

DENTAL SURGERY FOR A GERIATRIC SOUTHERN WHITE RHINO

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North Carolina Zoo keepers had known for some time that our female southern white rhino, Olivia, she was slow to eat her hay and occasionally choked on grain. One day we noticed a swelling on the right lower jaw and Olivia was unable to eat, the food just tumbled through her lips. While we tried several methods to medicate and find textures that she could ingest, our veterinary staff was making arrangements for a sedation and dental procedure on Olivia. At 48 years old everyone involved knew there were risks, but the alternative was to euthanize or watch her slowly starve. A specialist was called in to help our veterinary team and two weeks after symptoms were recorded Olivia went under sedation. Two points were removed from the left lower arcade that were cutting into her tongue and a lot of plaque was removed. She recovered well and is back to her old self, hopefully for a few years more to come. The presentation will cover this case from symptoms, through planning and implementation of the sedation, to future preventative care. My goal is to dissuade some of the fears often expressed about performing anesthesia on large mammals, especially in this case, due to age. I believe by telling our story we can encourage other facilities to evaluate their dental health and provide some ideas to help prepare for a successful sedation procedure. I am going to talk about the tools needed to perform a dental exam and those we had on hand to increase our chances of success with anesthesia. Dr. Mike Lowder also shared with us some ideas for preventative care that could reduce the need for future treatments. Our attending keepers can take this information home with them to their zoos and rhinos in our care.

SAVING SUMATRA'S RHINOS

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Given the Sumatran rhino's Critically Endangered status, it's important that we learn as much as possible about this species – its basic biology, disease risks, food and habitat requirements – to help it survive. After seeing pictures and reading about Sumatran Rhinos, I had the opportunity to actually see and work with them in May of this year. The Sumatran Rhino Sanctuary (SRS) is home to 7 Sumatran Rhinos that reside in large, open areas where they can experience a natural rainforest habitat while still receiving state-of-the-art veterinary care. During the 2 weeks I was there - I became familiar with each of their individual personalities and worked alongside the rhino keepers each day as they went about their daily routines. The mornings were spent hand feeding, bathing, checking the rhinos bodies for ticks and cleaning their feet, before letting them back out into their forest enclosure for the remainder of the day. I also had the pleasure of following the vet team around, and was able to observe the female rhinos having an ultrasound. Many discussions were had relating to their breeding successes and challenges they face in the future. The dedication and devotion to the care of these animals by all the SRS staff is inspiring. At the SRS everything they do is for the survival of the species and to give it a sustainable future. The rhinos living at the SRS serve as ambassadors for their wild counterparts, and as instruments for education for local communities and the general public. They also comprise an 'insurance' population that can be used to re-establish or revitalize wild populations, once threats have been eliminated in their natural habitat.

DEVELOPMENT OF INTRODUCTION PROTOCOL FOR EASTERN BLACK RHINO (*DICEROS BICORNIS MICHAELI*)

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Since late 2015, the rhino team at Chester Zoo has been working to develop our protocol for mixing the Eastern black rhino, for breeding purposes. Prior to this date, mixing dates were set according to information on hormone levels, and behavioural observations of the individual rhinos. Through faecal sampling, our in-house lab were able to map the oestrus cycles of our cows, and advise on dates during which they would be most receptive to being introduced to a bull for breeding success. This system was successful, with each of our breeding females conceiving during that time. Introductions of the cows to the bulls were not always easy, however, and it was felt more could be done to make introductions smoother and less stressful for the individuals involved. In 2015, after

considering the natural behaviours associated with wild rhino matings, changes were made to our mixing plans, which are now used in conjunction with the hormone results from our lab. The changes mostly involve work prior to cows coming in to oestrus and allowing the bull to establish and maintain a territory. Husbandry routines are adapted in an attempt to allow the cows and the bull to become familiar with each other prior to introduction within the bulls territory, such as allowing the bull to establish a midden, swapping faeces between middens and allowing the female to travel and scent mark the bull's paddock. The hope with this method was that upon physical meeting, the pair would be familiar with and expectant of each other and the bull would be aware of the cow's reproductive status. This was essentially seen as removing a blindfold from the introduction. This method has proved to be very successful, with matings of all three of our breeding females using two different bulls. Further to this success, mixing appears to have become largely stress free for the rhino, and very routine for our team. Following this success, we will continue to follow this method and possibly develop it further in the future. We look forward to our first calf conceived under this new protocol arriving in May 2017.

Black Rhino Introductions Removing the Blindfold



Facility Overview

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Previous Introductions

- **Timing based on hormone results and behavioural observations**
- **Bull moved to cow paddock**
- **Breeding success**

Problem Animals?



**Kifaru &
Kitani**

Protocol Review

- **Provision of best possible environment**
- **What can we learn from the wild?**
- **Science and behavioural observations**

Natural behaviours

- Bulls thought to be territorial
- Establish middens and maintain home ranges
- Both sexes semi-solitary
- Bulls consort with pre-oestrus females

Natural Communication

- Establish middens
- Deposit faecal and urine markers
- Vocalisations
- Body language and posturing

A New Approach

- **Preparation**
- **Introduce rhinos pre-oestrus**
- **Increase mixing periods**
- **Diffuse and avoid confrontation prior to escalation**

Prepare the Rhino

- **Allow bull to establish a midden**
- **Faecal swap**
- **Allow cow to familiarise bulls territory**
- **Build expectation**
- **Establish a routine**

A New Approach

- **Always mix outside**
- **Always take the cow to the bull**
- **Allow cow to familiarise with bulls territory**
- **Move cow before releasing bull**

Kifaru and Zuri 2016

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Conclusions

- **Reduction of stress**
- **Improvement of welfare**
- **Exhibition of natural breeding courtship behaviours**
- **Mating of all three cows**
- **Two confirmed pregnancies**

Conclusions

- 1:1 healthy calves born!



Hazina, born 19/06/17



Ike, born 26/06/17

Other Considerations

- **Routine husbandry**
- **Natural enrichment**



Thanks and questions?