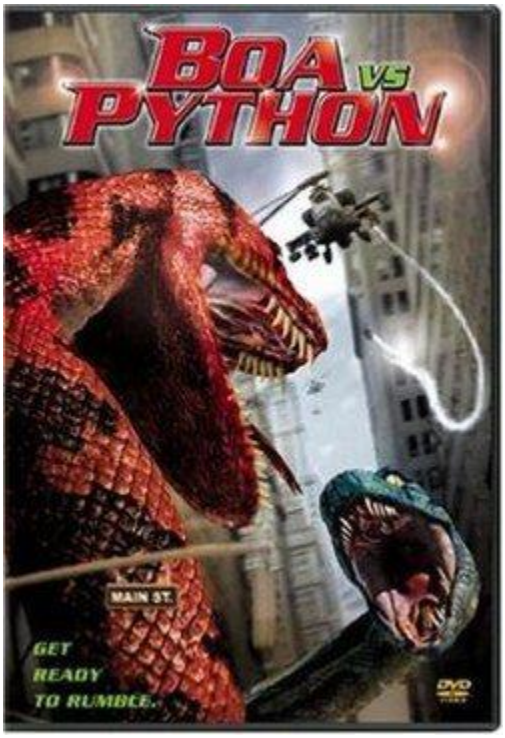
Boa Vs. Python! What Are the *Real* Differences!?



**2004 B-Movie Horror Film Gag "Boa Vs. Python".*

Boas and pythons are perhaps among the most well-known groups of snakes, with most being found in a wide range of tropical to sub-tropical habitats, from rainforests and woodlands, to swamplands, marshes, and river courses, as well as oftentimes near cultivated, agricultural, or even areas of human habitation and settlement. Some can also be found in more arid to semi-arid deserts, grasslands, open plains or savannahs, or scrublands as well. They include some of the largest snake species in the world, including the heaviest known species of snakes in the world, the Green Anaconda (*Eunectes murinus*) of South America, and also the longest known snake species, the Reticulated Python (*Malayopython reticulatus)* of southern to southeastern Asia. Many smaller species are also known, and a few species of boas are even indigenous to the United States and North America! Boas and pythons are both extremely diverse groups of snakes occupying nearly any suitable habitat and ecological niches, or roles, and also examples of species can be found in nearly every shape, size, color, pattern, or other physical feature.

**Australian Woma Python (Aspidites ramsayi). Aspidites is the only known genus of boas or pythons lacking heat pits. © Almightyshadowchan.*

But what actually are the differences between a boa and a python? Are they both just genetically engineered "movie-monsters" just set out to eat people while creating mass destruction? In all actuality, this could not be further from the truth! Unlike many other groups of commonly confused, or mistaken groups of reptiles or amphibians (such as turtles vs. tortoises), in which some rules of thumb can generally hold true, at least to a good degree, there are not really any good or reliable visual or external differences we can easily point to or generalize from in order to determine a boa from a python. Instead, we must turn to more minute and internal differences between the two, as well as our ability to learn, and become familiar with the different species which are seen both in the wild and in captivity through experience over time.

With that said, here are several of the most reliable means which can be used to differentiate *most* boas from *most* pythons, although, as can be imagined by now, there are often exceptions to every rule that are always worth noting.

**Brazilian Rainbow Boa (Epicrates cenchria cenchria). © EverythingReptiles.com*

<u>Taxonomy and Classification</u>

-Taxonomically, all, or ***most*** we should say, species of snakes which are boas fall into the family **Boidae**, comprising of five subfamilies, 12 genera, and approximately 49 currently recognized species. The subfamily Boinae consists of the greatest number, and of what are known as the "true boas", most of which occur in Central and South America. Other, "Non-Boinae" subfamilies of boas, which include the Calabariinae (Calabar Boas), Candoiinae (Bevel Nosed Boas), Erycinae (Rubber, Rosy, and Sand Boas),

and Sanziniinae (the Madagascar Boas), may also be elevated, according to the source, to their own family status.

-Smaller subfamilies, such as those of Ungaliophiinae, formerly comprised of 4 genera, also exist, but some of these genera have since either been found to be more closely related to the Pipe Snakes (families Tropidophiidae within the Amerophidia), or have become sister-clades, or sister-taxon to the genera Charina and Lichanura, or the North American Rubber Boas and Rosy Boas.

**Common "Boa constrictor" (Boa imperator). © The Nature Admirer.*

-The common name of "Boa" also applies to a genus of "true boas", known by the genus and species "Boa constrictor". Boa constrictors are generally medium sized to large, heavy-bodied, terrestrial to semi-arboreal snakes of Central and South America. There is also much phenotypic, or outward variation among the different species, subspecies, morphs, and localities of "Boa constrictors", and more information on differentiating them can be found in our "Boa Constrictor" Identification Guide. While all species of boas and pythons are also constrictors, only the species "Boa constrictor" retains this name as both their common and scientific names. Furthermore, there are also many other members of the family Boidae which are commonly referred to as boas in their common names, but are not of the genera and species "Boa constrictor".

**Jungle Carpet Python (Morelia spilota cheynei). © Australian Addiction Reptiles.*

-When it comes to pythons, the separate family of Pythonidae is now recognized, consisting of ten genera and approximately 42 species. Many older, and now obsolete classification and taxonomy have formerly placed pythons into the subfamily Pythoniinae, a subfamily of Boidae. In many, catch-all respects, both boas and pythons are thus still referred to collectively as "boids". Despite their superficial resemblance to boas, pythons are now believed to be more closely related to the Sunbeam Snakes of Central and South America (genus Xenopeltis).

**Mexican Burrowing "Python" (Loxocemus bicolor). © http://fateslayer99.hubpages.com/*

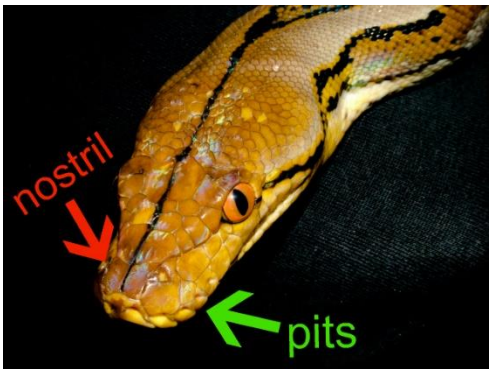
-Furthermore, at least one species, the Mexican Burrowing Python (*Loxocemus bicolor*) is called a "python" by common name, but is also, technically, more closely related to sunbeam snakes than they are to the "true" pythons. As with many taxonomic changes and distinctions, however, all of these above distinctions have had their share of debate, even to this day, and such taxonomic classifications are only, ultimately arbitrary differences.

Skeletal and Internal Differences

**Aglyphous Boa/Python Skull. © Adrien Farese.*

-Both boas and pythons are comparatively primitive groups of snakes, having elongated supratemporal bones. They also have somewhat elongated quadrate bones, and relatively rigid lower jaws with coronoid elements. Most species of boas and pythons also both possess a functional second, or Left Lung, whereas most other more modern snakes such as Colubrids (Family Colubridae) have only one lung, usually the Right Lung, with the Left Lung being significantly reduced or absent in those families of snakes. Both Boas and Pythons also have an **Aglyphous dentition** as well, lacking any specialized fangs or grooved teeth for the delivery of any venom.

-Several differences in the presence or absence of certain skull bones is one defining trait between boas and pythons, although this difference obviously cannot be seen externally. Unlike pythons, boas do not possess certain postfrontal bones, and also lack Premaxillary Teeth.



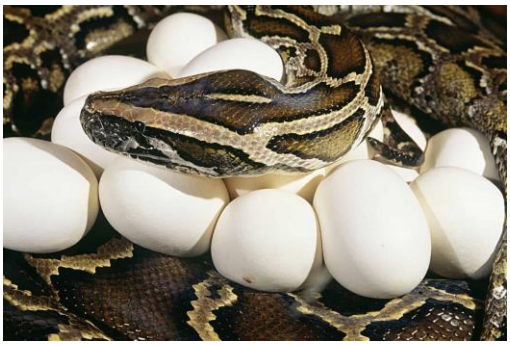
**The Heat Pits on a Reticulated Python (Malayopython reticulatus). © The Skinny on Science.*

-Most species of both boas and pythons also have heat-sensitive pits along their upper jawlines or labial scales. Some genera of both have Labial Pits on, or between their labial scales, while some other genera do not have external heat pits, instead having sensory receptors of the same function within their labial scales. And at least one genus of Australian pythons, the genus Aspidities, or the Womas and Black-Headed Pythons, do not have heat sensitive pits altogether. Therefore, the presence or absence of heat pits really depends on the genera and species, and is not a major identifying factor between boas and pythons.


**The Vestigial Cloacal Spurs Which Both Boas and Pythons Possess. © Reptile.Guide.*

-Both boas and pythons also possess a **Vestigial Pelvic Girdle** with a pair of small, claw-like projections at the vent or cloaca known as **Spurs**. This vestigial skeletal structure is comparatively primitive, and is not found in most other families of snakes. These claw-like spurs are used primarily during mating, copulation, and reproduction. While there is often claimed to be a sexually dimorphic difference in size or prominence of these spurs between males and females, it is not uncommon for females to also possess enlarged spurs, thus this distinction between the sexes, often does not necessarily hold true.

Reproductive Differences:



**An Oviparious Burmese Python, Left (Python bivittatus) With Eggs. © Embora Pets.*
**An Ovoviviparious Common Boa, Right (Boa imperator), With Live Young. © Pets Stack Exchange.*

-Perhaps one of the most well-known and commonly cited differences between the two, are that *most* boas are **Ovoviviparous**, meaning their eggs develop internally, and young are born "alive" in a clear, transparent sac or membrane in which they break out of. *Most* pythons, on the other hand, are **Oviparious**, laying hardened external eggs, where hatchlings then use a temporary egg tooth to emerge. Some species of pythons will also brood their eggs as well by coiling around them and through periodic, rhythmic muscular contractions, can incubate and regulate the temperatures of their eggs.

**Calabar Boa (Calabaria reinhardtii), A "Rule Breaking" Species of Egg-Laying Boa. © John Fowler, AustralianHerpetology.com*

-But what about some rule breakers!? As it turns out, as with exceptions to many rules, there are also oviparious, Old World species of boas which lay eggs. At least three boa species, the Calabar Boa (*Calabaria reinhardtii*), sometimes still referred to as the "Calabar Python", of which it is not technically a "true" species of python, the Saharan, or West African Sand Boa (*Gongylophis muelleri*), and the Arabian Sand Boa (*Eryx jayakari*), lay eggs!

<u>Geographical Differences:</u>

-When it comes to the “New World” and “Old World” distinctions between boas and pythons, most “true boas” do occur only in the New World of North America, and Central and South America. However, numerous other families, or subfamilies of boas are also found in the Old World in Africa, southern Europe, Madagascar, New Guinea, and the Solomon Islands, where there may also be python species occurring.


**Rubber Boa (Charina bottae), Left, © CuriOdyssey, and Rosy Boa (Lichanura trivirgata), Right, © Tucson Herpetological Society. Both species are indigenous to the United States (U.S.)*

-On the other hand, pythons generally occur, at least naturally, only in the “Old World” in Africa, Asia, and Australia. As mentioned previously, however, there are always exceptions to every rule, and the Mexican Burrowing “Python” mentioned above has at least the common name of “python”, and occurs in the New World, but taxonomically and phylogenetically, is more closely related to the sunbeam snakes than they are to “true” pythons. This is also notwithstanding some well documented instances of introduced species from elsewhere in the world, such as the populations of Burmese pythons (Python bivittatus) in southern Florida. All in all, there are some instances in which some boa species occur only in the New World, and Pythons in the “Old World”, but this, as has been demonstrated, often has its exceptions.

**Green Anaconda (Eunectes murinus). Also known as the “Water Boas”, Anacondas belong to the Boidae Family. © Reptile Range.*