure that the wild rhea population has increased its genetic diversity.
- The improvement in local conditions for the species due to removal of fences, threat reduction, increase in patrolling by park wardens and more awareness of the species by neighbors and the local community.
- The active collaboration with Reserva Quimán as a breeding center since 2021, whom is acting as donors of young rheas to be released into the wild by the program.

Previous page: *rheas and guanacos seen via camera trap;* ***top****: Figure 6, releasing chicks for adoption by male*

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Recognizing the challenges of re-wilding the North African ostrich in its natural habitat: sharing experience from Tunisia

Dr. Marie Petretto,
Marwell Wildlife

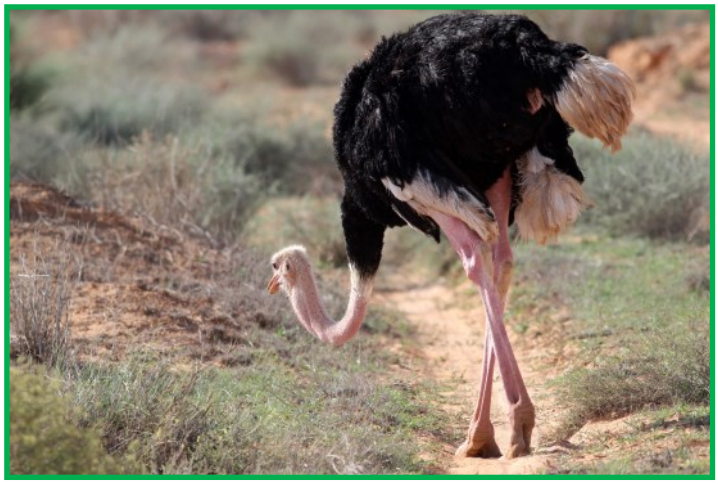
For the fifth year, we report toward the joint efforts of Marwell Wildlife (British Charity) and the Direction Générale des Forêts (DGF, Ministry of Agriculture, fisheries and Freshwater Resources) for the reintroduction and conservation of the North African ostrich *Struthio camelus camelus* in Tunisia. This conservation action is considered an instrumental goal for the restoration of the region's aridlands and within the broader framework of the Sahelo-Saharan ecosystem conservation, the Tunisia's DGF and Marwell Wildlife have established a close partnership in order to repopulate the depleted areas that once were inhabited by this large flightless bird.

During the last decade, Tunisia established a founder population of birds imported from breeding centres in Morocco and Saudi Arabia (respectively from Chadian and Sudanese lineages) with a goal of maximizing the genetic diversity of the Tunisian meta-population. Their offspring are now being released to progressively re-establish the species at the national protected areas located within their former range. Having implementing management and logistical solutions to the many problems that emerged during the post-release phase (see previous reports) and developing the expertise to re-wild the animals that descend from generations kept in captivity, we are now aiming at improving the facilities to allow to safely handle the free-ranging birds for conservation translocations and be able to increase the population sizes.

In 2021, we were indeed hoping to do some animal translocations, and in particular bring back some adults in one more protected area, Oued Dekouk NR, but the global pandemic and the related lack of financial support has meant that Marwell's Tunisian-based team has had limited opportunities to carry out field work. The import of additional chicks from the Saudi captive population has also been postponed, due to international travel restrictions. We therefore prioritized monitoring of released ostriches in the four Tunisian protected areas where the ostriches already exist and despite everything, have made some progresses toward our objectives. Together with the parks' staffs, we compile data from direct observations and data collected by camera-traps. It is encouraging that they are not only surviving without any human intervention, but actually breeding. The reproduction strategy of these non-flying birds consists in large number of eggs for a small part of the offspring that will reach maturity: consequently the population growth is naturally slow. We are however anticipating that this growth will be exponential as with larger flocks, the chicks will be better protected against predators.

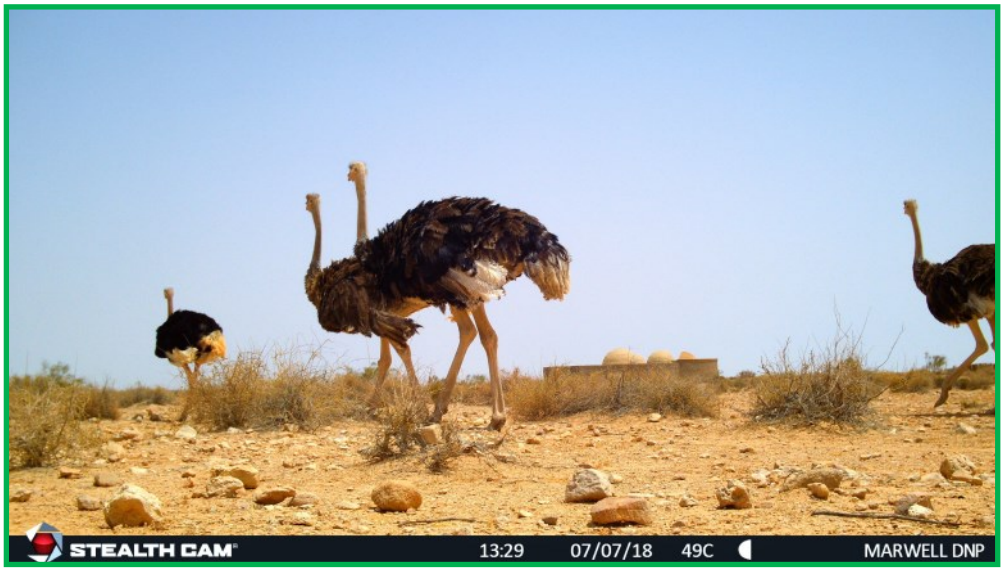
Whilst continuing monitoring their behaviour and population trends, we hope to be able to get some chicks imported from Saudi Arabia, not only to build up the numbers but also to enhance the genetic diversity of the Tunisian metapopulation. The intensive work in Tunisia continues, with the goal of having sustainable social groups in each of the targeted protected areas by 2030.

Tunisia is committed to developing a regional effort to restore North African ostrich to their natural habitat as part of the International Sahelo-Saharan Conservation initiatives. You can find out more about the Tunisian reintroduction program in previous Ratite Review of the AZA Struthioniformes TAG and in Marwell's last technical report.



Marwell Wildlife

"We aim to secure further healthy semi-wild populations of this threatened sub-species across its bformer range. Marwell Wildlife's 2022 fundraising campaign will target critical infrastructure developments at the breeding center of Orbata NR and El gonna NR to improve the management of ostrich and to house the imported chicks until they'll be big enough for release. In addition to the infrastructure developments, training is needed to increase the level of expertise within the local teams in preparation of further ostrich releases to more protected areas. If you would like to support conservation work for North African ostrich in Tunisia, please contact Marie Petretto (MarieP@marwell.org.uk) for further details."



Update on the North African Ostrich Reintroduction Project

Sahara Conservation Fund

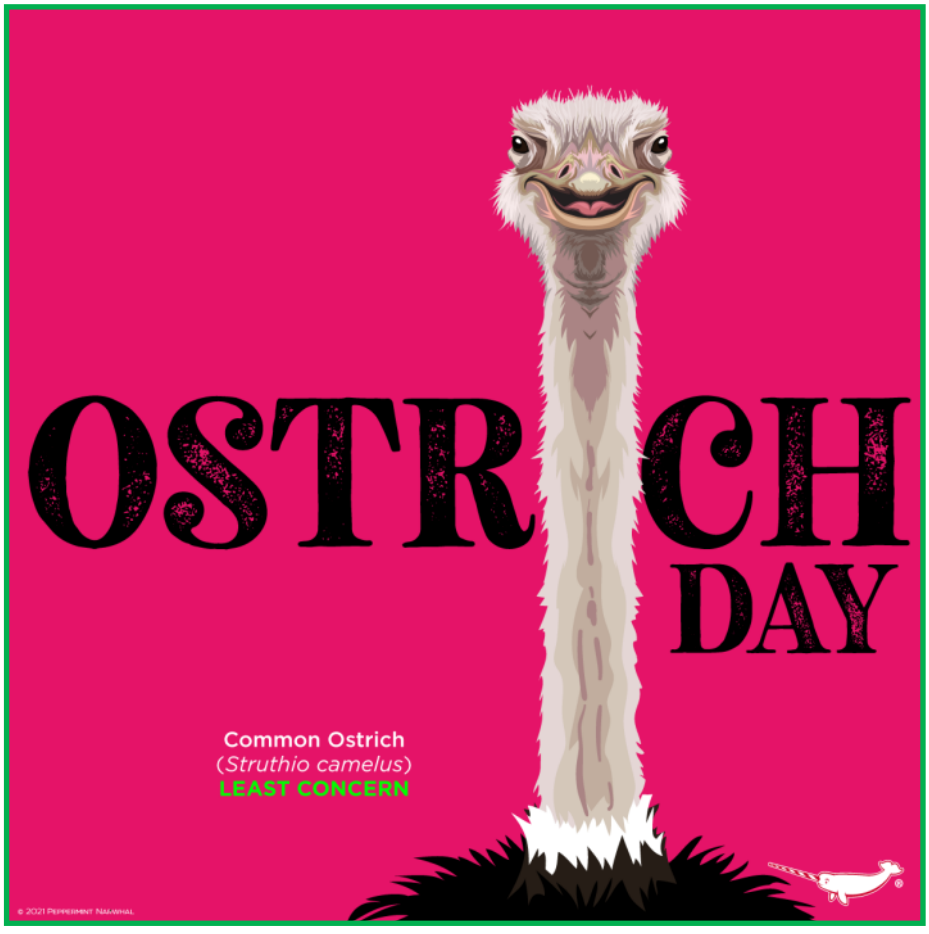
From November 23 to 26, 2021, the first translation of ostriches from the Kellé breeding center (Gouré, ZINDER Region) to the Gadabédji Biosphere Reserve (RBG) (Department of Bermo, Maradi Region) took place thanks to the technical support e Financial of the NGO Sahara Conservation Fund (SCF), Project of Sustainable Biodiversity Management and Protected Areas (PGDBAP) funded by UNDP and of course Niger State.

"The nine (9) ostriches are currently doing well. North African ostrich are now part of the effort to reintroduce and restore the full complement of large Sahelian birds and mammals to the region."

World Ostrich Day!

Mark your calendars for the 4th World Ostrich Day, February 2nd, 2023! Please share with your marketing, advertising, social media, and keeper teams so we can continue to grow participation and awareness of this new animal day. Thank you to everyone who celebrated this year, we look forward to seeing and hearing about your birds again next year. Celebrated for the first time in 2020, World Ostrich Day was created by ostrich keeper Jade Tinker and is now embraced by the zoological community as a day where we celebrate the only bird with two toes, on the second day of the second month in honor of this unique adaptation.

Please email pictures & articles of any celebrations to kpitchford@aqua.org



SAVING THE BIGGEST BIRD ON THE PLANET:

The Adopt-an-Ostrich Program in Niger

THE biggest bird on the planet is on the verge of going under in the silent tide of extinction that has been rolling across the Sahara. Once common across the Sahelo-Saharan zone, the North African red-necked ostrich (*Struthio camelus camelus)*, largest representative of its species, has been extirpated across 95% of its range. Within Niger, the bird is locally extinct in the wild, having vanished over two dacades ago.

Zoos are uniquely positioned to do something about this crisis. Pure-bred *S. c. camelus* still exist in small privately-owned flocks scattered across Niger. Sahara Conservation Fund (SCF), with support and advice from zoos and others, gathered birds and launched a breeding program in Kellé, Niger as a first step toward a recovery strategy for this species. With advice and support, Nigeriens caring for ostrich have substantially improved the bird health and the reproductive success of these birds, relying on natural incubation by the parents. More recent improvements, such as a solar-generated power network and conditioned labs for artificial incubation and hatchery operations, should further boost chick production by salvaging surplus fertile eggs that exceed the parent birds' capacity to cover and brood naturally. With the right material and technical support, Niger can breed North African ostrich that could be returned to the wild.

The AZA Struthioniformes Taxon Advisory Group has championed the recovery of North African ostrich in Niger since 2007. Through SCF, we are part of a public-private partnership with the Republic of Niger and a consortium of private local breeders (CERNK), with the goal of producing chicks for eventual reintroduction. We have helped significantly improve the ostrich breeding pens in Kellé. Bird welfare has responded dramatically to diet improvements and other management changes. Courtship behavior, the production of fertile eggs, reliable parental incubation on the nest, and the subsequent hatching and rearing of chicks bode well for the future for Niger's ostrich.

Let your Zoo's ostrich become an ambassador! SCF is now beginning to assess Niger's Gadabedji Biosphere Reserve (5448 sq. mi.) as a site for a pilot release of ostrich. This is a great opportunity for all of us to make a connection between our zoo ostrich and the conservation of the *biggest bird on the planet*. The AZA Struthioniformes TAG developed the **Adopt-an-Ostrich Program** to fund the acquisition, care and feeding of pure-bred Saharan ostrich in Niger; to maintain the ostrich facilities; and to improve capacity for ostrich management and restoration to the wild. Now more than ever, we need zoos to help support this breeding effort. With your help, we can get North African ostrich back on the road to recovery in Niger.

$500 will cover the care of one ostrich in Niger for a year. Our goal is 100% participation by all zoos holding ostrich, at whatever level each can contribute Please consider making a pledge today and add your Zoo's voice to the growing chorus speaking for the conservation of the biggest bird on the planet. A pledge form has been provided for your convenience.

SAHARA CONSERVATION FUND

PLEDGE FORM

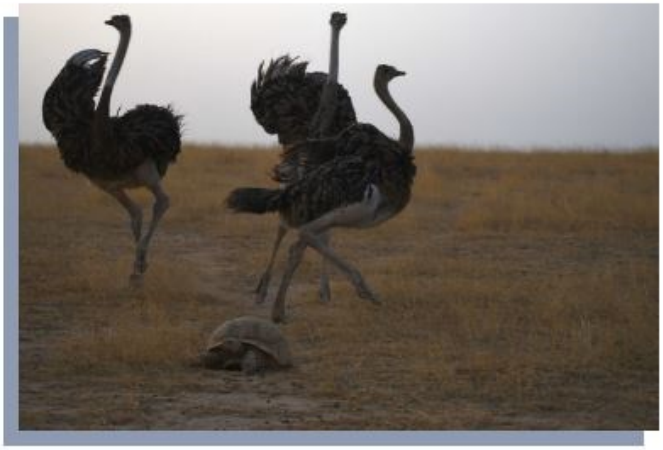
FROM:	
TO:	Sahara Conservation Fund
DATE:	
PURPOSE:	Support for AZA Struthioniformes TAG/SCF Adopt-an-Ostrich program in Niger

☐ _____ wishes to adopt an ostrich for one year for the sum of $500
OR (insert institution name here)
☐ _____ would like to pledge the amount of $_____
(insert institution name here)

Thank you again for your support.

Please make checks payable to **Sahara Conservation Fund** and mail to:	**Sahara Conservation Fund** c/o Karen Sausman, Treasurer 13220 N Red Hill Rd Marana, AZ 85653

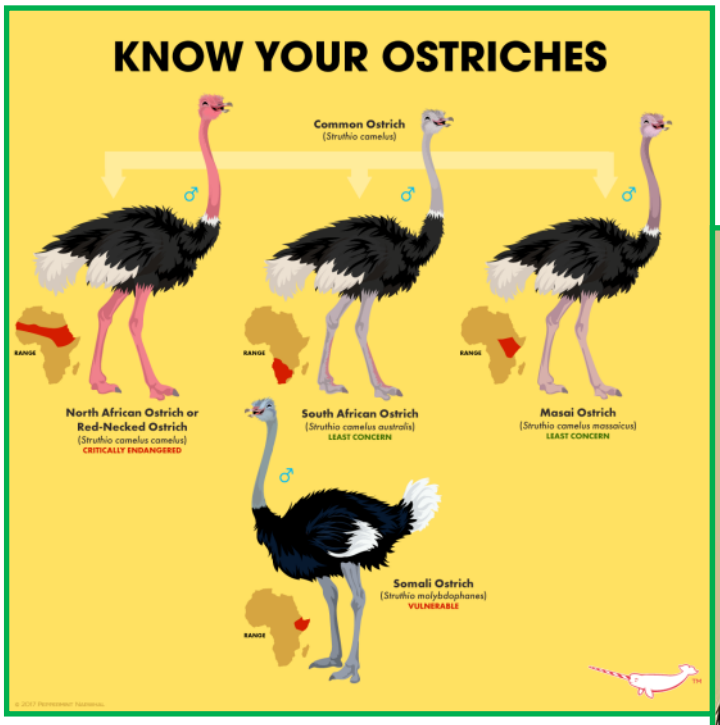
Or wire funds to: **Wells Fargo Bank,** 27630 Ynez Rd., Temecula, CA 92591, USA	
SCF Bank Account No.:	2879230544
SWIFT Code:	WFBIUS6S
US Interior Transfer Prefix:	121000248



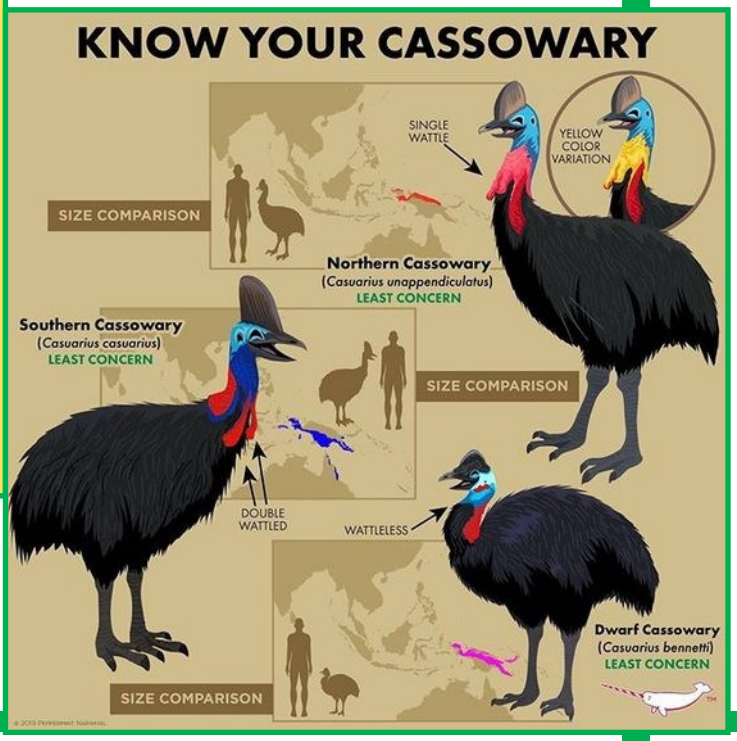
Sincerely,

Karen Sausman, Treasurer
Sahara Conservation Fund

Thank you for your support. The Sahara Conservation Fund is a not-for-profit organization exempt from federal income tax under the provisions of Section 501(c)(3) of the Internal Revenue Code. Contributions to the Sahara Conservation Fund are tax-deductible in accordance with the law.



PEPPERMINT™ NARWHAL
CONSERVATION THROUGH CREATIVITY



Above and right: *Educational graphics by Peppermint Narwhal Creative;* ***below:*** *Virginia Zoo's Executive Director Greg Bockheim with an inflatable cassowary and eggs.*

Betty White holds a kiwi with Kathy Brader, brown kiwi SSP coordinator, at the Smithsonian's National Zoo, Washington, D.C.

Photo courtesy of Smithsonian's National Zoo.

Thank you for being a friend to animals and their keepers — and a vocal advocate for zoos and aquariums throughout your long and storied career. Rest in peace, Betty.

"The END"

Photo credits: ***Brown kiwi*** *- Jessie Cohen;* ***Greater rhea*** *- Meghan Murphy;* ***Emu*** *- Angela Blommer;* ***Southern cassowary*** *– Mike Taylor;* ***Ostrich*** *– Colleen Baird*