Lindner Center for Conservation and Research of Endangered Wildlife • Cincinnati Zoo & Botanical Garden

CREW ReView

Successful Science with a Sad Outcome

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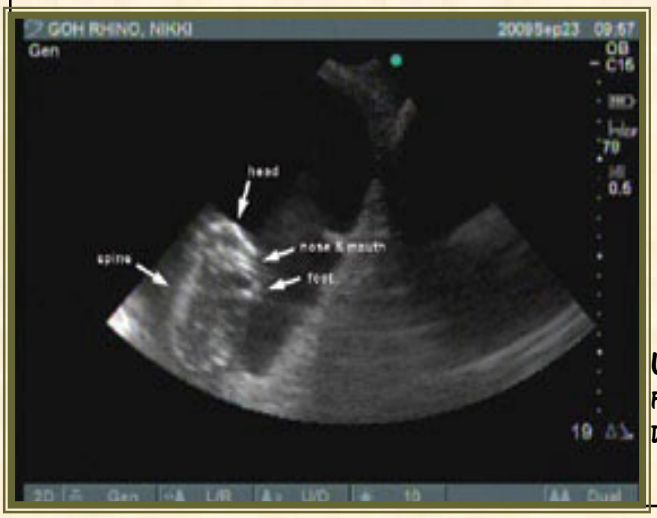
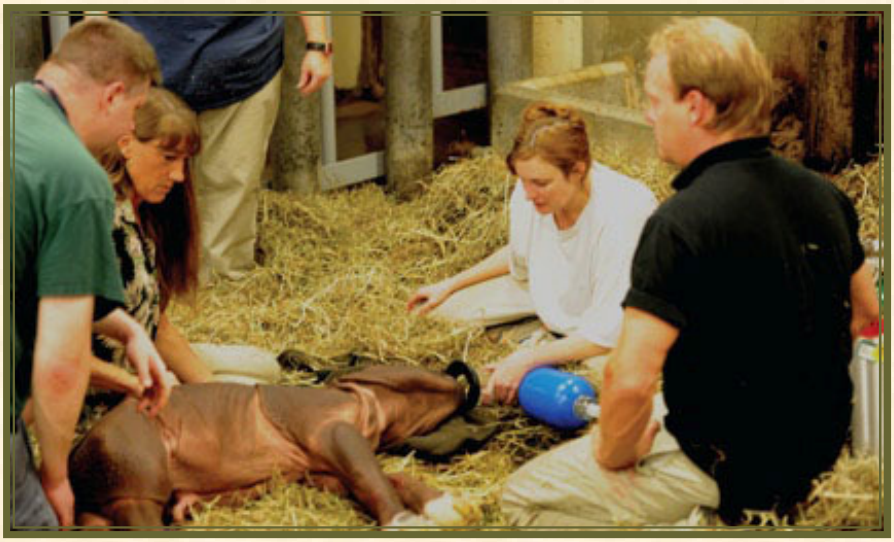
Nikki

On October 26th, 2010 the newest CREW baby entered the world at the Cincinnati Zoo & Botanical Garden, but not in the manner we had hoped. Indian Rhino, Nikki went into labor about 3:00 AM that Tuesday morning and our Zoo Volunteer Observers alerted staff exactly as they were trained to do. Staff arrived at CREW where they continued to monitor Nikki remotely by camera making certain there were no distractions in the barn that might delay delivery. The calf finally started to emerge at 5:51 AM and was delivered by 6:06 AM. However, the calf was not moving or breathing. By the time the calf was delivered, rhino keepers were at the barn and immediately separated Nikki from her calf so that the calf could be assessed. Just a flutter of a heartbeat could be felt, and the team immediately went to work resuscitating the newborn. As CPR was administered, the heartbeat became increasingly stronger. The staff simply refused to give up, and finally, after several injections of drugs from the veterinary team, the calf miraculously started to move ever so slightly. When the calf finally took an independent breath, the team cried out in joy, and spent the next few hours watching in awe as the calf made progress in baby steps. The next concern was getting nourishment into the calf's weakened body. Mother Nikki, true to form, cooperated beautifully while CREW staff and keepers collected milk into a bottle that could be offered to the calf until strong enough to stand and nurse on his own. Unfortunately, that moment was never to come as the little guy became less active throughout the afternoon, finally undergoing cardiac arrest at 7:15 PM from which no amount of drugs or heroic acts could bring him back.

Dr. Monica Stoops

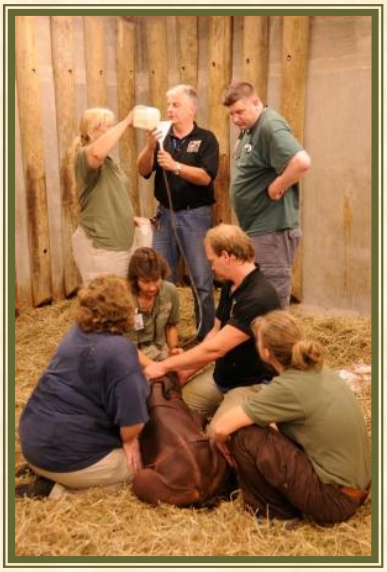


Ultrasound images of Nikkis fetus at day 90 of its 491 day gestation.



Staff relaxes slightly after 117lb male calf breathes on his own following resuscitation

As with all CREW babies, years of research went into bringing this Indian rhino calf into the world. However, we have all learned over the years that even when the science is successful, the final outcome is often out of our control. For CREW scientist Dr. Monica Stoops and her team, such an outcome has unfortunately now been experienced twice. Four years ago, Nikki was the first rhino in the world to become pregnant following artificial insemination (AI) with frozen-thawed sperm. Sadly in January 2009, after completing a full term pregnancy, Nikki delivered a stillborn calf. Approximately 50% of Indian rhinos that become first time mothers over the age of 10, such as Nikki, experience a stillbirth. Despite the devastating outcome, CREW scientists were optimistic Nikki would become pregnant by AI again, and that this subsequent pregnancy would end with a successful live birth. It was not long before Dr. Stoops and her team attempted to repeat the successful AI procedure they had developed. Despite the fact Nikki exhibited estrous cycles during the year following the stillbirth, ultrasound exams revealed Nikki was not successfully ovulating. Without an egg released into the reproductive tract, Nikki had no chance of getting pregnant.



Therefore, in January 2009, Nikki was treated with hormones in an attempt to induce ovulation. The trial was successful in triggering ovulation and was repeated in two subsequent estrous cycles. Artificial insemination procedures were performed in conjunction with some of these trials, but Nikki failed to conceive. Then, in June 2009, Dr. Stoops and her team decided to again allow Nikki to ovulate on her own without hormone injections. A single AI procedure was conducted on June 24, 2009 and one day later Dr. Stoops verified Nikki had successfully ovulated. An ultrasound exam conducted 18 days later confirmed the presence of an embryonic vesicle in Nikki's uterus. Everyone was elated that Nikki was pregnant again! Not only did Nikki's second pregnancy prove the science of artificial insemination developed by CREW scientists was repeatable, but it also proved the fertility of frozen-thawed sperm from a second male Indian rhino by the name of Vinu. In 2005, CREW scientists collected and cryopreserved sperm from Vinu at the Bronx Zoo. Vinu's sperm remained frozen at -320°F in CREW's CryoBioBank until it was thawed four years later and used to inseminate Nikki. Despite the sad outcome with the death of the calf, CREW's groundbreaking AI research represents an important and new step in managing captive Indian rhinos. By producing offspring from non- or under-represented individuals, CREW can help to ensure a genetically healthy captive population of Indian rhinos exists in the future. Furthermore, CREW has demonstrated that assisted reproduction can be used for genetically matching rhino pairs instead of moving rhinos across the country, a primary goal of CREW's National Leadership Grant from the federal Institute of Museum and Library Services (IMLS). Despite this heartwrenching loss, CREW's science is sound, and we will persevere in our mission: Saving Species With Science.

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