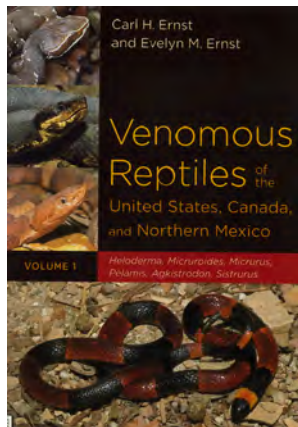


## Book Reviews

### *Venomous Reptiles of the United States, Canada, and Northern Mexico Volume 1: Heloderma, Micruroides, Micrurus, Pelamias, Agkistrodon, Sistrurus*

Carl H. Ernst and Evelyn M. Ernst

John Hopkins University Press, 392 pp



The stated aims of this book are threefold: to present as much current knowledge as possible about the biology and life history of these animals while indicating areas that require further research; to discuss reptilian venom in detail and finally to enhance understanding of venomous reptiles (and thereby their conservation) by providing a ‘balanced picture’ of their lives. This, the first of two volumes, covers both species of helodermatid lizard, all of the elapid species (including the single species of seasnake) in this geographic region and the vipers belonging to the genera *Agkistrodon* and *Sistrurus*. The genus *Crotalus* will be featured in the second volume, completing a comprehensive guide to all the strictly (dangerous to humans) species to be found in these regions. Note that other (Colubrid) species, such as the hog-nosed or ring-necked snakes that have been implicated in envenomations are not covered here. The book is split into three sections; the first dealing in great detail with venom, envenomation and treatment followed by the conservation section and then, for the bulk of the book, the species accounts.

The venom section starts with a clear and simple broad description of the types of venom to be discussed. After being gently ushered into the subject we then get thrown in at the deep end as the non-technical aspect (as we are warned in the preface!) of the book is replaced by the necessarily more technical discussion of the different categories of toxic venom and their components. While much useful information is gathered here it is quite difficult to find amongst the reams of chemical names and symbols. The section closes with an interesting review of the medical uses, both actual and potential, of reptile venoms.

The following section, on envenomation’s, sets out a few statistics regarding fatalities caused by reptile venoms in the US and shows surprisingly few from an area with a large amount of people and quite a few venomous species. The Mexican picture is less clear as not all the venomous species from the country are included here. What these Fig.s really show is the absolute necessity of medical treatment and the need to make it rapidly accessible to keep these Fig.s low – compare with the amount of snakebite fatalities in countries such as India - on average less than 10 per year in N. America compared with an estimation of almost 11,000 in India (Kasturiratne et al., 2008). Even given the difference in population size of these countries there is a staggering increase in percentage of bites that are reported as fatal. Again, though I thought that the book could be more user friendly with perhaps tables or graphs comparing snakebite statistics from different parts of the world.

The ‘Treatment of envenomation’ section is very interesting and highlights not only the do’s and don’ts of reptile bite first aid, but also the global shortage and the different types of anti-

venom, along with the problems of developing new products. The section closes with a brief look at the use of plants to treat snakebite in historical and current practice and how there is still the prospect of gaining some knowledge from these traditional uses of plants.

The conservation chapter is relatively brief and covers the expected subjects – the threats and declines faced by these species and some possible broad conservation strategies to counter them. Levels of protection for the species covered by this book are given in table form and I can't help thinking that the paragraph (page 48) highlighting the varying levels of vulnerability of the species would have benefitted from similar treatment. As with comments on previous sections I do not mean to imply that the information is lacking in any way, just difficult to digest in the form in which it is presented.

Following this are the species accounts which are incredibly detailed and cover everything you are likely to need to know about the species concerned. Subjects covered include the obvious such as recognition, distribution, habitat, behaviour and ecology, as well as comprehensive information on karyotype (when known), venom and bites, parasites and pathogens, reproduction, and much more. There is an incredible level of detail here. The discussion of solenoglyphous dentition, and the ligament and muscle function associated with this unique mode of predation is incredibly detailed, as are many other sections: reproduction in cottonmouths, male combat in gila monsters etc. There are keys to the genera of each family covered, distribution maps, some very good black and white photos, as well as some slightly disappointing colour plates. The bibliography is huge, taking up 90 pages, and very much up-to-date.

However, I feel that this very impressive piece of work is marred somewhat by the way in which the information is presented. The amount of detail and quality of information is certainly more than sufficient but it is not always that easy to find. At times the text becomes an impenetrable list, which, when mixed with the citations makes for heavy going. This is a shame as there is some great writing here, with a welcome dash of humour in places. I was very taken with the description of *Sistrurus*

*miliarius* as 'a nasty little snake with a fiery temper!' and the closing remarks of the gila monster species account, dealing with some of the myths surrounding the species, are hilarious!

This is not a book for a casual reader and certainly requires some prior knowledge of subjects such as sexual cycles (spermiogenesis, recrudescence etc.), snake bone structure and indeed chemistry if one is to fully grasp the sections on venom and the chemical processes involved in venom delivery. Even though rattlesnakes and helodermitid lizards are covered elsewhere in very good publications it is refreshing to see the *Agkistrodon* species given such thorough coverage and it becomes apparent that some of the coral snake species are comparatively little known.

Putting small criticisms aside I fully support the concept behind this well researched book, that the conservation of these species is dependent on gaining as much information as possible and that globally, education is one of the key elements in helping us conserve reptiles and in particular venomous species. This book will certainly help greatly on both counts.

#### REFERENCE

- Kasturiratne, A., Wickremasinghe, A.R., de Silva, N., Gunawardena, N.K., Pathmeswaran, A., Premaratna, R., Savioli, L., Lalloo, D.G. and Silva H.J. (2008). Estimating the global burden of snakebite: A literature analysis and modelling based on regional estimates of envenoming and deaths. *PLoS Med* 5 (11): e218, doi:10.1371/journal.pmed.0050218

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