

(40) INTENSIVE MANAGEMENT OF AN ENDANGERED SPECIES: LONG-TERM EFFECTS OF CHEMICAL IMMOBILIZATION AND DEHORNING ON HEALTH AND REPRODUCTION IN A DISCRETE POPULATION OF BLACK RHINOCEROS IN ZIMBABWE

MICHAEL D KOCK^{1,3} AND MARK W ATKINSON^{1,2}

¹Formerly: Veterinary Unit, Department of National Parks and Wild Life Management (DNPWLM), PO Box CY140, Causeway, Harare, Zimbabwe

²Currently: The Wilds, 1400 International Road, Cumberland, Ohio 43732 USA

³From January 1, 1997: Department of Animal Health and Production, Gaborone, Botswana

Abstract: With current concerns for animal welfare and the effects of various management and research interventions on wild animals there is a need to document the effects (short and long term) of these interventions. Negative effects can range from short- to long-term stress, traumatic lesions, disease introduction or increased susceptibility to existing disease, reduction in reproductive potential and increased susceptibility to, for example, predation. On the other hand, in many instances management and research interventions can result in significantly positive impacts on the health and survival of wild animal populations, aside from valuable behavioral and biological data that may be collected. Ultimately, if these impacts are overwhelmingly negative then it would be inappropriate to continue and alternative methods of capture for marking or collection of biological data, or reducing the incentive for illegal hunting, for example black rhino dehorning, would need to be identified.

In the Sinamatella Intensive Protection Zone (IPZ), Hwange National Park, Zimbabwe, black rhinos (*Diceros bicornis*) were first dehorned in 1992 as part of a conservation management program to reduce the incentive to illegal hunters. Since 1992 this population has had management and research interventions on at least 4 occasions, involving the use of chemical immobilization followed by either dehorning or the attachment of radiocollars. The last such intervention was in December 1995. As part of an adaptive management program considerable data has been collected on this population with regards to morbidity and mortality, reproduction and the long-term effects of repeated chemical immobilization using opioids on black rhino's health and survival.

The population of black rhinos in the Sinamatella IPZ was estimated to be >60 animals in 1992, following operations in 1994 and 1995 the current population is estimated at >65. During the early part of 1993, with severe budgetary cuts within the DNPWLM and, therefore, a severe reduction in law enforcement effort coupled with at least 18 months of horn regrowth over 80 white rhinos and an estimated 8-10 black rhinos specifically from the Sinamatella population were presumed to have been poached. Despite this initial setback in population numbers following the dehorning program (this program has subsequently been a success following improved law enforcement), the total number of black rhinos lost during management interventions is 1 animal (from an estimated population of 60, indirect mortality rate = 1.6%). This 1 mortality occurred 12-24 hours after immobilization and recovery (the animal was estimated to be >35 years old indicating that he was a high risk animal). Greater than 140 individual immobilizations have been carried out on the Sinamatella population since 1992. Despite some black rhinos being immobilized 6 times over a 4-year period there have been no known deaths directly related to chemical immobilization. During this period over 17 calves have been born to the population and confirmed to be alive and well in December 1995.

In addition, related to dehorning there is evidence that this conservation measure reduces the estimated 30%-40% mortality related to interspecific fighting in black rhinos. Based on both biological (blood health evaluation) and body condition scoring coupled with reproductive success, chemical immobilization, dehorning and radiocollaring appear to have had a minimal impact on the long-term survival of this

population. Key factors in reducing the impact include efficient monitoring and, therefore, documentation (both ground and aerial through radiotracking and, the positive identification of all animals in the population through passive implantable transponders, ear notches or spoor patterns), early detection of any health problems and mortalities, and ensuring that management interventions are carried out to the highest professional standards.