



## Chemical and Physical Restraint of Wild Animals

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# BOOK REVIEW

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**Chemical and Physical Restraint of Wild Animals.** Edited by Michael D. Kock, David Meltzer, and Richard Burroughs. International Wildlife Veterinary Services (Africa), Greyton 7233, South Africa. 2006. 292 pp. ISBN 0-620-358-11-4.

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*Review by Terry J. Kreeger*

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This is a training and field manual arising from several years of courses taught by the Zimbabwe Veterinary Association Wildlife Group. Potential readers should be advised that the text is specifically oriented toward southern African species. Nonetheless, probably three-fourths of this book provides useful, general information applicable to anyone engaged in animal capture anywhere in the world.

The book begins with a discussion of legal considerations of drug acquisition and use. This discussion appears to be limited to Zimbabwe regulations with one page reflecting the South African Veterinary Council's policy on the use of immobilizing agents, reflecting the regional orientation of the text.

There are good reviews of basic pharmacology and physiology to enhance understanding of the events that take place in a physically or chemically captured animal. Some of the illustrations in this area appear to have been cut and pasted from other sources and the volume would have been improved by creating these illustrations anew, specifically to match the text and layout. Still, there is a lot of good information to provide a level of understanding of how drugs work. The calculation of drug doses is well covered with many examples provided.

Following these basics, a discussion of applied pharmacology ensues. Specific drugs are discussed, including their formulations and pharmacology. This discussion should be read with care, as there is much good and important information undoubtedly amassed from years of experience in the immobilization of African species. This chapter ends with a useful table, classifying groups of drugs with their generic and their trade names. There is also a good

and necessary chapter on stress and capture-related mortality. There is particular emphasis on hyperthermia, capture myopathy, and aspiration, with an excellent table on the "eleven commandments" to prevent and reduce stress.

The next chapter covers primarily human safety concerns, including firearm safety, drug exposure, and helicopter use. Although relatively few people worldwide use helicopters in the capture of wildlife, it is still perhaps the most dangerous exercise undertaken by veterinarians and biologists and thus the discussion is valuable. This helicopter safety discussion is also well illustrated. Regarding drug safety, there is a good general discussion on first-aid techniques followed by actions to take for specific drug exposure.

The section covering principles of chemical and physical restraint also requires close scrutiny because of the tremendous amount of practical advice. The pen and ink illustrations demonstrating injection sites for a variety of species are particularly good.

For those already experienced with animal capture, the chapter on individual species is perhaps the most valuable aspect of this book. This section boasts excellent illustrations with useful information on weight, habitat, behavior, reproduction, disease issues, equipment and techniques. Most species are given individual tables, broken down into sex and sometimes age, with recommended drugs and drug combinations. This section also benefits from little illustrations that draw the reader's eye to important facts about the drug or the species. There is a wealth of information in this section to be gleaned by the reader. Anybody dealing with these species would be well advised to read this section carefully.

Following the section on individual species there is a well illustrated and annotated discussion on equipment. Although I disagree with some of the authors' opinions and statements in this book, it is just that: a disagreement of opinion. However, in the section discussing dart impact energies, the authors make a common factual mistake in calculating kinetic energy. In table 10.2, they calculate the kinetic energy of a variety of dart weights, but forget to factor in gravitational

acceleration (32.174 ft/sec/sec). Failure to do so results in truly outstanding energies delivered by capture darts, ranging up to 4,010 foot pounds of energy. This is greater than the kinetic energy delivered by a Winchester 300 Magnum! Obviously, if darts were capable of delivering this kind of energy, every dart would penetrate the animal and most likely kill it. In fact, darts develop kinetic energies in the range of 10-30 foot-pounds. Oh well, math was not my strong suit either.

The book finishes with an overview of physical capture methods, transport of wild animals, and live game auctions. This discussion is probably more applicable to life in southern Africa, but, still, there are bits of information that are applicable on a broader scale.

This book was printed in China, entirely in four color on coated stock, typifying the excellent printing industry developing in that

country. This allows high-quality books to be produced at an affordable price. The book contains a wealth of practical and useful information regarding the chemical and physical capture of southern African species. If anything, it suffers from a lack of close editing, demonstrated by the numerous typographical errors and inconsistent layouts, but these are truly minor faults. This book is an absolute necessity for anyone working in Africa or zoo veterinarians responsible for African species in their collections. It would certainly be a valuable adjunct to anyone engaged in the capture of wildlife anywhere in the world, because there is something here for everyone.

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