

THE VINE SNAKES

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Vine snakes, remarkable for their excessive slenderness and elongated heads, are found in tropical forest regions throughout the world. They are arboreal, and either green or the colour of bark so that they resemble the stems and tendrils of lianas vines. Back-fanged Colubridae, they are practically harmless to human beings, their venom causing pain, swelling and blisters, but no systemic effects. The mild poison is normally utilized for paralysing the lizards upon which vine snakes mostly feed.

Four distantly related genera are known. As a group these are morphologically and behaviourally alike. Ecological equivalents, their similarity results from convergence rather than from close relationship. *Oxybelis* (4 spp.) ranges from southern Arizona and western Mexico into South America - Bolivia, south-east Brazil, Paraguay and northern Argentina. The genus *Ahaetulla* (= *Dryophis*) (8 spp.) occurs in India, Sri Lanka, South East Asia, the Malayan peninsula and Indo-Australian archipelago; *Thelotornis* (2 spp.) inhabits Central and South Africa, while *Uromacer* (4 spp.) is found in Haiti, the Dominican Republic and surrounding islands.

Vine snakes are probably the only arboreal snakes that feed on potentially speedy prey, to the movements of which they respond by sight. Day-active, they have the widest binocular fields of vision known for any snakes. Before stalking their prey, however, they sway their heads. This presumably, assists in distance judging and three-dimensional vision by invoking parallax. Black horizontal stripes from the posterior of the eye to the tip of the snout in *Oxybelis* and *Uromacer* spp. not only enhance camouflage, but may also aid vision by assisting the snakes to line up their heads onto the prey. The eye line may be extended by protruding the tongue, for up to nearly 20 mins in the case of some *Oxybelis* spp. In *Thelotornis* spp., the markings are really more of an eye mask. *Oxybelis* and *Uromacer* spp. have round pupils, typical of most diurnal colubrids, while *Ahaetulla* and *Thelotornis* spp. have horizontal, key-hole pupils (which are also found in *Dryophiops* spp. of S.E. Asia). *Ahaetulla*, *Thelotornis*, and possibly *Dryophiops*, are the only snakes with a fovea or yellow spot. At the outer rim of the retina, on the temporal or caudal side of the eye, a line of sight passes through the centre of the lens, through the slot in the key-hole pupil, along a groove in the cheek in front of the eye, and straight forward parallel to the axis of the body. Furthermore, the slender cones in *Ahaetulla* increase visual acuity.

Vine snakes are 'sit and wait' foragers, which stalk their prey with lateal swinging of their heads. Predatory behaviour is released by the movements of the prey. Even subtle motions, such as breathing, are sufficient to attract attention and induce a vine snake to begin stalking. If the lizard prey walks or runs, the pursuing snake will move just a little bit further, thus closing the distance between them. It strikes when the gap has narrowed to 10-15 cm. The prey is grasped at, or anterior to, the pectoral girdle: once seized the predator's grip is never relaxed until the lizard has been swallowed.

The red tongue of the African Twig Snake *Thelotornis kirtlandi* is, apparently, sometimes used as a lure which attracts the prey: its effect is enhanced by expanding the forepart of the snake's body. This has been shown to entice birds to approach the snake, whose display makes it look like one of their own fledglings. From this may have arisen the concept of snakes charming their prey!

Vine snakes are normally exceedingly cryptic and difficult to see (Plate 1). When the wind blows, they sway their bodies like branches. Some species even fall to the ground when touched, and lie motionless there, looking like dead twigs. The eye stripes serve to camouflage the eyes which would otherwise be very conspicuous. In *A. acuminatus*, a horizontal band terminates on a level with the bottom of the pupil; in *O. argenteus* the band is as wide as the pupil.



Oxybelis acuminatus on Barro Colorado Island, Panama.

Tail vibrations may perhaps produce warning sounds, as they do when terrestrial snakes rattle their tails among dry leaves, and the blue-black lining of the open mouth of *Oxybelis* spp. serves as a threat display. The front part of the body may also be inflated in threat. *Oxybelis* spp. are mimicked by third and fourth instar larvae of the Neotropical sphingid hawk-moth *Hemeroplanes triptolemus*, whereas the last instar has been described as a mimic of the formidable pit viper *Bothrops schlegelii*. Whether these are cases of true mimicry, or examples of deimatic or startling behaviour is, of course arguable.

Oxybelis spp. inhabit all types of habitat from dry, open scrub to rainforest, but are usually to be found well above the level of the grass. They feed primarily on lizards, with the occasional insect or frog. *O. brevirostris* is a native of Costa Rica, Panama, Colombia and Equador. *O. fulgidus*, the largest species, feeds mainly on birds and small rodents. It occurs in Mexico, Guatemala and Peru. *O. acuminatus* and the bicuda, *O. aeneus* also have Neotropical distributions, as already mentioned.

For a detailed review of the ecology of vine snakes, the reader is referred to Henderson & Binder (1980).

REFERENCE

Henderson, R.W. & Binder, M.H. (1980). The ecology and behaviour of vine snakes (*Ahaetulla*, *Oxybelis*, *Thelotornis*, *Uromacer*): a review. *Contr. Biol. Geol. Milwaukee Publ. Mus.* No. 37: 1-38.