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

INSTITUTE of Museum and Library SERVICES

When a Small Sample Size is Good News



Photo by: Grahm S. Jones, Columbus Zoo and Aquarium

By definition, endangered species are rare, so scientists studying them are constantly plagued by small sample sizes that limit the power of their data. CREW's rhino scientists recently encountered that exact "problem" while analyzing hormone data as part of the AIRS project. One of the AIRS priorities was to identify factors causing reproductive dysfunction in rhinos, especially white rhinos that have a history of poor reproductive performance. However, our data revealed that all female black rhinos and ~75% of the white rhinos in our study were reproductively active, including 20 white rhinos that were even pregnant during AIRS. These findings are great news for the rhino community! Most female rhinos are contributing calves to the next generation which is essential for population sustainability. Although the small number of reproductively inactive females made it challenging to answer questions about dysfunction, we did identify just enough to address one potential concern. Hyperprolactinemia, a condition characterized by high serum prolactin concentrations, is associated with reproductive quiescence in elephants, and we wanted to know if this disorder also occurs in reproductively inactive female white rhinos. Despite the small sample size, AIRS data conclusively ruled it out. In fact, reproductively active white rhinos produce slightly higher prolactin concentrations than quiescent females, so hyperprolactinemia is one condition we probably don't need to worry about in rhinos. *This project was funded, in part, by the Institute of Museum and Library Services National Leadership Grant #MG-249011-OMS-21.*

The Rhino Horn–Human Health Disconnect



The world's wild rhinos continue to fight for survival as poaching ensues despite substantial efforts by conservationists and law enforcement to counter such threats. This crisis is fueled by the exorbitant price paid for rhino horn that is often consumed for its putative medicinal qualities. One of AIRS' studies focused on quantifying minerals in rhino horns as an indirect measure of liver concentrations. Our interest was driven by the challenges of monitoring iron overload disorder in susceptible black and Sumatran rhinos. Although our results revealed that only arsenic and selenium (not iron) concentrations in horn are correlated to those in livers, there was a very beneficial by-product of our research. We found that the numerous minerals we measured in horn keratin were present in such low concentrations that they could not possibly provide any human health benefits if ingested in feasibly consumable quantities. Furthermore, horn products are often illegal and unregulated, so the environmental contamination we documented in horn is likely adding risk to an otherwise ineffective "medicine". Humans are better off simply taking a daily vitamin/mineral supplement that is inexpensive, readily available, and safe. Although scientific data about its composition is unlikely to stop rhino horn demand, even a slight reduction in the illegal market would be a welcomed reprieve from the current merciless slaughter of wild rhinos. *This project was funded, in part, by the Institute of Museum and Library Services National Leadership Grant #MG-249011-OMS-21.*