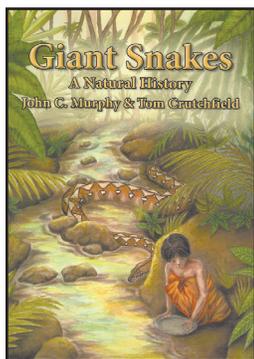


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Giant Snakes: A Natural History

John C. Murphy and Tom Crutchfield. 2019. Book Services, US (available from Amazon.com). xvi + 346 pp. Hardcover and Paperback. US \$ 59.95/38.95. ISBN: 978-1-64516-233-9 (Hardcover), ISBN: 978-1-64516-232-2 (Paperback).



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Giant Snakes fascinate us, and by us I don't just mean herpetologists. They fascinate the general public, and movies about snakes that are so large they might be able to swallow someone whole have been

considerable box office successes. According to Wikipedia, *Anaconda* (1997) cost \$45 million to make and grossed \$136.8 million

worldwide. Now I am no movie buff, but that seems like a healthy profit to me. I should definitely have invoiced Columbia Tristar for more when they hired me to talk about anacondas on British chat shows in the run-up to its release.

I am inclined to think that the public's fear and, by default, also its fascination, for giant snakes is different from that felt for other man-eating predators, the tigers, lions, bears, crocodiles and sharks, the big difference being that giant pythons (as far as I am aware, no anaconda has been confirmed as having eaten a human) devour their victims whole. They are not reduced to easily swallowable mouthfuls of dehumanized meat—what goes down the python's throat is still recognizably human. And when such snakes are killed and opened up, their guilt is writ large; there are no anonymous body parts, but an entire clothed member of our own species.

I am certain that the idea that there are snakes that can swallow a human whole is what will initially draw some general readers to *Giant Snakes: A Natural History*, and the authors have not missed a trick. The cover illustration is of a young Asian girl washing dishes (or panning for gold?) in a tropical stream, seemingly unaware of the sly Reticulated Python that is approaching from behind. You just want to shout, in the old English pantomime tradition "It's behind you!" And this theme continues. Chapter 1, Anxiety, Vision, and Snakes, is headed by a color version of a familiar old print, a python constricting a turbaned man in a small boat. It then plunges in and tells the tragic story of 54-year-old Wa Tiba of Sulawesi, Indonesia, and how she succumbed to the fate I have mentioned above.

Giant Snakes: A Natural History does indeed investigate the capabilities of large snakes to consume humans, but having hooked the reader with the possibility of some gory details, it goes on to immerse them in science. This is not John Murphy's first book on giant snakes; over 20 years ago he co-authored *Tales of Giant Snakes: A Historical Natural History of Anacondas and Pythons* (Henderson and Murphy 1997).

Chapter 2, Size and Shape, explains how snakes in different environments, with different ecological requirements, vary in their shapes and sizes. In the section on Sexual Size Dimorphism, I discovered something that answered a question of mine. We accept that female boas and pythons usually grew larger than their male counterparts, something that makes perfect sense given their large potential clutch or litter sizes. The authors explain that the Scrub Python (*Simalia kinghorni*) reverses this trend, the male being much larger than the female. This interested me a great deal because we maintain a pair of sibling Amethystine Pythons (*S. amethystina*) at the West Midland Safari Park. The female is 2.5 m and the male is 3.9 m in total length. He truly dwarfs her, so this reversed trend may be a more common pattern in the genus *Simalia*, but this observation leaves me wondering why! The chapter also includes interesting discussions of gigantism—how it occurs and what conditions it requires, including 13-m *Titanoboa*, probably the largest snake that ever lived, and Pritchard's Rule, which states that the maximum size of an adult will be 1.5–2.5 times the minimum adult size of the smallest mature female (presumably the smallest mature male in *Simalia*).

The authors have drawn from books by Clifford Pope, Colonel Percy Fawcett, and others as they searched the earlier literature for evidence of giant snakes. They consider the true giants to be those species that may exceed 6.1 m, and their list includes six species: Green Anaconda (*Eunectes murinus*), Reticulated Python (*Malayopython reticulatus*), North African Python (*Python sebae*), South African Python (*P. natalensis*), Burmese Python (*P. bivittatus*), and

the aforementioned Australian Scrub Python. Apart from the fact I would call the two African species the Central and Southern African Pythons respectively, I cannot disagree with this list. A second list of six “near giants” that do not quite break the 6.1 m threshold is also provided: Indian Python (*P. molurus*), Western Olive Python (*Liasis olivaceous barroni*), Oenpelli Python (*Morelia oenpelliensis*), Papuan Python (*L. papuana*), Yellow Anaconda (*E. notaeus*), and Cuban Boa (*Chilabothrus angulifer*). My only quibbles here are that the Oenpelli Python is now *Simalia oenpelliensis* (fide Reynolds et al. 2014), and I prefer to retain *Apodora* for the Papuan Python. I chuckled at the comment that the Boa Constrictor (*Boa constrictor*) is only “a giant in the mind of the public.” How true!

The authors also debunk the use of snake skins (whole skins, not sloughs) as an accurate tool for the estimation of the owner's original length, and I concur with their thoughts. In the past, it has been suggested that the snake was longer than the skin because the skin will have shrunk over time, but this is not the case. Around 20 years ago, we lost a *Python natalensis* to an internal soft-tissue tumor. With the cadaver in front of me, I decided to conduct an experiment. I would measure the dead snake, then skin it, taking every care not to stretch the skin, and I would then measure the skin. It took a long time. The connective tissue of a python is remarkably tough, but I got there eventually and I discovered the carefully removed skin was 20% longer than the original python. I then wondered how much would a skin stretch if removed with more force by pulling rather than gentle scalpel cutting to sever the connective tissue. Murphy and Crutchfield also came up with a 20% stretch rate for skins. They also quoted values from other authors conducting the same experiment, which ranged from 19.3% for a *B. constrictor* to more than 40% for a *E. murinus*. Presumably, the larger the snake, the stronger the connective tissue and the greater the opportunity for stretching.

Many giant snake stories found their way into this tome, including one I personally like and to which I have some connection. Do you remember Fragrant Flower in 2004, a Reticulated Python captured and transported to an Indonesian zoo where she excited the interest of the world's newspapers and the internet? She was reported to be 14.85 m in length, weigh 447 kg, and be 150 years old. *The Guardian* newspaper in the UK contacted me and asked me what I thought, sending a photograph of the python coiled but with its head clearly visible. Many of us who have seen numerous individual snakes of a particular species, especially the larger ones, can come up with a good estimate for total length based on a head photograph because the rough ratio of eye to head, and head to body, tends to be similar between conspecifics. I estimated Fragrant Flower to be between 6.1–7.6 m. *The Guardian* reporter sent to investigate the snake measured her and came up with a length of 6.5–7.0 m. Murphy and Crutchfield include this story, along with the information that Fragrant Flower was fed several dogs every month, but they did not include a couple of other tidbits I picked up from my discussions with *The Guardian*. When confronted with the actual length of their prize exhibit, the zoo authorities countered “Ah, yes, but she grows and shrinks depending on whether it is a sunny day and she is happy.” And then they dropped the real bombshell. “When we got her, she had a decomposing pig inside her....so we had to cut four metres off her!” There is something about snakes that enables some people to believe, and by default expect you to believe, the most incredulous and impossible stories.

I did find some sections where I scribbled objections in the margin and one such was where the authors suggested that *Simalia kinghorni* occurs in New Guinea. Until its elevation to

specific status by Harvey et al. (2000), *S. kinghorni* was the Australian subspecies of *S. amethystina*, which is the older name and occurs throughout New Guinea (but may itself be a complex). So far, the geographical point where *kinghorni* stops and *amethystina* starts has not been defined. It may be somewhere in the Torres Strait or in southern New Guinea. We don't know, but extending the range of *S. kinghorni* right up into Chimbu (correctly Simbu) Province in the Papuan Highlands, as indicated by the map on p. 93, is overstating its known distribution. I am currently unaware of any taxonomic evidence proposing this scenario and limiting *S. amethystina* to northern New Guinea.

Chapter 3, Snake Origins & Biology, delves into the ancient history of snakes and their anguimorph or mosasaur origins, which might be summed up as representing terrestrial, fossorial, or marine ancestries. The chapter continues with discussions of how pythons and boas hunt and obtain food, kill and consume it, and subsequently grow larger. Reproduction is also included in this chapter, along with facultative parthenogenesis (FP), an area of growing interest as more and more taxa become members of the elite parthenogenetic club (Booth and Schuett 2015). And again I have a personal investment in the story—we reported the first instance of FP in *E. murinus* (O'Shea et al. 2016). So many subjects are covered in this chapter that is not possible to comment on all of them in any depth—multiple paternity, mating systems, relative clutch mass, and the effects of climate and geography on body size.

Chapters 4–7 are devoted to the pythonid snakes while chapters 8–10 are given over to the boids. These chapters are not just concerned with the six giants and six near-giants, but all pythons and boas down to the smallest representatives, the Anthill Python (*Antaresia perthensis*) and Oaxacan Dwarf Boa (*Exiliboa placata*), both of which achieve little more than 500 mm in total length. Each chapter is headed by a photograph of a representative species, and the most impressive is the photograph at the start of Chapter 5, Giant Constrictors of Australasia. Now that is a very impressive *S. kinghorni*!

As I read through the pythonid and boid chapters, I made numerous pencil notations in the margins of the book, and going back through as I write this review, I realize it would be impossible to include them all here. Sometimes they were about small controversial statements, whereas at other times they concerned interesting facts that I highlighted for my future benefit. On other occasions, it was because the text reminded me of an amusing anecdote or personal experience. One such was the section on Sexual Cannibalism in *E. murinus* on p. 207. In 1993, I was in Guyana investigating stories of a large horned anaconda. I now know the truth behind that story, but that is not what I will relate here. I only caught one anaconda on that trip, a female of 1.94 m SVL and 2.34 m TTL. It was late in the afternoon, so I thought I would process and release the snake the following morning, and I looked around for somewhere to keep it overnight. I settled on using my sheet sleeping bag, as it was very hot and I wasn't using it myself. I bagged the anaconda, left it in the science area and went to bed. In the morning, I got up and in the science area was haunted by a rather unpleasant smell. I opened my sleeping bag and tipped out a now slimline anaconda, followed by the contents of its stomach—a small conspecific. I reported this discovery (O'Shea 1994), but have not used the sleeping bag for its original purpose since.

Chapter 11, Giant Snakes in Captivity, begins with an unusual photograph, an elderly lady sitting in her garden with two giant Burmese Pythons stretched out in front of her, the tail of one running off her lap. This is obviously a chapter that will attract a great

many herpetoculturists. It looks at the reasons why people keep and breed pythons and boas, goes into the cultivars and morphs (which I freely admit hold little allure for me but that I do see as important conservation tools because, while the snake-keeping public wants fancy snakes, it takes the pressure off wild populations). This chapter also deals with something few giant snake keepers probably consider, that they might be killed by their pet. The chapter includes several accounts where keepers have been killed or had to fight for their lives, and even with help from experienced snake handler friends have struggled to escape the coils. Reticulated Pythons especially, are powerful, and smart, and a species demanding great respect; Tom Crutchfield relates how a large captive specimen was observed stalking his wife.

Chapter 12 is entitled Invasive Giant Snakes in Florida. This is a subject that has received a great deal of attention, including several books (Dorcas and Willson 2011; Perez 2012), numerous papers, and a documentary presented by Nigel Marven. It is a serious issue but one that may now be impossible to resolve—the python genie is well out of the bottle and after eating an alligator or two, there is no way we can jam it back into that bottle. Ecologically, the pythons in southern Florida are altering the entire balance of the ecosystem, preying on Raccoons (*Procyon lotor*), which means more turtle eggs hatch, knocking gators off the climax carnivore spot, and potentially pushing the already endangered Key Largo Woodrat (*Neotoma floridana*) and threatened water birds over the brink into extinction. It is Guam on a grand scale.

The final chapter, Chapter 13, Extinct Giant Snakes, goes back to Chapter 3 and provides a who's who of extinct boids, madtsoiids, paleophids, and pythonids. There are also four Appendices. The first includes some basics of DNA. The second is on how the anaconda got its name, explaining its origins as a Sinhalese name applied to the *pimbura* python in Ceylon. Sri Lanka was the British colony of Ceylon during the 19th century, but before that it had been a Portuguese colony since the 16th century. The name anaconda may have come to Brazil with sailors or colonists who had visited Ceylon. There are of course other names used for anacondas within that natural range, e.g., water *camoudi* (Guyana), *sucuri* (Amazonian Brazil), or *aboma* (northeast Brazil). It is my understanding that *aboma* was the name applied to the Central African python in West Africa, and it was brought to Brazil by slaves transported to Bahia to work in sugarcane fields, so once again the snake *E. murinus* bears the common name of a python. The authors also provide the story of how the anaconda got its scientific binomial name. It is interesting how human movements around the world have also resulted in names being transported and relocated, i.e., the Alligator River of Arnhem Land, Northern Territory, where presumably someone saw a crocodile in the river; the names applied to monitor lizards in Australia (goanna) or South Africa (leguaan), which are derived from iguana; and the relocation of the name tarantula, from a southern European lycosid spider to the mygalomorphs of the Americas and beyond. The third and fourth appendices deal with giant snakes in oral traditions, and attacks and deaths caused by giant snakes, something I have already touched upon.

Do I have any criticisms, well yes, but nothing major. I sometimes felt the narrative jumped about a bit, and occasionally there was some repetition where the text mirrored something discussed in an earlier chapter. And there are a few careless typos, some of which may be due to “the curse of spell-checker”—*Egernia rugose* instead of *rugosa* (p. 86), or “thick fingers” (also on p. 86), *Pogona barbata* is written as “barabata” (p. 91), *Python regius* is “regiusa”, and “Apadora” appears in place of *Apodora* (p. 104). There are

others, including scientific names that were not italicized, but I won't dwell on them since they did not distract from the very readable narrative of this book. Overall, I am certain *Giant Snakes: A Natural History* will find a place on many herpetological book shelves and be delved into on a regular basis, especially as the go-to source for the settling of arguments about out-sized snakes.

For myself, I carried *Giant Snakes* around with me everywhere I went, taking every opportunity to read and analyze each section as I read it from cover to cover and scribbled pencil notes in the margins. As a result, my softback copy is now rather dog-eared and beaten up from continual removal and replacement in my bag enroute the university or the safari park. What I really need now is a pristine hardback copy for my personal herp library—authors' signatures optional but preferred!

LITERATURE CITED

- BOOTH, W., AND G. W. SCHUETT. 2015. The emerging phylogenetic pattern of parthenogenesis in snakes. *Biol. J. Linn. Soc.* 118:172–186.
- DORCAS, M. E., AND J. D. WILLSON. 2011. *Invasive Pythons in the United States*. University of Georgia Press, Athens, Georgia. x + 156 pp.
- HARVEY, M. B., D. G. BARKER, L. K. AMMERMAN, AND P. T. CHIPPINDALE. 2000. Systematics of pythons of the *Morelia amethystina* complex (Serpentes: Boidae) with the description of three new species. *Herpetol. Monogr.* 14:139–185.
- HENDERSON, R. W., AND J. B. MURPHY. 1997. *Tales of Giant Snakes: A Historical Natural History of Anacondas and Pythons*. Krieger Publishing, Malabar, Florida. 238 pp.
- O'SHEA, M. 1994. *Eunectes murinus gigas* (northern green anaconda): cannibalism. *Herpetol. Rev.* 25:124.
- , S. SLATER, R. SCOTT, S. SMITH, K. McDONALD, R. LAWRENCE, AND M. KUBIAK. 2016. *Eunectes murinus* (green anaconda): reproduction / facultative parthenogenesis. *Herpetol. Rev.* 47:73.
- PEREZ, L. 2012. *Snake in the Grass: An Everglades Invasion*. Pineapple Press, Sarasota, Florida. xvii + 220 pp.
- REYNOLDS, R. G., M. L. NIEMILLER, AND L. J. REVELL. 2014. Toward a Tree-of-Life for the boas and pythons: multilocus species-level phylogeny with unprecedented taxon sampling. *Mol. Phylogenet. Evol.* 71:201–213.