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Kamfers Dam flamingo incident 2019: Collaborative conservation

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Abstract

Kamfers Dam lesser flamingos abandoned thousands of nest sites after changing environmental conditions left the nest mounds dry and vulnerable to disturbance. Thousands of chicks and eggs were found dead and dying. An immediate global response to the incident resulted in an unprecedented rescue of 1800 chicks and eggs that were removed to the Kimberley, South Africa, Society for the Prevention of Cruelty to Animals (SPCA) and then distributed throughout South Africa for hand-rearing.

Resumen

Los Flamencos Enano de la presa de Kamfers abandonaron miles de nidos después de que las condiciones ambientales variables dejaran los montículos secos y vulnerables a las perturbaciones. Miles de polluelos y huevos fueron encontrados muertos y moribundos. Una respuesta global inmediata al incidente resultó en un rescate sin precedentes de 1800 polluelos y huevos que fueron llevados a la Sociedad para la Prevención de la Crueldad hacia los Animales (SPCA) de Kimberley, Sudáfrica, y luego distribuidos en toda Sudáfrica para la cría a mano.

Résumé

Les flamants nains du barrage Kamfers ont abandonné des milliers de nids après que les conditions environnementales changeantes aient laissé les nids secs et vulnérables aux perturbations. Des milliers de poussins et d'œufs ont été retrouvés morts et mourants. Une réaction mondiale immédiate à l'incident a entraîné le sauvetage sans précédent de 1 800 poussins et œufs qui ont été secourus par la Société pour la prévention de la cruauté envers les animaux (SPCA) à Kimberley, en Afrique du Sud, puis distribués dans toute l'Afrique du Sud pour y être élevés à la main.

Introduction

Kamfers Dam is a privately-owned wetland spanning over 400 hectares; home to tens of thousands of flamingos, it is a critical breeding location for the lesser flamingo (*Phoeniconaias minor).* In 2006, Ekapa Mining and Birdlife SA CEO, Mark Anderson partnered to build a large artificial island which became the only breeding site for lesser flamingos in South Africa (M. Anderson, *personal communication*). In the following years, changing conditions caused breeding failure on the island and the flamingos now nest on the pan's edge nearest to the location of proposed residential housing and commercial developments; yet another threat to lesser flamingo breeding. Water levels at the dam are dependent on rainfall, raw effluent from the Homevale Wastewater Treatment Works (WWTW), and storm water runoff from the city (Beangstrom, 2019). High temperatures, low rainfall, and infrastructure challenges at WWTW resulted in low water levels, lack of blue-green algae and dry conditions at Kamfers Dam (M. Anderson, *personal communication*). In addition, Ekapa Mining activities are dependent on water sourced

from the dam. In 2019, environmental pressures combined with new predator accessibility to the nests increased until the nesting adults abandoned thousands of chicks and eggs.

Methodology

One-thousand-eight-hundred chicks were rescued from the dire situation on 24 January 2019 in an unprecedented, unplanned rescue project in South Africa. Rescuers found eggs, hatching chicks, and hatched chicks baking in the hot sun without any adults in sight. Hundreds of chicks were dead. Thousands of chicks were dying. Eggs were left sitting atop mud cones. Untrained volunteers showed up at the SPCA with boxes full of chicks and eggs. Hundreds of eggs were initially stacked in a corner while a handful of people began to triage and organize the incoming chicks, which were beginning to cover a large lawn outside the SPCA facility.

Concurrently, Saam Staan Kimberley and the SPCA began to coordinate logistics. The Kimberley SPCA did not have resources on site to feed, hydrate and assess chicks at the rate of intake so chicks were moved from Kimberley to other facilities by private individuals prior to PAAZA involvement (D. Smith, *personal communication*).

Figure 1: Expanse of dried up nest mounds depicting the abandonment of the Kamfers Dam breeding area. Photo credit: L. Allen/ Saam Staan Kimberley.

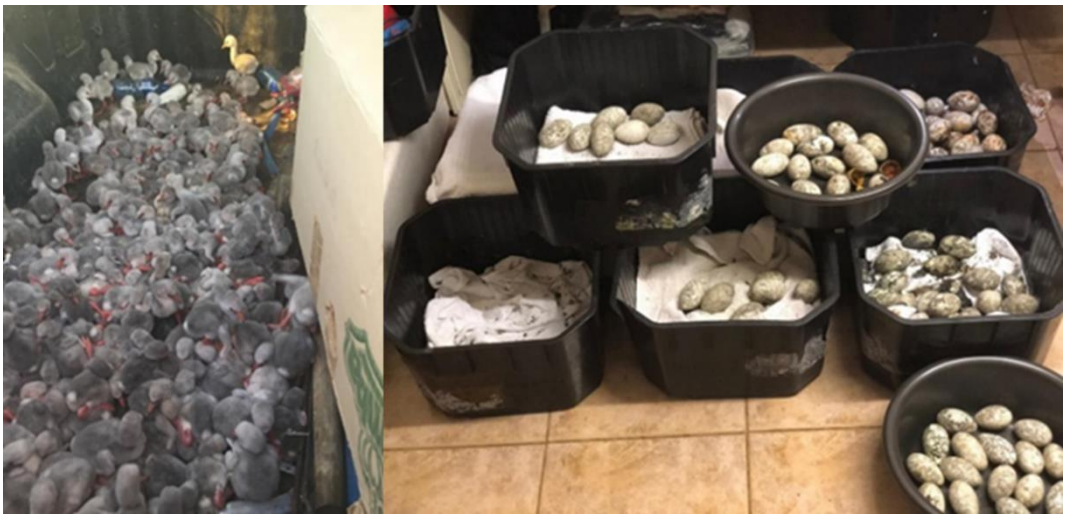

Figure 2: Hundreds of chicks and eggs at the Kimberley SPCA facility prior to transport to participating rescue facilities. Photo credit: L. Allen/ Saam Staan Kimberley.

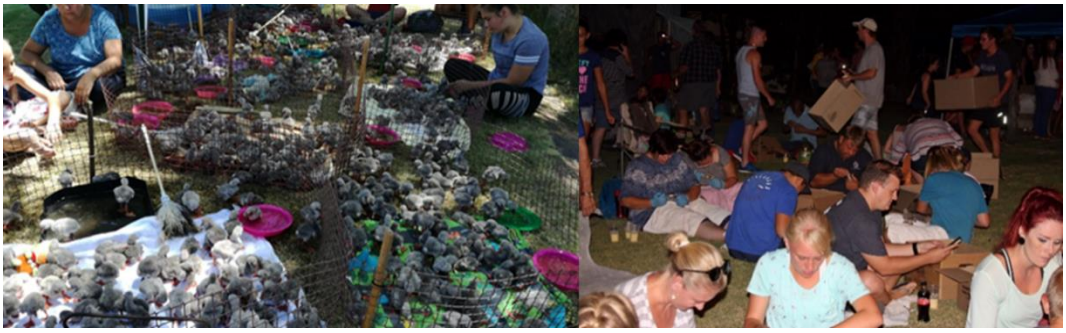

Figure 3: Kimberley community response to dehydrated chicks rescued from nest site. Photo credit: L. Allen/ Saam Staan Kimberley.

Local Kimberley veterinarian, Donavan Smith, led efforts to organize the responders and triage dehydration and other medical issues plaguing the chicks, working round the clock with other caregivers. As eggs hatched, the chicks were hydrated, examined, treated with antibiotics as needed, and fed. "Save the Flamingo", a non-profit group and communication medium (Facebook and website) helped to spread the news internationally and solicit followers for resources including labour, supplies, and money. A first group of 870 chicks were flown to Pretoria as the community realized that they needed assistance and resources. Flamingo chicks require labour intensive care. Each chick needed feedings every couple of hours, specific housing and temperature requirements, and a specific diet.

Hand-rearing flamingos is complicated and coupled with the magnitude of the event, required millions of dollars in food, labour, and housing. Conversations started between IUCN members, PAAZA, AZA, and EAZA zoologists and researchers to implement emergency hand-rearing and diet guidelines for inexperienced caregivers. Dallas Zoo coordinated AZA resources with PAAZA Executive Director John Werth after receiving a request for expertise and other resources. AZA sent 53 experienced animal care experts to assist local efforts. A workshop at the Kimberley facility led by AZA experts trained community members to respond in the event of future incidents.

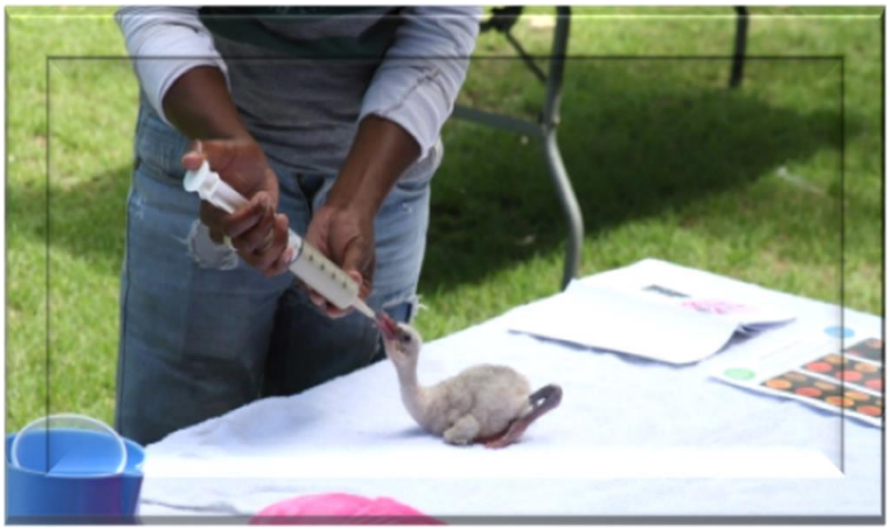

Figure 4: Kimberley community workshop demonstrating hand-feeding and initial intake and triage methods. Photo credit: L. Wilson/Texas State Aquarium.

While most of the rescued chicks were transferred to PAAZA and private facilities, the initial respondents were the Kimberley community members who were naïve to flamingo hand-rearing and husbandry requirements. Most were without training, but what they lacked in training was made up for in dedication, hard work, and passion. Veterinary team, K. Koeppel (Onderstepoort) and R. Campbell (National Zoological Gardens of South Africa), developed the disease testing, health criteria and screening, quarantine, and transport and permit requirements implemented through the PAAZA executive office.

Multiple meetings were held to secure funding, arrange transport, find animal feed sources; write, review and approve permits. Participants included National and Provincial Statutory bodies, Provincial Scientific Services, Onderstepoort Veterinary Research, Private Sector, NGO's, Birdlife SA, IUCN Specialist Group members, PAAZA Accredited facilities holding chicks and AZA members. All representatives attempted to provide clear communication. The Department of Nature Conservation and Environmental Affairs formed a working group to provide a communication tree and meetings were conducted regularly to review communication, animal welfare, and permit compliance. The overall collaborative outcome was very positive. Ultimately, multiple organizations participated in the care of the chicks. Most receiving facilities were PAAZA accredited including Pretoria Zoo, World of Birds, uShaka Marine World, Monte Casino, Lory Park Zoo and coordinated by PAAZA.

Additionally, private facilities such as VulPro, Onderstepoort, and a private conservation facility in Leeuwfontein provided facilities and resources. Diet composition in the chick formula understandably had variability within institutions and between different facilities. Various rearing method and ingredient availability had an unmeasured and difficult to quantify effect on the growth rates and development of the chicks. Variables were kept to a minimum and guidelines were established throughout the process and executed as quickly as possible given the unplanned and magnitude of the rescue effort.

Figure 5: Juvenile flamingo learning to forage in artificial food dish. Photo credit: L. Conrad.

Once the flamingo chicks were placed in a facility, the hand-rearing process lasted for months. Volunteers exhausted themselves feeding, cleaning, and preparing food round-the-clock. Chick were encouraged to wean and self-feed as they exercised their legs and wings in the holding pen. As the commercial diet was introduced, most birds began to take on a red, waxy appearance and participants realized that the food was building up on the feathers and bills of the birds. Increased efforts were made to improve waterproofing through misting and providing additional clean water sources. Ultimately, the Kimberley team hand-washed hundreds of individual birds prior to release that required more hours of exhausting work.

Figure 6: Juvenile flamingo with developed primary feathers in Kimberley quarantine facility. Photo Credit: D. Smith.

Figure 7: Kimberley quarantine facility specifically designed and built for quarantine and pre-release conditioning for hundreds of flamingos. Photo credit: L. Conrad.

D. Harebottle (Sol Plaatjies University) and J. Werth (Nelson Mandela University) lead a team responsible for long-term monitoring of the released birds. Permits were required for back-pack tracking units, colour bands and Safrings and approved by Provincial and National Scientific authorities. Each flamingo was individually marked, recorded, and measured prior to release.

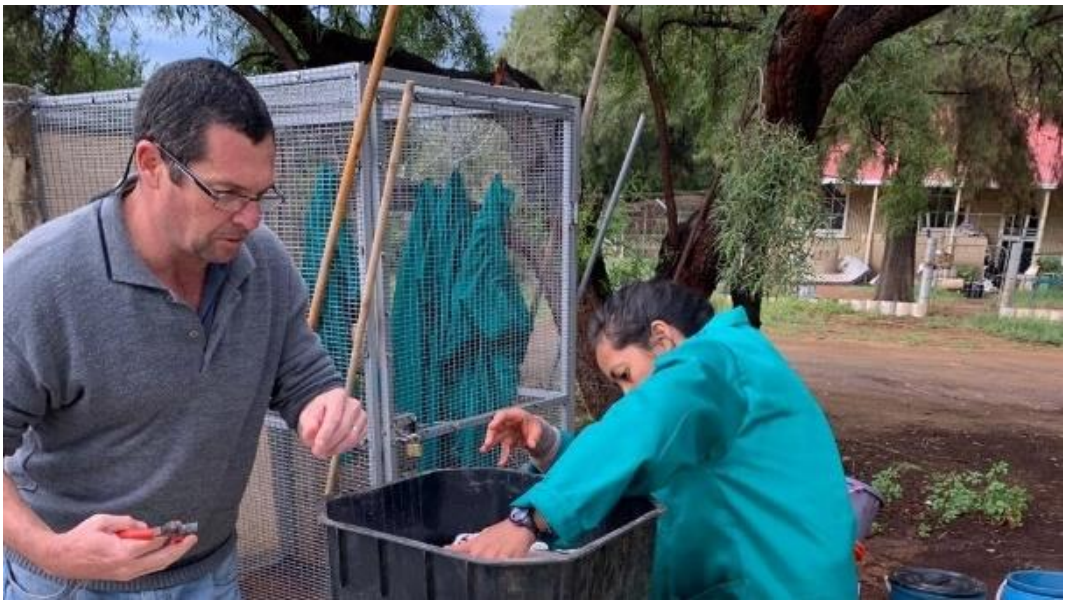

Figure 8: D. Harebottle and J. Daly-Rauff weighing and ringing flamingos prior to release. Photo credit: L. Conrad.

Release criteria were established based on IUCN release guidelines through J. Werth/PAAZA and Onderstepoort Veterinary Research. Birdlife SA monitored habitat and provide valuable expertise about the wild colony and habitat conditions. 10 May 2019, 49 birds were hard-released at Kamfers Dam. D. Smith selected a site near the colony that was partially obscured by brush on the edge of the pan. 49 birds were carried to the edge of the water in cardboard boxes and then released as a group from a small, portable pen where the colony vocalizations were heard. The birds stood and preened for several seconds and then began to catch the wind. One-by-one they flew out and into the colony. Many landed on the perimeter where they could be monitored through binoculars.

View the release at:
https://www.facebook.com/DallasZoo/videos/438515983582461/

Select birds were fitted with trackers and monitored. The first release occurred four months after the initial rescue and on June 15, 2019, a banded bird was sighted in Namibia with a group of flamingo juveniles, more than 600 miles from the release sight.

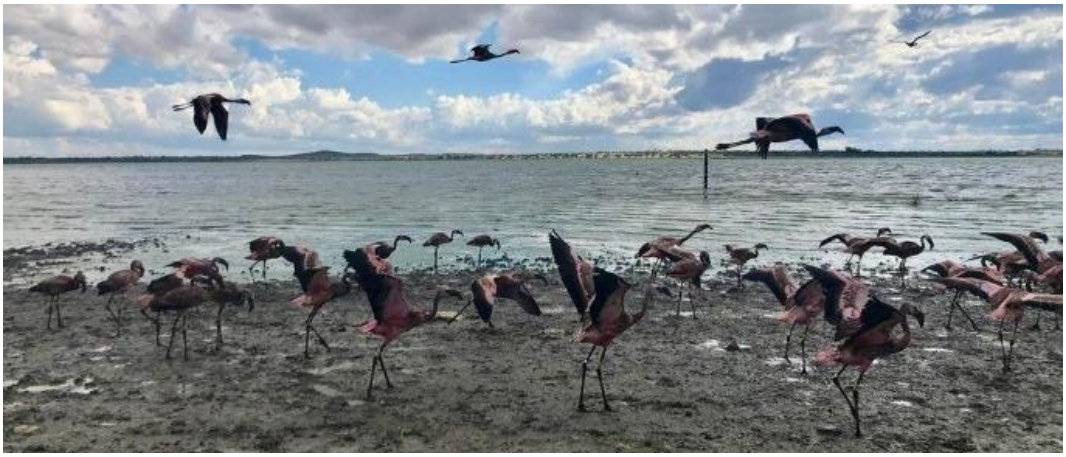

Figure 9: First hard-release of rescued flamingos at Kamfers Dam. Photo credit: L. Allen/ Saam Staan Kimberley.

Rehabilitation experts have very strong opinions about preferred release methods. Very little documentation can be found regarding reintroduction of flamingos because few data have been collected regarding Phoenicopteriformes. Results from other families/orders was considered during plan formulation. Consideration was specifically given to release criteria used with colonial versus solitary species and the natural history and habitat of the flamingo. Hand-reared chicks generally have behavioural differences from parent-reared chicks. The contact with human caretakers and artificial environmental conditions protects chicks from temperature extremes and predators; but does not “harden” the chicks to the elements or prepare them for natural challenges. Releasing the chicks into a wild creche of juveniles gave the hand- reared chicks the opportunity to observe behaviours that they may not have been exposed to under human care. Hand-reared chicks needed to learn where to forage, where to move for protection at night, when to react to predators, and when and where to fly and migrate.

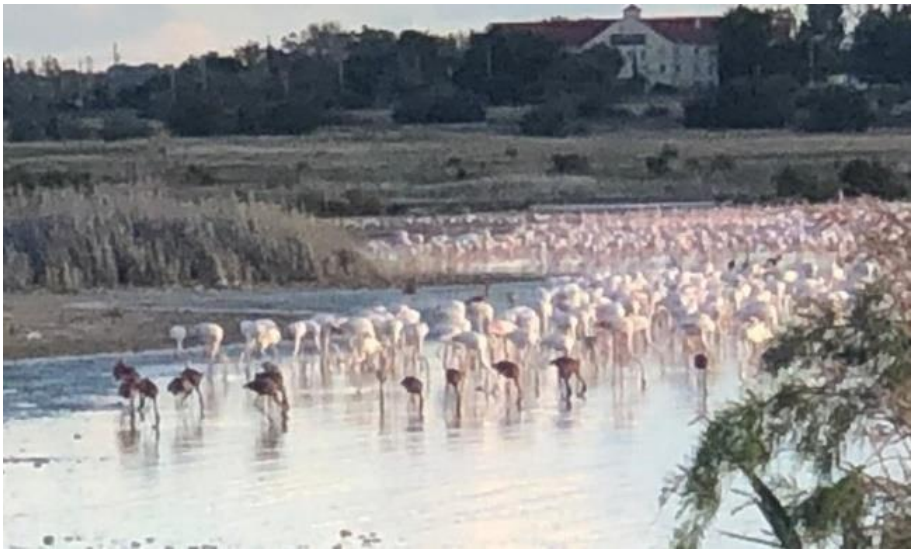

Figure 10: Released birds foraging on the perimeter of the flamingo colony the day following the initial release. Photo credit: L. Conrad.

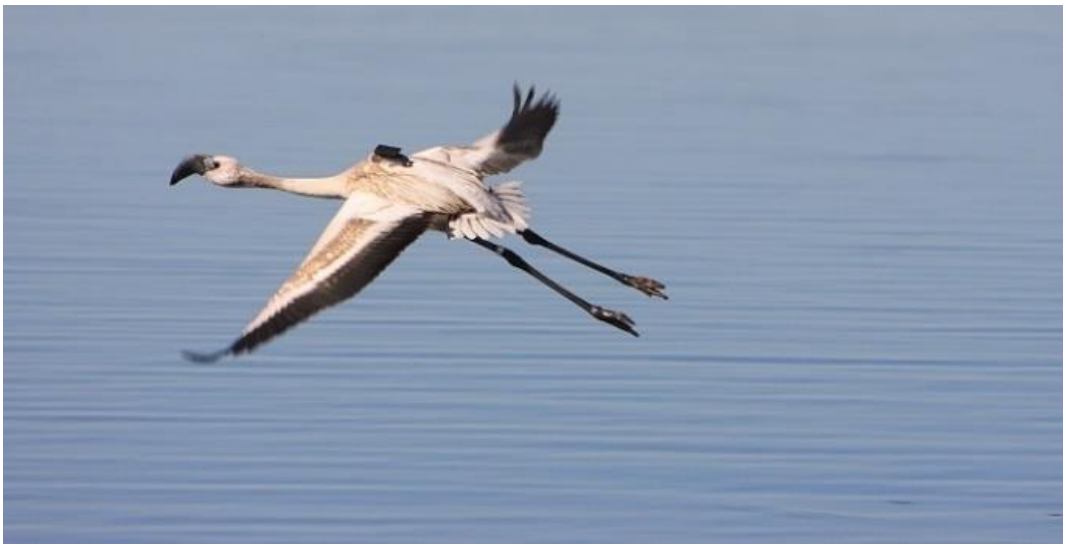

Figure 10: Juvenile with fitted tracker flying among Kamfers Dam flamingos post release. Photo credit: D. Smith.

Discussion

The Kamfers Dam incident required disaster response. The large scale and resource requirements of this wildlife disaster came at a tremendous cost to the community and the animals. Unfortunately, very few people have hand-raised flamingo chicks and there were not many local experts available to train. The birds require specific nutrients and commercial diets were not readily available at the beginning of the incident. Financial cost of the response likely rose into the millions of dollars. In addition to lack of resources, this unprecedented rescue did not have a step-by-step guideline. Without org charts and established policies, organizations worked to build a cohesive plan and communication network. Differing methods throughout the incident resulted in different outcomes. It is difficult to analyse and measure data in the middle of crisis management.

Conclusion

The magnitude of the global response to the incident support the rescue and release of hundreds of animals. Habitat management is crucial in preventing future incidents. Birdlife International SA continues to champion habitat management focusing on the Homevale Waste-Water Treatment Plant (HWWTP) process. To date the HWWTP continues to threaten the ecosystem. The collaboration between zoological professionals, community members, government organizations and NGOs saved hundreds of animals. Without this collaboration for conservation, the number of flamingo deaths would have undoubtedly significantly increased.

Acknowledgements

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