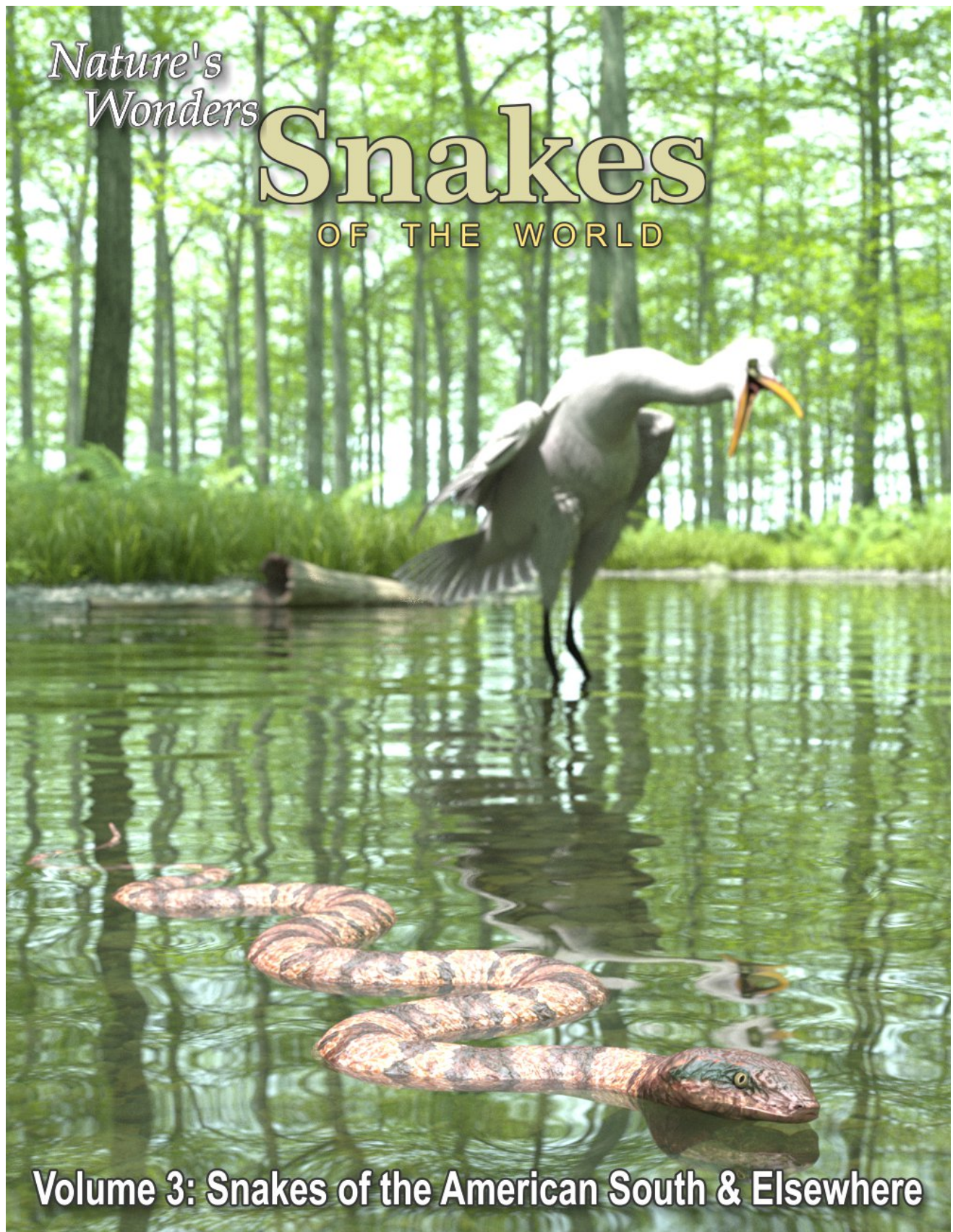




A 3D Model Set by Ken Gilliland

Nature's Wonders

Snakes

OF THE WORLD - VOLUME 3

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Snakes

OF THE WORLD - VOLUME 3

Introduction

Snakes are found on every continent except Antarctica. They are elongated, limbless reptiles of the suborder *Serpentes*. Many species of snakes have skulls with several more joints than their lizard ancestors and relatives, enabling them to swallow prey much larger than their heads. To accommodate their narrow bodies, snakes' paired organs, such as kidneys, appear one in front of the other instead of side by side, and most only have one functional lung. Around thirty families of snake are currently recognized, comprising about 520 genera and about more than 4,170 species.

This add-on set to Nature's Wonders Snakes includes snakes from the southern United States and Europe. This set includes the massive Eastern Diamondback, the iconic Black Swamp Snake, and the Cottonmouth/Water Moccasin of the Eastern United States. It also includes the Grass snake of Lithuanian and Latvian Folklore and the Aesculapian Snake which is featured on the medical and the pharmacological profession symbols.

The set has both native DAZ Studio and Poser versions and supports Iray, 3Delight, Firefly and Superfly render engines.

Overview and Use

The set is located within the Animals : Nature's Wonder folder. Here is where you will find a number of folders, such as Manuals, Resources and Fauna Libraries. Let's look at what is contained in these folders:

- **Fauna Libraries:** This folder holds the actual species and poses for the "premade" fauna. The fauna for this set can be found in the following folder(s):
 - **Reptiles/Snakes of the World**
- **Manuals:** Contains a link to the online manual for the set.
- **Props:** Contains any props that might be included in the set.
- **Resources:** Items in this folder are for creating and customizing your fauna included in the set.
- **Reptile Based Models:** This folder has the blank, untextured model(s) used in this set. These models are primarily for users who wish to experiment with poses or customize their own

species. When using physical renderers such as Iray and Superfly, Sub D should be turned up. For DAZ Studios 3Delight renders, the Sub D must be turned from the "High Resolution" setting to the "Base" setting (otherwise some areas will render incorrectly transparent).

Creating a Specific Snake using Poser

1. For this example, we'll create the Egyptian Cobra.
2. Load Poser, select the FIGURES library and go to the "Animals", "Nature's Wonders" and then the Nature's Wonders Fauna Libraries Reptiles folder.
3. Go to the Snakes of the World folder and select the Firefly or Superfly sub-folder.
4. Select the Egyptian Cobra (or a snake of your choice) and load it by clicking the mouse.

Creating a Specific Snake using DAZ Studio

1. For this example, we'll create the Egyptian Cobra.
2. Load DAZ Studio and go to the "Animals", "Nature's Wonders" and then the Nature's Wonders Fauna Libraries Reptiles folder.
3. Go to the Snakes of the World folder and select the 3Delight or Iray sub-folder.
4. Select the Egyptian Cobra (or a snake of your choice) and load it by clicking the mouse.

Posing your Snake

The poses were designed around the default snake model (found in "Resources"). Posing species that use more extreme morphs and different lengths, may not fit the poses perfectly. Some minor adjustments will probably be necessary.

There are a lot of joints in this model and moving them can become overwhelming. I decided to create master controls that break the snake into 5 different sections to help ease this burden; Head (3 parts), Fore (18 parts), Mid (20 parts), Hind (20 parts) and Tail (8 parts).

Because the model is a very long cylinder shape, zooming in on the snake and then rotating it can be cumbersome. The model in the BODY and Mid01 sections are centered at 0,0,0. It is usually best practice to leave the Mid01 section at 0,0,0 and use the main (BODY) section for your x,y,z rotation and movement. Moving and/or rotating the Mid01 will exacerbate camera rotation issues with the model. In Poser, if you want to work on the head of the snake, using the Face Cam (once zoomed and focused on the head) will help significantly.

Rainbow Snake

Farancia erytrogramma

Rainbow snakes are rarely seen due to their secretive habits. They spend most of their lives in the water, hiding in aquatic vegetation or other forms of cover. They are strong swimmers, and also know how to burrow into mud and sand. Rainbow snakes are not aggressive when captured, and rarely bite their captors.

Habitat: It is found from southern Maryland to southeastern Louisiana, including eastern Virginia, southeastern North Carolina, South Carolina, Georgia, northern Florida, Alabama and Mississippi.

Status: Least Concern. A small population of a subspecies once inhabited the Lake Okeechobee region of southern Florida, but was declared extinct on October 5, 2011. They are found in aquatic habitats ranging from cypress swamps and marshes to blackwater creeks, slow-moving streams, and sandy coastal plain.



Diet: They subsist mainly on eels, but also prey on fish, earthworms, small frogs, tadpoles, and salamanders. They eat their prey alive, usually swallowing them head first.

Identification: Dorsally, rainbow snakes have smooth, glossy bluish-black back scales, with three red stripes. They have short tails, with a spiny tip which they sometimes use as a probe. Adults may show yellow coloration along the sides and on the head.

They usually grow to a total length (including tail) of 36-48 inches (91-122 cm), although some specimens have been recorded up to 66 inches (168 cm) in total length. Females are larger than males.

Venom: They are non-venomous and are usually docile.

Subspecies: There are no longer any recognized subspecies. The subspecies was declared extinct in 2011.

Cottonmouth

Agkistrodon piscivorus

The generic name is derived from the Greek words which translates to "hook-toothed fish-eater". Common names include cottonmouth, northern cottonmouth, water moccasin, swamp moccasin, black moccasin, and simply "viper". Many of the common names refer to the threat display, in which this species often stands its ground and gapes at an intruder, exposing the white lining of its mouth. Many scientists dislike the use of the term water moccasin since it can lead to confusion between the venomous cottonmouth and nonvenomous water snakes.



Habitat: It is found in the eastern United States from the Great Dismal Swamp in southeast Virginia, south through the Florida peninsula and west to Arkansas, eastern and southern Oklahoma, and western and southern Georgia (excluding Lake Lanier and Lake Allatoona). There have been a few sightings of the species being found along the Rio Grande in Texas, but these are thought to represent disjunct populations, and now, possibly eradicated.

It is usually associated with bodies of water, such as creeks, streams, marshes, swamps, and the shores of ponds and lakes. This species has a unique swimming pattern and appears to be floating on top of the water rather than swimming with its body beneath the surface.

Status: Least Concern.

Diet: Its diet includes mammals, birds, amphibians, fish, eggs, insects, other snakes, small turtles, and juvenile alligators. Cannibalism has also been reported. Normally, though, the bulk of its diet consists of fish and frogs.

Common prey species include southern leopard frogs, bass, juvenile black rat snakes, young common snapping turtles, and North American least shrews. On occasion, juvenile specimens feed on invertebrates. Catfish are often eaten, although the sharp spines sometimes cause injuries. Toads are apparently avoided.

Identification: It is the largest species of the genus *Agkistrodon*. Adults commonly exceed 31 inches (80 cm) in total length (including tail). Females are typically smaller than males.

The broad head is distinct from the neck, and the snout is blunt in profile with the rim of the top of the head extending forwards slightly further than the mouth. Substantial cranial plates are present, although the parietal plates are often fragmented, especially towards the rear. A loreal scale is absent. Six to 9 supralabials and eight to 12 infralabials are seen. At midbody, it has 23–27 rows of dorsal scales. All dorsal scale rows have keels, although those on the lowermost scale rows are weak.

Venom: Their bites have a powerful cytotoxic venom that destroys tissue. Although deaths are rare, the bite can leave scars, and on occasion, require amputation. Absent an allergic reaction in the bitten individual, the venom does not cause the common systemic reactions that occur with most rattlesnake species bites. Bites can be effectively treated with CroFab antivenom; this serum is derived using venom components from four species of American pit vipers (the eastern and western diamondback rattlesnakes, the Mojave rattlesnake, and the cottonmouth).

Subspecies: For many decades, three subspecies were formally recognized: eastern cottonmouth, *A. p. piscivorus*, western cottonmouth, *A. p. leucostoma* and Florida cottonmouth, *A. p. conanti*. However, a molecular DNA-based study was published in 2014, changed that the long-standing taxonomy. The resulting and current taxonomic arrangement recognizes two separate species with no associated subspecies. The western cottonmouth was incorporated with the eastern cottonmouth into one single species. The Florida cottonmouth is now recognized as a separate species, *Agkistrodon conanti*.

Eastern Diamondback

Crotalus adamanteus

It is the largest rattlesnake by length and one of the heaviest snakes in the world. One specimen, collected in 1946, measured 7.8 feet (240 cm) in length and weighed 34 pounds (15.4 kg). Eastern diamondback rattlesnake venom is estimated to contain over 100 different toxins.

Habitat: It is found in the Southeastern United States from southeastern North Carolina, south along the coastal plain through peninsular Florida to the Florida Keys, and west along the Gulf Coast through southern Alabama and Mississippi to southeastern Louisiana.



The eastern diamondback rattlesnake inhabits upland dry pine forest, pine and palmetto flatwoods, sandhills and coastal maritime hammocks, longleaf pine/turkey oak habitats, grass-sedge marshes and swamp forest, cypress swamps, mesic hammocks, sandy mixed woodlands, xeric hammocks, and salt marshes, as well as wet prairies during dry periods. In many areas, it seems to use burrows made by gophers and gopher tortoises during the summer and winter. Wiregrass ground layer is a very important habitat characteristic with wiregrass being present in areas that are burned frequently with open forest canopies

Status: Least Concern to Endangered. It is currently under review for being added to the Endangered Species List by the United States Fish and Wildlife Service owing to its recent decline, and the current population represents only 3% of the historical population.

In North Carolina, it is already protected by state law and considered endangered (possibly extinct) within the state. The last confirmed sighting was in the early 1990s. It is also likely extinct in Louisiana, with the last confirmed sighting reported in 1995.

Diet: The eastern diamondback rattlesnake forages actively or lies in ambush for small mammals, especially rabbits and rice rats. The diet also includes birds.

Identification: While specimens have been recorded over 7 ft (2.1m), the average size is much less. The average size is much less. Specimens are rarely found over 6 feet in length. Lengths of 3.5 to 5.5 ft (1.1 to 1.7 m) are much more common. Males are typically larger than females. The color pattern consists of a brownish, brownish-yellow, brownish-gray or olive ground color, overlaid with a series of 24–35 dark brown to black diamonds with slightly lighter centers. Each of these diamond-shaped blotches is outlined with a row of cream or yellowish scales. Posteriorly, the diamond shapes become more like crossbands and are followed by 5–10 bands around the tail. The belly is a yellowish or cream-colored, with diffused, dark mottling along the sides. The head has a dark postocular stripe that extends from behind the eye backwards and downwards to the lip; the back of the stripe touches the angle of the mouth. Anteriorly and posteriorly, the postocular stripe is bordered by distinct white or yellow stripes.

Venom: The eastern diamondback rattlesnake has the reputation of being the most dangerous venomous snake in North America. While not usually aggressive, it is large and powerful. The eastern diamondback rattlesnake is a major leader of fatal snakebites within its geographical range. Studies show a mortality rate of 10–20% (untreated).

Subspecies: There are no subspecies.

Black Swamp Snake

Liodytes pygaea

Common names also include the mud snake, the red-bellied mud snake, and the swamp snake.

Habitat: It is found in the states of North Carolina, South Carolina, Georgia, Alabama, and Florida on the east coast of the United States.

It prefers swampland habitat that is heavily vegetated. The black swamp snake is almost entirely aquatic. It spends most of its time hiding among dense vegetation in tannic cypress swamps.

Status: Least Concern.



Diet: It feeds on small fish, tadpoles, frogs, salamanders, sirens, amphiumas, and invertebrates, such as leeches and earthworms.

Identification: The black swamp snake is a small, thin snake, usually 10–15 inches (25–38 cm) long (including tail); the record size is 22 inches (55 cm). It is uniformly black on the dorsum, with a bright orange or red belly.

Venom: This snake non-venomous.

Subspecies: The following three subspecies are recognized as being valid.

- South Florida swamp snake, *Liodytes pygaea cyclas* (Dowling, 1950)
- Carolina swamp snake, *Liodytes pygaea paludis* (Dowling, 1950)
- North Florida swamp snake, *Liodytes pygaea pygaea* (Cope, 1871)

Timber Rattlesnake

Crotalus horridus

It is also known commonly as the banded rattlesnake, and the canebrake rattlesnake. The timber rattlesnake is one of 36 species in the genus *Crotalus*. The timber rattlesnake was designated the state reptile of West Virginia in 2008. The Gadsden (Don't Thread on Me) flag depicts a timber rattlesnake.

Habitat: Timber rattlesnakes are present in the eastern United States from southern Minnesota and southern New Hampshire, south to East Texas and North Florida.

Generally, this species is found in deciduous forests in rugged terrain. It can be found in a variety of terrestrial habitats including lowland cane thickets (thus the common name canebrake rattlesnake), high areas around swamps and river floodplains, hardwood and pine forests, mountainous areas, and rural habitats in farming areas. During the summer, females seem to prefer open, rocky ledges where the temperatures are higher, while males and nongravid females tend to spend more time in cooler, denser woodland with more closed forest canopy.



Status: Least Concern. It has been extirpated from many areas, particularly in the northern part of its range, and is classified as endangered in six states and threatened in five others. The timber rattlesnake is listed as endangered in New Jersey, Ohio, Vermont, Connecticut, Massachusetts, Virginia, Indiana, and New Hampshire. The species is listed as threatened in Illinois and New York.

Diet: The prey of the timber rattlesnake are mainly small mammals, in particular mice, rats, squirrels, and rabbits, but may include small birds, frogs, and other small animals.

They are known to use fallen logs as a waiting site for prey to pass by, giving them an elevated perch from which to effectively strike their prey, which is almost entirely

terrestrial rather than arboreal (even arboreal prey such as squirrels tend to be caught when they come to the ground).

Identification: Adults usually grow to total length of 36-60 inches (91-152 cm). The dorsal scales are keeled and arranged in 21-26 scale rows at midbody (usually 25 rows in the southern part of its geographic range, and 23 rows in the northern part). There are four primary colorations; tan with dark brown, olive with dark brown, light brown to dark with dark brown and greenish-brown with dark brown. The rattle is off-white to light brown.

Venom: Potentially, this is one of North America's most dangerous snakes, due to its long fangs, impressive size, and high venom yield. This is to some degree offset by its relatively mild disposition and long brumation period. Before striking, they often perform a good deal of preliminary rattling and feinting. A timber rattlesnake will always make the effort to retreat from perceived danger before deciding to attack, and if left undisturbed poses nearly no threat to the humans who encounter them.

Subspecies: There are no recognized subspecies.

Grass Snake

Well-known literary works based on these traditions include Lithuanian folk tale Eglė the Queen of Serpents and the Latvian folk fairytale "The snake's bride" feature the grass snake. Today, many Latvians and Lithuanians believe that grass snakes bring good luck and protect the home. One tradition is to put a bowl of milk near a snake's place of residence, although there is no evidence of a grass snake ever drinking milk. Driven by late 19th century and 20th century Romantic nationalism, grass snake motifs in Latvia have come to symbolize education and wisdom, and are common ornaments in the military, folk dance groups and education logos and insignia.

Habitat: The grass snake is widely distributed in mainland Europe, ranging from mid Scandinavia to southern Italy. It is also found in the Middle East and northwestern Africa.



The preferred habitat appears to be open woodland and "edge" habitats, such as field margins and woodland borders. These areas may offer adequate refuge while still affording ample opportunity for thermoregulation through basking. Grass snakes are strong swimmers. Pond edges are also favored and the relatively high likelihood of observing this elusive species in these areas may explain why it is often associated with ponds and water.

Status: Least Concern. In Denmark, it is protected, as all five species of reptiles were protected in 1981. Two of the subspecies are considered critically endangered: *N. n. cetti* (Sardinian grass snake) and *N. n. schweizeri*.

Diet: It feeds mainly on amphibians, particularly the common toad and the common frog, although they may also occasionally eat ants and larvae. In captivity, grass snakes have been observed accepting earthworms offered by hand, but they never take dead prey.

The snake actively searches for prey, often on the edges of the water, using sight and sense of smell (using Jacobson's organ). They consume prey live without using constriction.

Identification: The grass snake is typically dark green or brown in color with a characteristic yellow or white collar behind the head, earning it the alternative name of 'ringed snake'. Its coloration can range from grey to black; darker colors are more prevalent in colder regions, presumably due to the thermal benefits of dark pigmentation. The underside is whitish with irregular black markings that are a useful field identification feature. It can grow to 1 m (3 ft 3 in) or more in length.

Venom: This snake is non-venomous.

Subspecies: Many subspecies are recognized, including:

- *N. n. algirus* (fide Sochurek, 1979)
- *N. n. calabra* Vanni & Lanza, 1983
- *N. n. cypriaca* (Hecht, 1930)
- *N. n. fusca* (Cattaneo, 1990)
- *N. n. gotlandica* (Nilson & Andrén, 1981)
- *N. n. natrix* (Linnaeus, 1758)
- *N. n. persa* (Pallas, 1814)
- *N. n. schweizeri* (L. Müller 1932)
- *N. n. scutata* (Pallas, 1771)

Aesculapian Snake

Zamenis longissimus

The Aesculapian snake has been of cultural and historical significance for its role in ancient Greek, Roman, and Illyrian mythology and derived symbolism. The symbol for the medical profession, the Rod of Aesculapius, and the symbol for Pharmacology, the Bowl of Hygieia, use the Aesculapian Snake.

Habitat: Its range covers most of France, except in the north (up to about the latitude of Paris), the Spanish Pyrenees and the eastern side of the Spanish northern coast, Italy (except the south and Sicily), all of the Balkan peninsula down to Greece and Asia Minor and parts of Central and Eastern Europe up until about the 49th parallel in the eastern part of the range (Switzerland, Austria, South Moravia (Podyjí/Thayatal in Austria) in the Czech Republic, Hungary, Slovakia, south Poland (mainly Bieszczady/Bukovec Mountains in Slovakia), Romania, south-west Ukraine).



Further isolated populations have been identified in western Germany (Schlangenberg, Odenwald, lower Salzach, plus one - near Passau - connected to the contiguous distribution area) and the northwest of the Czech Republic (near Karlovy Vary, the northernmost known current natural presence of the species). Also found in a separate enclave south of Greater Caucasus along the Russian, Georgian and Turkish northeastern and eastern shores of the Black Sea.

It prefers forested, warm but not hot, moderately humid but not wet, hilly or rocky habitats with proper insolation and varied, not sparse vegetation that provides sufficient variation in local microclimates, helping the reptile with thermoregulation. In most of its range it is typically found in relatively intact or fairly cultivated warmer temperate broadleaf forests including the more humid variety such as along river valleys and riverbeds (but not marshes) and forest steppes. Frequent locations include places such as forest clearings in succession, shrublands at the edges of

forests and forest/field ecotones, woods interspersed with meadows etc. However, it generally does not avoid human presence, being often found in places such as gardens and sheds, and even prefers habitats such as old walls and stonewalls, derelict buildings and ruins that offer a variety of hiding and basking places. The synanthropic aspect appears to be more pronounced in northernmost parts of the range where it is dependent on human structures for food, warmth and hatching grounds. It avoids open plains and agricultural deserts.

Status: Least Concern. Though the Aesculapian snake occupies a relatively broad range and is not endangered as a species, it is thought to be in general decline largely due to anthropic disturbances. The snake has been classified as Critically Endangered in the German Red List of endangered species. In most other countries including France, Switzerland, Austria, the Czech Republic, Slovakia, Hungary, Bulgaria, Poland, Ukraine and Russia it is also under protection status.

Among the key concerns is human-caused habitat destruction to old growth forest zones and fringe ecotones near woodland areas.

Diet: Their prey is mostly small mammals such as shrews, moles, and rodents up to the size of rats.

Identification: Adults are usually from 110 cm (43.3 in) to 160 cm (63 in) in total length (tail included), but can grow to 200 cm (79 in), with the record size being 225 cm (7.38 ft). It is dark, long, slender, and typically bronzy in color, with smooth scales that give it a metallic sheen. Adults are much more uniform, sometimes being olive-yellow, brownish-green, sometimes almost black. Often in adults, there may be a more or less regular pattern of white-edged dorsal scales appearing as white freckles all over the body up to moiré-like structures in places, enhancing the shiny metallic appearance. Sometimes, especially when pale in color, two darker longitudinal lines along the flanks can be visible. The belly is plain yellow to off-white, while the round iris has amber to ochre coloration. Melanistic, erythristic, and albinotic natural forms are known, as is a dark grey form.

Venom: This snake is non-venomous.

Subspecies: There are no subspecies.

Caspian Whipsnake

Dolichophis caspius

It is a common species of whipsnake found in the Balkans and parts of Eastern Europe. This snake is noted for its ability to consume rodents which may harm crops, it is valued as natural pest control.

Habitat: The Caspian whipsnake is found in the Balkan peninsula, parts of Eastern Europe and a small portion of Asia Minor. It may be found in Albania, Bulgaria, Greece, North Macedonia, Serbia, Romania, Croatia, Turkey, Moldova, Montenegro, southern Ukraine, southern Russia, Kazakhstan, and southern Hungary (Danube and the Olt River).



They have also been found in open, bushy areas, specifically, between the Danube Meadow and Romanian Plain, near Căscioarele. Vine covered areas were found near this habitat as well. At Drăgănești Olt, the species was found on a hilly slope. Its habitat also includes rocky riverbanks and swampy areas, as well as gardens and cemeteries.

Status: Least Concern. Habitat loss to agriculture may also be a cause of the species' decline in Romania.

Diet: Its diet may include small mammals, lizards, birds, and other snakes.

Identification: The Caspian whipsnake is perhaps the largest species of snake in Europe. It typically grows to around 140–160 cm (55–63 in) in length, though a few may exceed a length of 200 cm (79 in). The record sized specimen was approximately 250 cm (98 in). Body mass can be commonly from 120 to 673 g (4.2 to 23.7 oz). This species is not venomous and is mostly active during the day. The head is joined to the body by a thick neck. Its pupils are round. Nineteen rows of smooth scales can be

found at the middle body, though rarely there may be seventeen. Dorsal scales each have two apical pits at the posterior edge. The center of the scale is lighter in color than the edges. The dorsal side is gray-brown and features markings which are distinctive in juveniles and young snakes but fade with age. The ventral side is light yellow or white.

Venom: This snake is non-venomous. While not venomous, the Caspian whipsnake is considered "ferocious" and bites quickly and without warning.

Subspecies: There are no subspecies.

Special Thanks to:

... to my beta testers, Alisa and FlintHawk

Species Accuracy and Reference Materials

The author-artist has tried to make these species as accurate to their real life counterparts as possible. Snakes of the same species vary considerably, just as all others do in nature. The snakes were created using the correct field markings and the most common similarities.

With the use of one generic model to create dozens of unique moth species, some give and take is bound to occur. In addition, 3D-models have many technical challenges, which make exact representations difficult, if not impossible. It's best to think of these moths represented as resembling the particular species, and they may not, in some cases, be 100% scientifically accurate.

The model and morphs were created using Luxology's Modo. The texture maps were created in Corel's Painter. The model was rigged in Poser and materials created in Poser and DAZ's DAZ Studio.

Sources:

- Animal Diversity Web. <http://animaldiversity.org>
- Wikipedia <http://wikipedia.org>
- The Snake Guide <https://thesnakeguide.com>

Songbird ReMix Merchandise



www.empken.com/store