

RHINOCEROS SIGNATURE PROJECT

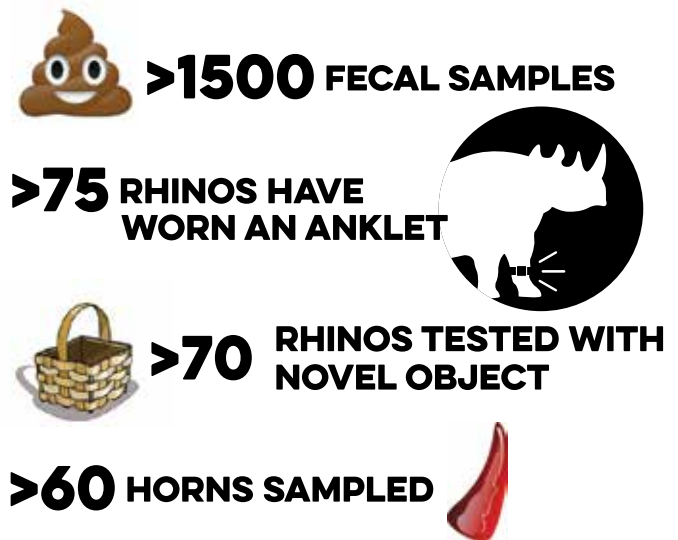
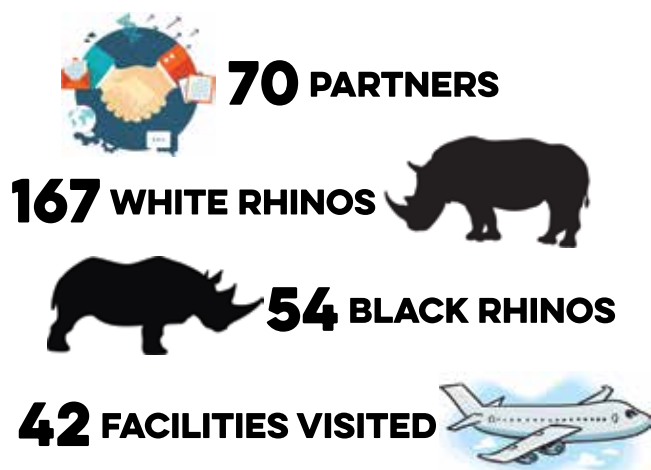


American Institute of Rhinoceros Science (AIRS):
A Model for Saving Species With Science *Ex Situ*



AIRS - by the Numbers

As the team completes its second year working on AIRS, we continue to be inspired by the outpouring of support from the rhino community. The numbers paint the story better than words. Below is a glimpse of our progress as we march towards our goal of producing science-based, affordable, and feasible management recommendations for monitoring and controlling physical condition, iron overload, and reproduction while ensuring optimal rhino wellbeing. (AIRS is made possible, in part, by the Institute of Museum and Library Services National Leadership Grant #MG-249011-OMS-21.)



AmeriCorps in Service to Rhinos - by the Numbers

CZBG recently expanded their AmeriCorps vision of service to encompass not only service to humans, but also service to the greater environment. Under that broader umbrella, CREW has been fortunate to have AmeriCorps service member Caitlin Consago working in service to conservation focusing on the AIRS project. Coming to CREW from Mississippi State University with a degree in Wildlife, Fisheries, and Aquaculture Science, Caitlin has provided much-needed support to not only the AIRS project but also the Polar Bear and Cat Signature Projects. In her service of **1700** hours at CREW this past year she has accrued some impressive numbers. She has processed over **2300** fecal samples(!), evaluated over **170** slides for sperm viability, acrosome integrity, and motility, and run close to **100** fecal hormone assays independently, generating valuable data for the AIRS project. In addition, Caitlin has been extremely helpful in managing our endocrine lab volunteers and Zoo Academy students for **950** hours of time. Although Caitlin's service has been very instrumental to CREW and AIRS, it has also been rewarding enough to her that she has agreed to join us for another year giving her **2** full AmeriCorps service years before heading to graduate school. We are very grateful to be a part of the AmeriCorps program, and the numbers speak for themselves about the impact the program has had through Caitlin.



Taking to the Air for AIRS

Greetings from Canada, eh! As I write this, I (Parker) am currently on the road for AIRS. Essential to the AIRS project is in-person data collection at almost every participating zoo during both winter and summer seasons. The three AIRS graduate students have certainly done their share of site visits, but with so many partners and rhinos participating in AIRS, more help was needed. Therefore, I stepped up to the task of covering zoos in California and Canada. In addition to being crucial to the project, these trips provide additional benefits beyond the data alone. They give us the chance to build relationships with the zoos and people that care for rhinos. Trip activities include morphometric measurements, bioimpedance readings, resting heart rate, activity tracking devices, behavior observations, nocturnal video recording, and a novel object test. Completing all of these tasks is challenging given the keepers' already busy daily schedules, but it is amazing to work alongside such committed caretakers who go above and beyond to help with this project. Behavior observations (ten 30-minute sessions on each rhino) are the most time-consuming, especially when a lot of rhinos are involved, and limit how quickly I can move from one zoo to the next. To reduce costs, I string as many zoos together regionally as possible which means long periods of time away from home at the Wilds. However, these AIRS trips have been an incredible experience. I have met some of the most dedicated keepers and wonderful rhinos in our care, and it helps to know that all of this effort is for them. *(AIRS is made possible, in part, by the Institute of Museum and Library Services National Leadership Grant #MG-249011-OMS-21.)*



What's Good for the Cat and Bear is Good for the Rhino, or is it?

CREW scientists have typically used electroejaculation (EEJ) to collect semen from rhinos, but urethral catheterization (UC) is often used in cats and always used in polar bears since EEJ is ineffective in the species. In recent years, UC has been gaining popularity in rhinos too. CREW scientists have begun to compare data on these two methodologies as part of their effort to determine the pros and cons of each. EEJ involves using specialized equipment and multiple trained personnel, whereas UC requires simple catheters and fewer people. Both procedures tend to be performed opportunistically when a rhino has been sedated for another procedure (e.g., physical exam, dental work, etc.). However, EEJ often stimulates body movements so it typically is performed after other procedures which can prolong the immobilization period. No body movement has been observed during UC, and the procedure takes no more than 10-15 minutes. Sperm collected via UC share a lot of the same characteristics as EEJ samples; total motility, concentration, pH, and osmolality are comparable, but the amount recovered via UC tends to be lower than that via EEJ which means fewer total sperm collected. Regardless, on several occasions, UC samples have contained enough sperm for cryopreservation and possibly even for artificial insemination. However, unlike most EEJ samples, almost all UC samples have been contaminated with urine, which is concerning as urine will affect the quality of sperm and survivability after freezing. Therefore, CREW scientists are now testing media supplements and processing techniques that may buffer the sperm from the deleterious effects of urine in UC samples in hopes of providing researchers and rhino caretakers an adequate alternative to EEJ for rhino semen collection. *(This project is made possible, in part, by the Institute of Museum and Library Services National Leadership Grant #MG-249011-OMS-21.)*



media supplements and processing techniques that may buffer the sperm from the deleterious effects of urine in UC samples in hopes of providing researchers and rhino caretakers an adequate alternative to EEJ for rhino semen collection. *(This project is made possible, in part, by the Institute of Museum and Library Services National Leadership Grant #MG-249011-OMS-21.)*