



Venomous Reptiles of the United States, Canada and Northern Mexico. Volume I: *Heloderma, Micruroides, Micrurus, Pelamias, Agkistrodon, Sistrurus*. Carl H. Ernst and Evelyn M. Ernst. The Johns Hopkins University Press, 2715 North Charles Street, Baltimore, Maryland 21218-4363. 2011. xviii + 352 pp. Price: US\$ 75.00.

People generally talk of ‘poisonous’ snakes but snakes actually are venomous, not poisonous. Venoms are injected, poisons are ingested. In the Tarzan tale the medicine man would have lived happily had he not had any bad gums. Snake venom consists of proteins and can in principle be digested!! The title told me this book was clearly scientifically correct and one could expect much from it, although the very colourful cover seemed to suggest a coffee table book. Not that I have anything against coffee table books but in general they tend to trade substance for form and colour. This book however belongs to both homes and libraries and is as much coffee table as reference material.

Despite not being by any means a quick referencing tool, it is a valuable mine of information reflecting considerable effort on the part of its authors, and should be of great interest to herpetologists and ecologists, while bridging the gap over to biochemists and medical practitioners. Given the potential for venom research in the pharmaceutical industry, books like these are particularly essential to these people.

This book provides a great deal of useful information on venoms as well. The large quantity of it may, in some cases, seem unnecessary, but this surfeit also makes it such that it has some thing for every one. Venoms in animals evolved as

a means to capture prey. I was gratified to see the authors affirming that venoms are only incidentally for defense. One can see this in the manner in which venoms have evolved containing components that immobilize and digest tissue of prey species. Clearly prey species come first and predatory tools sometimes are useful as defense.

Venom is so specialized that the story of its evolution also must be quite as unusual. Organisms must not just manufacture specific toxins but also develop specific machinery for their storage and delivery. Snake venoms are modified saliva produced in special glands of venomous species of snakes. The venom gland itself is a modification of the parotid found in lizards and frogs and venom is stored and sent via a duct to fangs through which it is ejected. Snake venoms consist of proteins that are neurotoxic, cytotoxic and anticoagulants. It is the neurotoxic components that act fast and cause paralysis and in many cases death. The neuroactive ingredient commonly found in snake venoms, alpha-neurotoxin, works by blocking the nicotinic acetylcholine receptor on muscle cells, paralysing and ultimately killing the victim.

The detailed write up on venoms for each species makes this book useful both to herpetologists studying venomous reptiles, and to researchers interested in the properties of, and medicine surrounding venom itself. The bibliography provided at the end is formidable, and the species accounts extremely well-written, with an excellent synthesis of available literature for each species. However, given the book’s theme of venoms, it would have been useful to have an index of venoms to go with the index of common and scientific names. An index of such a sort would have made the book much easier to use in case of quick referencing of venom components and envenomation symptoms. Currently, one’s best hope is to look through each of the species’ accounts, which could be tedious. The initial chapters alleviate this a bit by collecting some of this information, but an index would be preferable.

The use of medical anecdotes and case studies to illustrate the effects of envenomation is particularly effective, both as a means of communicating the targets of venom components, as well as being an instructive tool for medical practitioners specializing in venom. The sections on

venom delivery are particularly detailed, and provide enough information for one to perform quantitative comparisons across species simply using all the material contained herein.

My experience early in North America suggested that it had no snakes other than harmless grass snakes. Later with my friend Danny Brower I got to go looking for Gila monsters in Arizona and saw perhaps a couple of rattlesnakes but not many. This book hence surprised me with the number of venomous animals in the US, Canada and North America and I eagerly wait to see the second volume which will exclusively cover rattlesnakes found in US and Canada. India and in particular Kerala always come to mind when one thinks of snakes – it is not without reason they say that this region has a ‘foot of snake every inch of its soil’. They have many a *Sarpakkavu* where snake idols are worshipped and a substantial part of Ayurveda deals with *Vishachikitsa* or treating envenomation. Hence it is rather surprising that we have very few good books on snakes in India. There is, of course, the excellent pictorial guide by Rom Whittaker with Ashok Captaion and a scholarly volume by J. C. Daniels. However, it is past time for a detailed monograph on the biology of India’s herpetofauna. It is even more imperative since there are many species yet to be discovered and good taxonomists in general are becoming an endangered species.

The need for conservation and ecological knowledge of venomous fauna goes hand-in-hand with the potential for medical discoveries from venom, and this is something that can only begin at the level of reversing the unfortunate prejudices many people hold against snakes (India being no exception). A good book like this can be of invaluable help in such an endeavour. Hopefully this will stimulate more books like it, covering more neglected venomous taxa.

K. S. KRISHNAN

*National Centre for Biological Sciences,
University of Agricultural Sciences,
GKVK Campus,
Bangalore 560 065, India
e-mail: ksk@ncbs.res.in*