Dendroaspis angusticeps

Scientific Classification

Kingdom:	Anamalia
Phylum:	Cordata
Class:	Reptilia
Order:	Squamata
Suborder:	Serpentes
Family	Elapidae
Genus	Dendroaspis
Species	D.Angusticeps

Binomial name

Dendroaspis angusticeps
(A. Smith, 1849)[1]

Synonyms

- *Naja angusticeps* Smith, 1849[2]
- *Naja angusticeps* — Duméril & Bibron, 1854
- *Dendraphis angusticeps* — Günther, 1858
- *Dendrospis [sic] angusticeps* — Boulenger, 1897
- *Dendroaspis sjöstedti* Lönnberg, 1910
- *Dendraspis [sic] angusticeps* — Sternfeld, 1910
- *Dendroaspis angusticeps* — Razetti & Msuya, 2002

The **eastern green mamba** (*Dendroaspis angusticeps*), also known as the **common mamba**, **East African green mamba**, **green mamba**, or **white-mouthed mamba**, is a large, tree-dwelling, highly venomous snake species of the mamba genus *Dendroaspis*. This species of mamba was first described by a Scottish surgeon and zoologist in 1849. This snake mostly inhabits the coastal regions of southern East Africa. Adult females average approximately 2.0 metres (6.6 ft) in length, and males are slightly smaller. Eastern green mambas prey on birds, eggs, bats, and rodents such as mice, rats, and gerbils. They are shy and elusive snakes which are rarely seen, making them somewhat unusual among mambas, and elapids in general. This elusiveness is usually attributed to the species' green colouration which blends with its environment, and its arboreal lifestyle. However, eastern green mambas have also been observed to use "sit-and-wait" or ambush predation like many vipers, unlike the active foraging style typical of other elapids, which may be a factor in the rarity of sightings.

Like other mambas the eastern green mamba is a highly venomous snake. The venom consists of both neurotoxins and cardiotoxins. The toxicity of individual specimens can vary greatly based on several factors including geographical region, age, seasonal variation, diet, and so on. Symptoms of envenomation by this species include swelling of the bite site, dizziness and nausea, accompanied by difficulty breathing and swallowing, irregular heartbeat and convulsions progressing to respiratory paralysis. Bites that produce severe envenomation can be rapidly fatal.

Taxonomy

The eastern green mamba is classified under the genus *Dendroaspis* of the family Elapidae. *Dendroaspis angusticeps* was first described by a Scottish surgeon and zoologist, Andrew Smith in 1849.[4]

The generic name, *Dendroaspis*, derives from Ancient Greek *dendro* (*δένδρον*), meaning "tree",[5] and *ἀσπίς* (*ασπίς*), which is understood to mean "shield",[6] but also denotes "cobra" or simply "snake", in particular "snake with hood (shield)". Via Latin *aspis*, it is the source of the English word "asp". In ancient texts, *aspis* or asp often referred to the Egyptian cobra (*Naja haje*), in reference to its shield-like hood.[7] Thus, "Dendroaspis" literally means *tree asp*, reflecting the arboreal nature of most of the species within the genus. The genus was first described by the German ornithologist and herpetologist Hermann Schlegel in 1848.[8] Slowinski *et al.* (1997) pointed out that the relationships of the African genus *Dendroaspis* are problematical.[9] However, evidence suggests that *Dendroaspis*, *Ophiophagus*, *Bungarus*, and *Hemibungarus* form a solid non-coral snake Afro-Asiatic clade.[10]

The specific name *angusticeps* is derived from the Latin word *angustus*, which means "narrow"[11] and *caput* is also Latin and means "head", calling attention to the long narrow head of

this species. In addition to being called the eastern green mamba, this species is also commonly known as the common green mamba, East African green mamba, white-mouthed mamba, or just simply the green mamba.[12]

Description

An eastern green mamba

The eastern green mamba is a large, with a slightly compressed, and very slender bodied snake with a medium to moderately long tapering tail. Adult males average around 1.8 metres (5.9 ft) in total length, while females average 2.0 metres (6.6 ft) in total length. This species rarely exceeds lengths of 2.5 metres (8.2 ft). In general, the total length is 4-4.3 times the length of the tail.[13][14] The head is narrow, elongate, and coffin-shaped, with a distinct canthus which is slightly distinct from the neck. When threatened or otherwise aroused in some way, this species is capable of flattening its neck area, though no real hood is formed. The eastern green mamba has relatively long front fangs which are located at the proscenium end of the maxillary bone at the very front of the maxilla. These fangs can rotate on their axis with the prefrontal bone, giving this species more control over the movements of its fangs than in the case of other elapids. The maxillary bone has no other solid teeth; however, a pair of long, recurved, fang-like solid teeth, followed by a distinct interspace and numerous small teeth, are on the front of the lower jaw. The eyes are medium in size and the pupils round, in common with other elapids.[12][15]

Scalation

Dorsal scales are oblique, smooth and narrow. Coloration in this species is bright green dorsally and yellow-green ventrally, with a few bright yellow scales scattered on the flanks in some specimens. Juveniles are blue-green, and develop the brighter green adult coloration anteriorly to posteriorly in successive sheddings of the skin. Most individuals over 60 centimetres (24 in) in total length have the full adult coloration, but even some adults may return to a darker bluish green just before shedding. The border of the pupil may have a narrow bright ochre to golden yellow edge, and the posterior border of the iris may become bright green. The inside of the mouth may be white or bluish white. The males of this species usually have fewer ventral scales than the females.[12][13][14]

The head, body, and tail scalation of the eastern green mamba:[16]

- **Dorsal at midbody:** 17-21 (19)
- **Ventral:** 201-232
- **Subcaudal:** 99–126 (paired)
- **Anal plate:** Divided
- **Upper labials:** 7-9
- **Upper labials to eye:** 4th
- **Preoculars:** 3
- **Postoculars:** 3-5
- **Lower labials:** 9-11
- **Temporal:** 2+3 (variable)

Reproduction

The eastern green mamba is solitary, except during breeding season, when they are most active and males engage in combat. Gravid females tend to be sedentary, but males will actively search out and court females during the long rainy season, which is between the months of April and

June. Males have been observed engaging in agonistic behaviour and may fight each other over potential mating opportunities, or possibly to establish a dominance hierarchy. Typically, a male initiates a fight by moving on top of the other's body and tongue-flicking, after which the two snakes "intertwine their necks and bodies, and push against each other" in an attempt to pin each other's head repeatedly to the ground. Male-male combat can last for several hours, but combat between males of this species don't ever include biting and the nature of the combat is never as aggressive and/or vicious as commonly seen among the eastern green mamba's much larger cousin, the black mamba. Males locate females by following a scent trail. The male courts the female by aligning his body along the female's while rapidly tongue-flicking. Depending on whether the female is receptive to mating, she will lift her tail and cloacal juxtaposition will follow shortly. Courtship and mating take place in the trees, after which the female lays anywhere between 4-17 eggs (average of 10 to 15 eggs are laid), which occurs in the summer months of October and November.[17] The eggs are white and elongated, usually measuring 65x35 millimetres.[13] The eggs are usually laid in a hollow tree, among decaying vegetation, or leaf litter. The incubation period is 10 to 12 weeks. When the young emerge from the eggs, they are approximately 30 to 40 centimetres (12 to 16 in)[14] or around an average of 44 centimetres (17 in)[17] in length, and they're highly venomous right at birth. Individuals of this species usually reach adult coloration at a length of 60 to 75 centimetres (24 to 30 in)[13][14] Hatchlings tend to grow 50 to 80 centimetres (20 to 31 in) in length in the first year of life. As the hatchlings age, their growth rates decrease but they never stop completely growing.[17]

Lifespan

The longest living eastern green mamba was a captive specimen which lived for 18.8 years.[18] Another captive specimen lived for 14 years.[19] However, while it may be possible for wild specimens to live that long, they are thought to have shorter lifespans in general due to the threats of predation, habitat loss, disease, and other biological and environmental factors.

Distribution and habitat

This species is indigenous to more coastal regions of southern Africa and east Africa. The eastern green mamba's range extends from Kenya south through Tanzania, Mozambique, Malawi, eastern Zimbabwe, eastern Zambia into South Africa as far as southern Natal and northern Pondoland. It can also be found in Zanzibar. The distribution of this species is assumed to be continuous, but reports seem to be scarce in regions within the species' range.[12][13]

In South Africa, its range is restricted to low altitude forests along the KwaZulu-Natal coastline, extending as far south as the extreme northeastern part of the Eastern Cape.[20] The South African population, together with one locality in southern Mozambique, is considered as an isolated unit.[21]

The eastern green mamba is primarily arboreal (living in trees), only rarely descending to the ground. An elusive snake due to its coloration, it is usually well camouflaged in trees or bushes. It is believed by some herpetologists that this species is limited to tropical rainforests in coastal lowlands,[17] however, according to other experts, this species can also be found in coastal bush, and dune and montane forest.[19] Unlike its close relative the black mamba (*D. polylepis*), this species is rarely found in open terrain and prefers relatively dense, well-shaded vegetation. In addition to wild forest habitats, this species is also commonly found in thickets and farm trees (such as citrus, mango, coconut, and cashew). In coastal east Africa they are known to enter houses and may even shelter in thatched roof dwellings. Specimens of this species have been found at elevations up to 1,500 metres (4,900 ft) above sea level.[14]

Conservation status

As of 26 June 2011, the conservation status of *Dendroaspis angusticeps* has not been assessed by the IUCN. The eastern green mamba is, however, a fairly common species of snake throughout its geographical range, and populations are believed to be stable. Large concentrations of two to three individuals per hectare have been documented in coastal Kenya

and southern Tanzania, and in one instance a group of five eastern green mambas were seen in a single tree. Although populations of this species are stable, habitat destruction and deforestation may pose a possible threat to this species.[14]

Behaviour and ecology

A green mamba at a German serpentarium

The eastern green mamba is a diurnal, arboreal, and secretive species of snake, and it tends to spend most of its time above the ground in relatively dense brush, where it is well camouflaged.[14] This species is not commonly found on land unless motivated by thirst, prey, or the need to bask in the sun (thermoregulation).[22] It is an alert, nervous, excellent climber and extremely agile snake. It sleeps at night in a tree coiled up in leafy clumps rather than seeking a tree hollow (although sometimes found in them).[12] In a study of the movement patterns of two adult specimens of this species over a 27-day period, the researcher found that their activity range areas to be very low, comparable to other predators who ambush prey rather than actively hunt them. This is in contrast to most elapid species, including other mambas, who tend to actively hunt or forage for prey. The study's preliminary evidence sheds some light on this species' method of hunting prey and suggests that it may be an ambush predator due to the sit-and-wait behavior displayed. However, this evidence does not preclude active foraging by this species. A specimen systematically hunting a sleeping bat was observed by William York.[23] There is no evidence that the eastern green mamba migrates; in fact, this species is thought to be relatively sedentary. It can remain in the same location for days at a time, apparently moving most commonly to find food or mates. On average, individuals of this species move only about 5.4 metres (18 ft) per day.[17][23] Unlike its much larger cousin the black mamba, this mamba is more shy and not as aggressive or fearsome. It will avoid confrontation with humans or any other potential predators when possible, and will rather rely on its camouflage, or flee, than alert a potential threat of its presence. They are fast snakes, capable of moving 7 mph. They don't always strike, but under continuous harassment and provocation and especially if cornered, they may suddenly strike repeatedly in quick succession, often leading to severe envenomation.[22]

Diet

This mamba preys primarily on adult birds, eggs and rodents. This species has also been documented to prey on bats. It is also believed that this species eats arboreal lizards as well, but this has not been documented.[13][14][19] The preliminary evidence suggests that this species displays a sit-and-wait strategy of foraging. However, this evidence does not preclude active foraging by this species. One witness observed a specimen systematically hunt sleeping bats (J. Ashe, pers. comm. 1991).[23] They have also been known to raid the nests of young birds.[24] Sit-and-wait tactics may be successful with highly mobile prey, such as adult birds or rodents. Documented prey include the sombre greenbul, which occur in dense portions of natural and cultivated vegetation along Kenya's coastline. Ionides and Pitman (1965) reported a large Bushveld gerbil in the stomach of a green mamba in Tanzania. Although the Bushveld gerbil does not occur in Kenya, green mambas will prey on any of the seven species of gerbil that inhabit various portions of its range.[23]

Predators

The eastern green mamba has a few natural predators. Humans, mongooses, snake eagles, and genets commonly prey on this species of mamba. Hornbills and other snakes tend to prey on juvenile green mambas.[23]

Venom

The eastern green mamba has a very rapid-acting venom

The eastern green mamba is a highly venomous snake. The venom consists of both pre-synaptic and postsynaptic neurotoxins (dendrotoxins), cardiotoxins, calcicludine, and fasciculins. The average venom yield per bite is 80 mg according to Engelmann and Obst (1981),[25] while Minton (1974) gives it a range of 60–95 mg (dry weight).[12] The subcutaneous LD_{50} is 1.3 mg/kg.[14] The LD_{50} in mice through the IV route is 0.45 mg/kg.[26] Like all other mamba species, the toxicity of individual specimens within the same species can vary greatly based on several factors including geographical region, age, seasonal variation, diet, and so on. Local swelling is variable and sometimes absent after mamba bites. However, patients bitten by the eastern green mamba develop swelling of the entire bitten limb and also show mild haemostatic disturbances (Warrell DA; MacKay et al. 1966). The rare cases of local tissue damage usually resulted from bites on the fingers or the use of a tight tourniquet.[27] This species has caused bites to humans and many of the bites attributed to this species have often resulted in fatalities. The mortality rate of untreated bites is unknown but is thought to be quite high.[12] Symptoms of envenomation by this species include swelling of the bite site, dizziness, and nausea, accompanied by difficulty breathing and swallowing, irregular heartbeat, convulsions, rapid progression to respiratory paralysis. Bites that produce severe envenomation can be rapidly fatal. Case reports of rapidly fatal outcomes, in as little as 30 minutes, have been recorded for this species.[14]