

= Black mamba =

The black mamba ( *Dendroaspis polylepis* ) is a large and extremely venomous snake endemic to parts of sub-Saharan Africa . Specimens vary in color from grey to dark brown , but not black . Juvenile black mambas tend to be lighter in color than adults and darken with age . It is the longest species of venomous snake indigenous to the African continent ; mature specimens generally exceed 2 meters ( 6 @. @ 6 ft ) and commonly attain 3 meters ( 9 @. @ 8 ft ) . Specimens of 4 @. @ 3 to 4 @. @ 5 meters ( 14 @. @ 1 to 14 @. @ 8 ft ) have been reported .

Although most mamba species are tree @-@ dwelling snakes , the black mamba is not generally arboreal , preferring lairs in terrestrial habitats in a range of terrains . These include savannah , woodlands , rocky slopes and in some regions dense forest . It is diurnal and chiefly an ambush predator , known to prey on hyrax , bushbabies and other small mammals as well as birds . It is also a pursuit predator ; in this it resembles some other long , speedy , highly @-@ venomous species with well @-@ developed vision . Over suitable surfaces it is possibly the speediest species of snake , capable of at least 11 km / h ( 6 @. @ 8 mph ) over short distances . Adult mambas have few natural predators .

In a threat display , the mamba usually opens its inky black mouth , spreads its narrow neck @-@ flap and sometimes hisses . It is capable of striking at considerable range and occasionally may deliver a series of bites in rapid succession . Its venom is primarily composed of potent neurotoxins which may cause fast onset of symptoms . Despite its reputation for being formidable and highly aggressive , like most snakes , it usually attempts to flee from humans unless threatened or cornered . Not being proximal to humans , bites from the black mamba are not frequent .

= = Taxonomy = =

The black mamba is the species *Dendroaspis polylepis* in the genus *Dendroaspis* of the family Elapidae . The first formal description was by Albert Günther in 1864 . Although it had been known previously to missionaries and residents by the name " mamba " . Which was already established in the vernacular , presumably borrowed from the Zulu language . In 1873 , Wilhelm Peters described two subspecies : the nominotypical *D. polylepis polylepis* and also *D. polylepis antinorii* . However , these are no longer held to be distinct . In 1896 , Boulenger combined the species ( *Dendroaspis polylepis* ) as a whole with the eastern green mamba ( *Dendroaspis angusticeps* ) , a lumping diagnosis that remained in force until 1946 , when FitzSimons split them into separate species again .

The generic name , *Dendroaspis* , derives from Ancient Greek *dendro* ( ?????? ) , meaning " tree " , and *aspis* ( ????? ) , which is understood to mean " shield " , 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 . Thus , " *Dendroaspis* " literally means tree asp , reflecting the arboreal nature of most of the species within the genus .

The specific epithet *polylepis* is derived from the Ancient Greek *poly* meaning " many " and *lepis* meaning " scale " . It apparently refers to the scale count of this species , which is higher than some other species in the genus .

= = Description = =

*Dendroaspis polylepis* is a large , round @-@ bodied , slender , but powerful snake . It tapers smoothly towards the tail , but is of markedly more robust build than its distinctly gracile congeners *Dendroaspis angusticeps* and *Dendroaspis viridis* . The head is often said to be " coffin @-@ shaped " with a somewhat pronounced brow ridge and a medium @-@ sized eye . It is a highly proteroglyphous snake , with fangs up to 6 @. @ 5 millimeters ( 0 @. @ 26 in ) in length located at the front of the maxilla . The adult snake 's length ranges from 2 meters ( 6 @. @ 6 ft ) to 3 meters ( 9 @. @ 8 ft ) routinely but , according to some sources , specimens have grown to lengths of 4 @. @

3 to 4 @. @ 5 meters ( 14 @. @ 1 to 14 @. @ 8 ft ) . Black mambas weigh about 1 @. @ 6 kilograms ( 3 @. @ 5 lb ) on average . A specimen of 1 @. @ 41 meters ( 4 @. @ 6 ft ) was found to have weighed 651 @. @ 7 g ( 1 @. @ 437 lb ) . *Dendroaspis polylepis* is the second longest venomous snake species , exceeded in length only by the king cobra .

In spite of its common name , the black mamba is not actually black ; in fact the interior of the snake 's mouth is its only conspicuously black feature . Specimens vary considerably in color ; some are olive @-@ brown to khaki , many are grey , and some individuals display dark mottling towards the posterior . Such mottling may appear in the form of oblique bars . The underbody is often pale yellow or cream colored and the eyes are dark brown to black with a silver or pale yellow corona surrounding the pupil . Juvenile snakes are lighter in color than adults , typically grey or olive green in appearance , and they darken with age .

The " black " mamba has been said to take its name from the color of the inside of its mouth , but this claim is an urban legend , a factoid that lacks objective or historical support . In particular , it was referred to as the " black mamba " decades before knowledge of the color of its oral mucosa was in common circulation . Common names for mambas are to be taken no more seriously than any other common names , and we find for example that attempts to impose the more logical common name " common mamba " for the " black mamba " , which after all is not black , have been abandoned in favor of applying " common mamba " to the Eastern green mamba , *Dendroaspis angusticeps* . In the mean time , since the late twentieth century , some authors have unquestioningly copied the claim that the name derived from the color of its open mouth .

= = = Scalation = = =

Like most Elapidae , the scales of the black mamba are smooth and flat , without keels . Most specimens feature 23 ? 25 rows of scales , but rarely as few as 21 .

The head , body and tail scalation of the black mamba :

= = Distribution and habitat = =

The black mamba has a wide and fragmented range within sub @-@ Saharan Africa . Specifically , it has been observed in : north east Democratic Republic of the Congo , south western Sudan to Ethiopia , Eritrea , Somalia , Kenya , eastern Uganda , Tanzania , Burundi , Rwanda , southwards to Mozambique , Swaziland , Malawi , Zambia , Zimbabwe and Botswana to KwaZulu @-@ Natal in South Africa , and Namibia ; then north easterly through Angola to south eastern Democratic Republic of the Congo . The black mamba 's distribution contains gaps within the Central African Republic , Chad , Nigeria and Mali . These gaps may lead physicians to misidentify black mamba bites and administer an inappropriate antivenom .

The black mamba was also recorded in 1954 in West Africa , in the Dakar region of Senegal . However , this observation , and a subsequent observation that identified a second specimen in the region in 1956 , has not been confirmed and thus the snake 's distribution in this area is inconclusive . The black mamba is not commonly found at altitudes above 1 @, @ 000 metres ( 3 @, @ 300 ft ) , although its distribution does reach 1 @, @ 800 metres ( 5 @, @ 900 ft ) in Kenya and 1 @, @ 650 metres ( 5 @, @ 410 ft ) in Zambia .

The black mamba is primarily terrestrial , but occasionally arboreal , especially where it occurs in forest . Typically it inhabits neglected areas of scrub , termite mounds , abandoned burrows and rock crevices . It is adapted to terrain ranging from savannah and woodland to rocky slopes and dense forests . The black mamba prefers moderately dry environments such as light woodland and scrub , rocky outcrops , and semi @-@ arid dry savannah , to dense forest or arid desert .

= = Behaviour and ecology = =

The black mamba is graceful but skittish and often unpredictable . It is agile and can move quickly . It is shy and secretive by nature and , like most snakes , avoids threats . In the wild , a black mamba

seldom tolerates humans approaching more closely than about 40 meters . When confronted it can display great truculence and is likely to gape in a threat display , exposing its black mouth and flicking its tongue . It also is likely to form a hood by spreading its neck @-@ flap as cobras do . The mamba 's hood however , is narrower than that of a typical cobra . The threat display may be accompanied by audible hissing .

During the threat display , any sudden movement by the intruder may provoke the mamba into a series of rapid strikes leading to severe envenomation . Also , the size of the black mamba , plus its ability to raise its head well off the ground , enable it to launch as much as 40 % of its body length upwards , so that mamba bites in humans quite often are on the upper body , and correspondingly are likely to be difficult to treat . This behaviour also permits the snake to land a strike at unexpectedly long range . The black mamba 's reputed readiness to attack is often much exaggerated and usually is provoked by perceived threats , such as blocking its intended retreat , accidentally or otherwise .

= = = Speed = = =

For its slender body , the black mamba is deceptively powerful ; it is the fastest moving snake indigenous to Africa , and perhaps the fastest anywhere . It does however , move rather clumsily over soft sand , a surface to which it is not adapted . There have been many unrealistic stories concerning the black mamba 's speed , perhaps partly because the slender body exaggerates the impression of speed . These stories include the myth that it can outrun a galloping horse or a running human . On 23 April 1906 , on the Serengeti Plains , an intentionally provoked black mamba was recorded at a speed of 11 km / h ( 6 @.@ 8 mph ) , over a distance of 43 m ( 141 ft ) . A black mamba would almost certainly not be able to exceed 16 km / h ( 9 @.@ 9 mph ) , and like most reptiles it can maintain such relatively high speeds only for short distances .

= = = Diet = = =

The black mamba is diurnal and chiefly an ambush predator , though it has been recorded as hunting partly by pursuit , such as catching pigeons at a watering hole before they can gain sufficient height to escape . It usually goes hunting from a permanent lair , to which it will regularly return to providing that the hunting is good and it is not disturbed . It hunts mainly by sight and in doing so it commonly will raise much of its length well off the ground . The black mamba does not typically hold onto prey after biting , instead releasing its quarry and waiting for it to succumb to paralysis and die . This however depends on the type of prey ; for example , it typically will hold onto a bird till it stops struggling to escape . If prey attempts to escape or defend itself , the black mamba often may follow up its initial bite with a rapid series of strikes to incapacitate and quickly kill its prey . The snake has been known to prey on hyrax and rock hyrax , bushbabies , and bats . The black mamba has a potent digestive system and has been observed to digest prey fully within eight to ten hours .

= = = Predators = = =

Not many predators challenge an adult black mamba although it does face a few threats such as birds of prey , particularly snake eagles . Although all species of snake eagle commonly prey on snakes , there are two species in particular that do so with high frequency , including preying on black mambas . These are the black @-@ chested snake eagle ( *Circaetus pectoralis* ) and the brown snake eagle ( *Circaetus cinereus* ) . The Cape file snake ( *Mehelya capensis* ) , which is apparently immune to all African snake venoms and preys on other snakes including venomous ones , is a common predator of black mambas ( limited only by the size it can swallow ) . Mongooses which also are partially immune to venom , and are often quick enough to evade a bite , will sometimes tackle a black mamba for prey . Humans do not usually consume black mambas , but they often kill them out of fear .

### == = Reproduction == =

Black mambas breed annually and mating occurs in the early spring , when male mambas locate a female by following her scent trail . After finding a potential mate the male will inspect the female by flicking his tongue over her entire body . As in other species of snakes and many other reptiles , fertilization is internal and the intromittent organs of the males are in the form of hemipenes . Females lay clutches of eggs with an incubation period of some 80 to 90 days . Like most snakes female mambas are both oviparous and iteroparous . Egg @-@ laying typically occurs during the middle of summer and egg clutches range from 6 to 17 eggs .

During the mating season rival males may compete by wrestling , not by biting . Opponents attempt to subdue each other by intertwining their bodies and raising their heads high off the ground . Observers have on occasion mistaken such wrestling for mating .

Black mambas are generally solitary , but not strictly so ; as a rule they interact very little except in male rivalry during the mating season . However , black mambas are well known to share retreats occasionally , either with other mambas , or sometimes with other species of snakes .

In hatching , mambas break through the egg shell with an egg tooth and are born with fully developed venom glands ; capable of inflicting a potentially lethal bite minutes after birth . The body of the newly hatched snake contains the residues of the egg yolk , and assimilates them to sustain the young snake until it finds its first prey .

### == = Lifespan == =

There is little information available concerning the lifespan of wild black mambas , but the longest surviving captive example had a recorded lifespan of 11 years . It is possible that wild snakes may live significantly longer than this .

### == = Venom == =

The venom of the black mamba is extremely toxic , commonly causing collapse in humans within 45 minutes or less from a single bite . Without effective antivenom therapy , death typically occurs in 7 ? 15 hours . The venom is chiefly composed of neurotoxins , specifically dendrotoxin . The black mamba is capable of striking at considerable range and occasionally may deliver a series of bites in rapid succession . Despite its reputation for being highly aggressive , like most snakes , it usually attempts to flee from humans unless threatened or cornered .

The black mamba 's venom is composed of neurotoxins ( dendrotoxin ) and cardiotoxins as well as other toxins such as fasciculins . In an experiment , the most abundant toxin found in black mamba venom was observed to be able to kill a mouse in as little as 4 @.@ 5 minutes . Based on the murine median lethal dose ( LD50 ) values , the black mamba 's toxicity from all published sources is as follows :

( SC ) subcutaneous ( most applicable to real bites ) : 0 @.@ 32 mg / kg , 0 @.@ 28 mg / kg .

( IV ) intravenous : 0 @.@ 25 mg / kg , 0 @.@ 011 mg / kg .

( IP ) intraperitoneal : 0 @.@ 30 mg / kg ( average ) , 0 @.@ 941 mg / kg . 0 @.@ 05 mg / kg ( the last quote doesn 't make it clear if is either intravenous or intraperitoneal ) .

Its bites can deliver about 100 ? 120 mg of venom on average and the maximum dose recorded is 400 mg . It is reported that before antivenom was widely available , the mortality rate from a bite was nearly 100 % . The bite of a black mamba can potentially cause collapse in humans within 45 minutes , or less . Without effective antivenom therapy , death typically occurs in 7 ? 15 hours . Presently , there is a polyvalent antivenom produced by the South African Institute for Medical Research to treat black mamba bites from many localities .

A bite from a black mamba causes initial neurological and neuromuscular symptoms which may commonly include headache and a metallic taste in the mouth , which may be accompanied by a triad of paresthesias , profuse perspiration and salivation . Other symptoms may include ptosis and

gradual bulbar palsy . Localised pain or numbness around the bite site is common but not typically severe ; therefore , application of a tourniquet proximal to the bite site is feasible and may assist in slowing the onset of prominent neurotoxicity . Without appropriate treatment , symptoms typically progress to more severe reactions such as tachydysrhythmias and neurogenic shock , leading to death by asphyxiation , cardiovascular collapse , or respiratory failure .

= = Attacks on humans = =

The black mamba is popularly regarded as the most dangerous and feared snake in Africa ; to South African locals the black mamba 's bite is known as the " kiss of death " . However , attacks on humans by black mambas are rare , as they usually try to avoid confrontation , and their occurrence in highly populated areas is not very common compared with some other species . Additionally , the ocellated carpet viper is responsible for more human fatalities due to snakebite than all other African species combined . A survey of snakebites in South Africa from 1957 to 1963 recorded over 900 venomous snakebites , but only seven of these were confirmed black mamba bites , at a time when effective antivenom was not widely available . Out of more than 900 bites , only 21 ended in fatalities , including all seven black mamba bites .

= = = Reported bite cases = = =

In 1998 , Danie Pienaar , now head of South African National Parks Scientific Services , survived the bite of a black mamba without antivenom . Although no antivenom was administered , Pienaar was in serious condition , despite the fact the hospital physicians declared it a " moderate " black mamba envenomation . At one point , Pienaar lapsed into a coma and his prognosis was declared " poor " . Upon arrival at hospital Pienaar was immediately intubated , given supportive drug therapy , put on mechanical ventilation and was placed on life support for three days , until the toxins were flushed out of his system . He was released from hospital on the fifth day . Pienaar believes he survived for a number of reasons . In an article in Kruger Park Times he said : " Firstly , it was not my time to go . " The article went on to state , " The fact that he stayed calmed and moved slowly definitely helped . The tourniquet was also essential . "

In another case , 28 @-@ year @-@ old British student Nathan Layton was bitten by a black mamba and died of a heart attack in less than an hour in March 2008 . The black mamba had been found near a classroom at the Southern African Wildlife College in Hoedspruit , where Layton was training to be a safari guide . Layton was bitten by the snake on his index finger while it was being put into a jar , but he didn 't realize he 'd been bitten . He thought the snake had only brushed his hand . Approximately 30 minutes after being bitten Layton complained of blurred vision . He collapsed and died of a heart attack , nearly an hour after being bitten . Attempts to revive him failed , and he was pronounced dead at the scene .

In 2013 , in a rare case of survival without treatment , American professional photographer Mark Laita was bitten on the leg by a black mamba during a photo @-@ shoot of a black mamba at a facility in Central America . The bite ruptured an artery in his calf , and he was gushing blood profusely . Laita did not go to the doctor or the hospital , and except for the swollen fang marks giving him intense pain during the night , he was not affected and was fine physically . This led him to believe that the snake either gave him a " dry bite " ( meaning without injecting venom ) or that the heavy bleeding pushed the venom out . Some commenters to the story suggested that it was a venomoid snake ( in which the venom glands are surgically removed ) . Laita responded that it was not the case . Only later , Laita found that he had captured the snake biting his leg in a photograph .