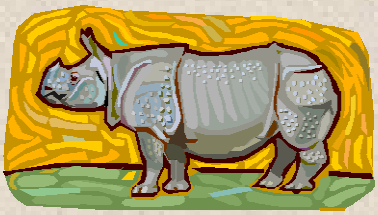
Artificial Insemination in a Greater One Horned Rhino

By: Joe Hauser, Buffalo Zoo

I would like to start, by congratulating the Montgomery Zoo and the Center of Conservation and Research of Endangered Wildlife (CREW) for a successful birth of a Greater- One Horned (GOH) rhino, from Artificial Insemination (AI). Both facilities put a lot of hard work into this procedure to help preserve this endangered species. It is no easy task to prepare for the AI, and both facilities deserve a great deal of credit for what they have accomplished. The Buffalo Zoo recently undertook its own AI procedure with Tashi, a 16 year old GOH rhino, so hopefully, we will have the same success around June 2014! On February 25, 2013, the Buffalo Zoo and Dr. Monica Stoops from CREW performed AI on Tashi. There was a lot that led up to her AI and why CREW and the Buffalo Zoo decided that it was the best route for Tashi and the future of the rhino program.

This will be Tashi's third pregnancy. Through natural breeding with Henry, Tashi gave birth to Asha (who is now in the Toronto Zoo) in September 2005 and Clover (who is now at the African Lion Safari) in March 2008. In October 2012, George, a 4 year old GOH male rhino, moved from the Bronx Zoo to the Buffalo Zoo. Eventually, George will be the Buffalo Zoo's breeding bull, but it will take approximately 4-6 years for him to be fully mature. During the time between Henry passing away in July 2011 and George's arrival in October 2012, Dr. Monica Stoops worked with the Buffalo Zoo to track Tashi's cycles. This task was very challenging because GOH female rhinos do not display the estrus behavior without a male present. We sent Tashi's urine samples to Monica so that we could accurately track her hormones. When Henry was present, Tashi was on a consistent 38 day cycle. Without a male rhino present, Tashi's cycle was not consistent and ranged from 35-65 days.

When Monica and I knew that the male rhino moving to the Buffalo Zoo was young and therefore needed time to mature before breeding, AI instantly became a strong option. Tashi has already proven to be a fertile female and great mother. AI would allow Tashi to breed before George is mature for breeding, while also serving to keep her as a healthy breeding female. It didn't take long for the Buffalo Zoo management to give us the approval to proceed with planning the AI procedure. Upon George's arrival, Tashi instantly began showing estrus behavior, which made the jobs of Monica and myself much easier. We continued to collect urine from Tashi daily and sent it to CREW. That way, we could match her hormone results with her behavior. With AI, there is a much



We had to train Tashi for the procedure, to occur at any time of the day or night. To do so, we did between 2 to 3 sessions a day with her in the chute, all at different times. The Buffalo Zoo got a new hydraulic gate put in the rhino chute just a couple months prior to the AI, so I started by getting her used to being restrained with the hydraulic gate. Then we desensitized her to the rectal and vaginal stimulation. We slowly increased the time in the chute, getting ready for about a 30-45 minute procedure. I have to thank Wendy Shaffstall and Randy Pairan at the Cincinnati Zoo for all their advice during the training period. They both gave great advice and were assets leading up to the AI. Monica and I agreed to do the AI procedure when Tashi was going to ovulate in mid-January 2013. Of course, Tashi wanted to re-write the record books and have the shortest recorded cycle for a GOH rhino, at 30 days. Both Monica and I thought this was just behavioral estrus and not true estrus, but after analyzing her urine results, we learned it really was Tashi's true estrus. We then planned on doing the procedure her next cycle, in February 2013. This was still a very short cycle at 34 days. Monica used sperm from Jimmy, a rhino that lived at the Cincinnati Zoo, but never bred. The sperm was collected and frozen in CREW's cyro-bio bank in 2004!

Tashi began showing estrus behavior around 3:00PM on February 24th. She slowed down with her behavior around noon the next day. We decided to begin the procedure at 3:00PM on February 25th, 24 hours after she began the estrus behavior. Monica performed the AI very smoothly, and did a rectal ultrasound to make sure the sperm was placed in the uterus. Less than a month later, her progesterone stayed high, and we knew she was pregnant. We continue to collect urine from Tashi to periodically send to CREW to make sure everything is going well. Tashi is also trained for both transrectal and transabdominal ultrasounds, so we can track the progress of the growing fetus.

I can't thank Dr. Monica Stoops, CREW, and the rhino staff at the Cincinnati Zoo enough for all of the research and work they have done over the years to make all of this possible. They have been the driving force behind Artificial Insemination with the GOH rhino. Monica was a great pleasure to work with during this process, and I have learned a great deal from her.

Keep your fingers crossed that Tashi has a healthy calf next June! Hopefully, this is yet another step in successful rhino conservation.

Photos courtesy of Jason Pootolal, African Lion Safari