

The American Institute of Rhinoceros Science (AIRS) project has been in full swing for the past year, and it has been a labor of love for everyone involved. As we make the final push toward data and sample collection, we wanted to share some updates. For some background, the AIRS project started from the desire to understand our rhinos in managed care better. Several areas of interest had already been identified by the Rhino Research Council during Rhino TAG sessions in 2019. They include Physical Fitness, Wellbeing, Reproduction, and Iron Overload which we have dubbed the 'Pillars' of the AIRS project – each led by a team of experts in that area. We also know that nothing happens in a vacuum, so any questions, samples, and other data that we would request from the diverse facilities that manage rhinos would be intertwined. We understand that each facility is unique in its management styles and strategies and wanted to understand how that impacts rhino physiology. Ultimately, we want to produce science-based, affordable, and feasible management recommendations.



The next step was to ask any rhino holding facility in North America to participate. And **WOW** has the response been amazing. The kind of data we are collecting ranges from physical measurements of animals to behavior observations and novel object tests to monthly blood samples for one year (and even more if participating in reproductive monitoring) not to mention a comprehensive husbandry and temperament survey. Many of these also needed to be collected by an AIRS member – which means facilities not only need to train (likely) new behaviors but also prepare to have a new person involved.

Although we are still collecting data/samples, we can start to see the finish line for this phase of the project – and it is both overwhelming and humbling to see the amount of data we will have to analyze, completely thanks to the incredible efforts made by the rhino caretakers. So far, we have over 190 rhinos from over 60 institutions participating in AIRS. The Physical Fitness Pillar has either fully or partially validated 7 biomarkers in serum that will help us understand rhino metabolic health, collected measurements and heart rate data, and collected deuterated water samples from 34 rhinos. The Wellbeing Pillar has over 65 novel object tests and over 615 hours of behavioral observations. The Reproduction Pillar has hormone monitoring samples from 25 females so far, representing over 700 fecal samples and 125 serum samples. Iron Overload Pillar has analyzed mineral content from 22 rhinos and has been able to distinguish between species and sex using horn DNA. We are expecting even more samples - facilities have been joining over the past 15 months, so some have completed their AIRS participation while others still have a few to several months/activities to go.

As the samples come in and we start to generate data we will be able to compile an incredibly comprehensive dataset that could inform the way we manage rhinos.

It will also undoubtedly lead to new questions.



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