

= Bitis arietans =

Bitis arietans is a venomous viper species found in savannah and grasslands from Morocco and western Arabia throughout Africa except for the Sahara and rain forest regions . It is responsible for causing the most snakebite fatalities in Africa owing to various factors , such as its wide distribution , frequent occurrence in highly populated regions , and aggressive disposition . Two subspecies are currently recognized , including the nominate subspecies described here .

= Common names =

The species is commonly known as the puff adder , African puff adder , or common puff adder .
" *arietans* " = " striking violently " and is derived from the Latin *arieto* .

= Description =

The average size is about 1m (39 @. @ 3 inches) in total length (body + tail) and very stout . Large specimens of 190 cm (75 in) total length , weighing over 6 @. @ 0 kg (13 @. @ 2 lbs) and with a girth of 40 cm (16 in) have been reported . Specimens from Saudi Arabia are not as large , usually no more than 80 cm (31 in) in total length . Males are usually larger than females and have relatively longer tails . The head has a less than triangular shape with a blunt and rounded snout . Still , the head is much wider than the neck . The rostral scale is small . The circumorbital ring consists of 10 ? 16 scales . Across the top of the head , there are 7 ? 11 interocular scales . 3 ? 4 scales separate the suboculars and the supralabials . There are 12 ? 17 supralabials and 13 ? 17 sublabials . The first 3 ? 4 sublabials contact the chin shields , of which there is only one pair . Often , there are two fangs on each maxilla and both can be functional .

Midbody there are 29 ? 41 rows of dorsal scales . These are strongly keeled except for the outermost rows . The ventral scale count is 123 ? 147 , the subcaudals 14 ? 38 . Females have no more than 24 subcaudals . The anal scale is single .

The color pattern varies geographically . The head has two well @-@ marked dark bands : one on the crown and the other between the eyes . On the sides of the head , there are two oblique dark bands or bars that run from the eye to the supralabials . Below , the head is yellowish white with scattered dark blotches . Iris color ranges from gold to silver @-@ gray . Dorsally , the ground @-@ color varies from straw yellow , to light brown , to orange or reddish brown . This is overlaid with a pattern of 18 ? 22 backwardly @-@ directed , dark brown to black bands that extend down the back and tail . Usually these bands are roughly chevron @-@ shaped , but may be more U @-@ shaped in some areas . They also form 2 ? 6 light and dark cross @-@ bands on the tail . Some populations are heavily flecked with brown and black , often obscuring other coloration , giving the animal a dusty @-@ brown or blackish appearance . The belly is yellow or white , with a few scattered dark spots . Newborn young have golden head markings with pinkish to reddish ventral plates toward the lateral edges .

One unusual specimen , described by Branch and Farrell (1988) , from Summer Pride , East London in South Africa , was striped . The pattern consisted of a narrow (1 scale wide) pale yellowish stripe that ran from the crown of the head to the tip of the tail .

Generally , though , these are relatively dull @-@ looking snakes , except for male specimens from highland east Africa and Cape Province , South Africa , that usually have a striking yellow and black color pattern .

= Geographic range =

This species is probably the most common and widespread snake in Africa . It is found in most of sub @-@ Saharan Africa south to the Cape of Good Hope , including southern Morocco , Mauritania , Senegal , Mali , southern Algeria , Guinea , Sierra Leone , Côte d'Ivoire , Ghana , Togo , Benin , Niger , Nigeria , Chad , Sudan , Cameroon , Central African Republic , northern , eastern and

southern Democratic Republic of the Congo , Uganda , Kenya , Somalia , Rwanda , Burundi , Tanzania , Angola , Zambia , Malawi , Mozambique , Zimbabwe , Botswana , Namibia and South Africa . It also occurs on the Arabian peninsula , where it is found in southwestern Saudi Arabia and Yemen .

The type locality given is " Promontorio bonae spei " [Cape of Good Hope , South Africa] .

= = Habitat = =

It is found in all habitats except true deserts , rain forests , and (tropical) alpine habitats . Most often associated with rocky grasslands .

It is not found in rainforest areas , such as along the coast of West Africa and in Central Africa (i.e. , central DR Congo) ; it is also absent from the Mediterranean coastal region of North Africa . On the Arabian peninsula , it is found as far north as Ta 'if . It has been reported to be found in the Dhofar region of southern Oman .

= = Behavior = =

Normally a sluggish species , it relies on camouflage for protection . Locomotion is primarily rectilinear , using the broad ventral scales in a caterpillar fashion and aided by its own weight for traction . When agitated , it can resort to a typical serpentine movement and move with surprising speed . Although mainly terrestrial , these snakes are good swimmers and can also climb with ease ; often they are found basking in low bushes . One specimen was found 4 @.@ 6 m above the ground in a densely branched tree .

If disturbed , they will hiss loudly and continuously , adopting a tightly coiled defensive posture with the fore part of their body held in a taut " S " shape . At the same time , they may attempt to back away from the threat towards cover . They may strike suddenly and at a high speed , to the side as easily as forwards , before returning quickly to the defensive position , ready to strike again . During a strike , the force of the impact is so strong , and the long fangs penetrate so deeply , that prey items are often killed by the physical trauma alone . The fangs are apparently able to penetrate soft leather .

They can strike to a distance of about one third of their body length , but juveniles will launch their entire bodies forwards in the process . These snakes rarely grip their victims , instead releasing quickly to return to the striking position .

= = Feeding = =

Mostly nocturnal , they rarely forage actively , preferring instead to ambush prey as it happens by . Their prey includes mammals , birds , amphibians , and lizards .

= = Reproduction = =

Females produce a pheromone to attract males , which engage in neck @.@ wrestling combat dances . A female in Malindi was followed by seven males . They give birth to large numbers of offspring : litters of over 80 have been reported , while 50 ? 60 is not unusual . Newborns are 12 @.@ 5 ? 17 @.@ 5 cm in length . Very large specimens , particularly those from East Africa , give birth to the highest numbers of offspring . A Kenyan female in a Czech zoo gave birth to 156 young , the largest litter for any species of snake .

= = Captivity = =

These snakes do well in captivity , but there are reports of gluttony . Kauffeld (1969) mentions that specimens can be maintained for years on only one mouse a week , but that when offered all they can eat , the result is often death , or at best wholesale regurgitation . They are bad @.@ tempered

snakes and some specimens never settle down in captivity , always hissing and puffing when approached .

= = Venom = =

This species is responsible for more snakebite fatalities than any other African snake . This is due to a combination of factors , including its wide distribution , common occurrence , large size , potent venom that is produced in large amounts , long fangs , their habit of basking by footpaths and sitting quietly when approached .

The venom has cytotoxic effects and is one of the most toxic of any vipers based on LD50 . The LD50 values in mice vary : 0 @. @ 4 ? 2 @. @ 0 mg / kg IV , 0 @. @ 9 ? 3 @. @ 7 mg / kg IP , 4 @. @ 4 ? 7 @. @ 7 mg / kg SC . Mallow et al . (2003) give an LD50 range of 1 @. @ 0 ? 7 @. @ 75 mg / kg SC . Venom yield is typically between 150 ? 350 mg , with a maximum of 750 mg . Brown (1973) mentions a venom yield of 180 ? 750 mg . About 100 mg is thought to be enough to kill a healthy adult human male , with death occurring after 25 hours .

In humans , bites from this species can produce severe local and systemic symptoms . Based on the degree and type of local effect , bites can be divided into two symptomatic categories : those with little or no surface extravasation , and those with hemorrhages evident as ecchymosis , bleeding and swelling . In both cases there is severe pain and tenderness , but in the latter there is widespread superficial or deep necrosis and compartment syndrome . Serious bites cause limbs to become immovably flexed as a result of significant hemorrhage or coagulation in the affected muscles . Residual induration , however , is rare and usually these areas completely resolve .

Other bite symptoms that may occur in humans include edema , which may become extensive , shock , watery blood oozing from the puncture wounds , nausea and vomiting , subcutaneous bruising , blood blisters that may form rapidly , and a painful swelling of the regional lymph nodes . Swelling usually decreases after a few days , except for the area immediately around the bite site . Hypotension , together with weakness , dizziness and periods of semi- or unconsciousness is also reported .

If not treated carefully , necrosis will spread , causing skin , subcutaneous tissue and muscle to separate from healthy tissue and eventually slough with serous exudate . The slough may be superficial or deep , sometimes down to the bone . Gangrene and secondary infections commonly occurs and can result in loss of digits and limbs .

The fatality rate highly depends on the severity of the bites and some other factors . Deaths can be exceptional and probably occur in less than 15 % of all untreated cases (usually in 2 ? 4 days from complications following blood volume deficit and a disseminated intravascular coagulopathy) , although some reports show that severe envenomations have a 52 % mortality rate . Most fatalities are associated with poor clinical management and neglect .

= = Subspecies = =