
with many interesting comparisons with the recent rhinos (*Les Rhinoceros du Miocene terminal au Pleistocene superieur en Europe occidentale*, 1980). Alain Zecchini works as a scientific journalist specialising in nature and wild animals. I am one of those people who starts reading a book at the end. Here one notices the absence of an index, but a reasonably comprehensive and up-to-date bibliography, unformatted, with one hundred titles in English as well as French. The text itself is indeed comprehensive, consisting of many short chapters on different subjects, including systematics, morphology, social structure, role in the ecosystem, interspecific relations, interactions with man, the recuperation of the white rhinoceros, trade and even a special chapter on the Bhutanese princess who was arrested in Taiwan in 1993 with 22 rhino horns in her luggage. It is refreshing to find the book arranged by subject matter than in the traditional species oriented approach. Zecchini did not intend to present new facts or new insights, but he has achieved a remarkably readable and well-researched overview of the biology and conservation of five recent species of rhinoceros. Following the French tradition of publishing, the book is a paperback, with well reproduced but uninteresting illustrations all combined on eight plates, and with rather unimaginative computer typesetting. Zecchini's text is a welcome addition to the rhinoceros literature as it introduces animals to a wide public in francophone countries.

THE AFRICAN ELEPHANT AS A GAME RANCH ANIMAL

Proceedings of a symposium, 29-30 April 1991

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This publication is a re-edited version of the 1991 symposium, part of a series that pulls together a

wealth of information from wildlife scientists and managers from southern Africa. This well executed series contains much new information presented by professionals directly from their own research and observations. Other titles that would interest wildlife managers are on buffaloes, sable antelopes, cheetahs, lions and leopards. Of particular interest to the readers of *Pachyderm* would be the proceedings of the 1994 symposium, "Rhinos as Game Ranch Animals". The entire series is a necessary component of every wildlife manager's library.

The elephant book starts with a historical perspective of the elephant in southern Africa, population numbers, ranges and elephant's relationship with man. Several chapters discuss elephant habitats, the positive and negative effects of elephants on their ecosystem and how these factors affect the creation of elephant sanctuaries. There are guidelines for determining minimum space requirements, minimum group size, herd structure and minimum facilities needed to create new elephant populations. Advantages and disadvantages of placing elephants on game ranches are discussed.

Two chapters contain a discussion of the hardware necessary for electric fencing and boma construction. The fencing, boma and ecosystem chapters will assist those who wish to maintain elephants in enclosed or semi enclosed areas as well as those wishing to exclude elephants.

Certain articles such as those regarding capturing, culling, and hunting of elephants will inflame some individuals involved in the elephant debate. However the writers are cognizant of the controversies which surround their topics and present the information as they should; as professionals who have grown up and lived with elephants. They are aggressively exploring all the options that man has in order to live in harmony with elephants. Their experiences should be taken into account.

A collection of physiology and veterinary topics are presented including: 1) health conditions during capture and boma operations (a summary of 761 individuals), 2) blood values of elephants under a variety of anaesthetic regimens, 3) digestive physiology, 4) post mortem protocols, and 5) infectious diseases (or the lack thereof except for anthrax). All together this impressive collection represents direct measure-

ments from well over 1,000 African elephants. Occasionally important omissions can be found where supporting information or references are lacking, citations are incomplete, and statistical comparisons would be useful.

One subject that is not addressed is research into the psychological well being and possible behavioural changes of elephants that are subjected to: conflicts with man, translocation or culling. The family structure of the elephant is well documented and disturbance of that may have long lasting effects. An Africa-wide retrospective study of the behaviour of elephant populations that have been modified by man certainly needs to be done.

The principal flaw in the book is its age. It defines the state of the art in 1991. As the world debate about elephants is so active, information quickly becomes dated. The chapter regarding legal and ethical aspects was written prior to the 1992 CITES conference. The re-edit of 1995 does not sufficiently compensate for the 4 years that transpired. Several other excellent works on elephants were published during that time and they have not been included (see below). The legal, ethical, and CITES issues have continued to evolve. This problem defines one of the rules of science; publish worthwhile results, then promote the publication.

Capture techniques have improved greatly. One article states that only animals up to a maximum

shoulder height of 2 m could be successfully moved. Eight years later successful translocations have been performed with fully grown males. (An indication of how fast this science is growing.) Considering the book's age a serious caution must be issued against quoting it directly. In the fast moving and opinion-laced world of the elephant, new information must be continuously sought before decisions are made.

As with each volume of this series an impressive bibliography has been assembled; these enrich the value of the books. In the elephant's case 1,212 references have been compiled and cross indexed by subject. All student of elephants should have access to this bibliography. Regardless of the age factor of this publication it should be included in the reading list of any serious elephant manager or researcher.

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