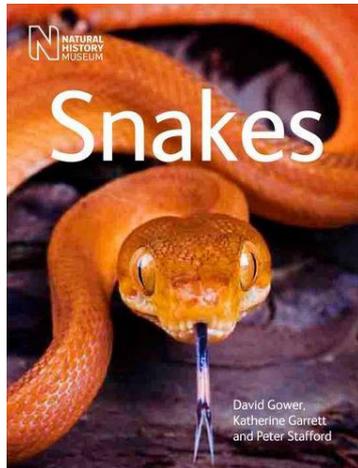


Snakes

David Gower, Katherine Garret & Peter Stafford 2012.

Natural History Museum, London, 144 pp.



On acquiring 'Snakes' I was pleasantly surprised by the expertly taken photo of the vivid orange South American tree boa (*Corallus hortulanus*) on the front cover. This stunning picture combined with a read through the preface and authors section, highlights how professionally this book is written.

Snakes is divided into three parts, where only part one and three are divided into appropriate subsections and only these will be explained in any detail. Part two 'The evolutionary tree and classification of snakes' is only four pages long; however it is not an insignificant part of the book - it holds useful information on the phylogenetics of the various snake families. The book is peppered with grey 'boxed' texts, which contain snippets of information on a variety of subjects.

Part one 'Structure and lifestyle' is divided into eight sub-sections, which are further subdivided; however, due to the amount of information, I will pluck out the more interesting ones for this review.

Although brief 'The origins and fossil record of snakes' will give the reader an introduction into the main environmental hypothesis that promoted the modern day snake anatomy, which is coupled with information on prehistoric snakes.

The generalised structure of the modern day snake, is explained in 'the anatomy' section; page 11 holds a detailed annotated drawing of a male snake, showing the typical organ layout which is a consequence of the evolutionary elongation of the body. This diagram couples extremely well with the detailed information provided. The more striking alteration produced by the elongation of the body, is the reduction or complete loss of the left lung and the possible addition of the tracheal lung as compensation. Information and diagrams on pages 12 to 14 provide a beginners guide to skull structure and dentition. Particularly informative is the illustration on types of dentition, with sketches showing the variety of biting mechanisms and teeth arrangement in venomous and non-venomous snakes.

The 'boxed text' on page 16 highlight the horrifying numbers of snakes that are used by humans, particularly for consumption/medicinal use. For instance in China alone 7 to 9 million kilograms of snakes are harvested annually. Other major threats mentioned include the pet trade and fashion industry.

The 'feeding and diet' section encapsulates the varying feeding mechanisms of snakes; however, the gem of information is the different diets, which portrays the more obscure dietary habits. For example, adult striped swamp snakes (*Regina alleni*) feed exclusively on crayfish, whereas juveniles feed on dragonfly nymphs and shrimp.

In 'reproduction' the generalised events that occur during courtship and the strategies that increase the chances of paternity are described. For instance, in many promiscuous species, males will produce a 'copulatory plug' to prevent insemination by rival males. It is finalised with 'eggs and hatching', which introduces the reader to the importance of temperature regulation and the strategies undertaken by various oviparous and viviparous

species to produce a fine balance for successful embryo development.

Part three is clearly the largest and covers snake diversity. As one would assume the families Boidae and Pythonidae, Viperidae, Elapidae, and Colubridae dominate. Due to the amount of information, I will only mention snippets from these families, leaving the rest to be discovered by the reader. Particularly interesting is the 'behavioural secrets of the water python' that describes the exceptional adaptability of the Australian water python (*Liasis fuscus*), which is able to mirror its dietary requirements to the season and prey abundance, such as rats during the dry season and water birds and eggs in the wet season. This strategy maximises its survival in the harsh and variable billabong environment.

The 'True vipers' section, projects the family's global importance, and is nicely represented by *Vipera berus* (adder). The adder is the most successful terrestrial living species of snake, inhabiting a geographical range from the British Isles, throughout Eurasia, and east to the Pacific Ocean. The adder has a considerable colour dimorphism, illustrated by the three brilliant pictures on page 82.

The authors delve into great detail and obscurities in the section on the marine elapids, focusing mostly on the physiological modifications of these unusual snakes. Examples of sea snake evolutionary changes are highlighted in the olive sea snake (*Aipysurus laevis*) that has light sensitive cells (photoreceptors) within their tail, to ensure that they are not exposed during the day. Furthermore,

an attribute common to all sea snake species is that they shed more frequently (2-6 week intervals), to possibly keep their skin barnacle and parasite free. The section on egg eating snakes describes the similarities and differences in egg eating strategies between the African egg eating snakes (*Dasypeltis*), and other egg eating species from around the world.

Some of the smaller, more obscure groups and families are not overlooked, for instance the group Scolecophidia (thread, worm and blind snakes), with their lack of or reduced dentition and their unique skull structure. The families in this major order may look insignificant; however, they have representatives of the smallest snake (*Tetracheilostoma carlae*), which grows to a maximum of 10 cm, and one of the very few parthenogenetic species (*Ramphotyphlops braminus*). The section on Texas thread snakes (*Rena dulcis*) describes its role as a parasite regulator in the nest of screech owls (page 45).

Overall *Snakes* is a brilliant read from start to finish and will captivate anyone who has a latent interest in snakes. David Gower, Katherine Garret & Peter Stafford have put together a magnificent piece of work that holds a plethora of balanced information, coupled with high quality photographs and annotated drawings.

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