

# Death Feigning in *Lycodon Striatus* from Tilpath Valley Biodiversity Park, New Delhi, India

Mohan Singh<sup>1</sup>, Pulkit Sharma<sup>2</sup>, M. Vijay<sup>3</sup>, Debanik Mukherjee<sup>4</sup>

<sup>1</sup>Centre for Environmental Management of Degraded Ecosystems, University of Delhi, Delhi – 110 007, India  
Email: [mskarakoti\[at\]gmail.com](mailto:mskarakoti[at]gmail.com)

<sup>2</sup>GuruJal 1600, Patel Nagar, Gurugram, Haryana – 122001, India  
Email: [pulkit.friu\[at\]yahoo.co.in](mailto:pulkit.friu[at]yahoo.co.in)

<sup>3</sup>Regional Museum of natural history, Siddartha Nagar, Mysore, Karnataka – 570011, India  
Email: [m.vijay\[at\]nic.in](mailto:m.vijay[at]nic.in)

<sup>4</sup>Centre for Environmental Management of Degraded Ecosystems, University of Delhi, Delhi – 110 007, India  
Email: [tomistoma\[at\]gmail.com](mailto:tomistoma[at]gmail.com)

**Abstract:** Some lizards and snakes have developed a multiple range of defensive mechanisms as survival strategies against predators, a result of evolutionary processes like fitness costs and natural selection. Survival strategies such as motionlessness feigning death or thanatosis has been recently observed in *Lycodon striatus* from Tilpath Valley Biodiversity Park, South Delhi, highlighting the use of a novel tactics when they are under severe threat, revealing the complex interplay of evolutionary survival strategies. These findings contribute valuable insights into species behavior and can aid conservation efforts.

**Keywords:** defensive mechanism, mimicry, thanatosis, wolf snake, predator avoidance

Certain evolutionary traits such as survival strategies equipped with defensive mechanisms and response to sudden threats by predators within prey species perhaps gradually evolved through a process known as fitness costs which is largely a part of natural selection (Humpherys & Ruxton, 2018). Lizards and snakes independently acquired such defensive mechanisms in their lineages to avoid predation pressure in their population. Interaction among species such as predation pressure within populations in different ecosystems may further lead to evolution of novel behavioural traits such as anti-predatory escape mechanisms which includes metachrosis or physiological colour change, ontogenetic shift in colour patterns resulting in differential colour in juveniles and adults, apostatic selection or colour polymorphism; all these mechanisms perhaps facilitated several species to camouflage with its immediate environment of habitat, whereas the evolution aposematism or bright colours are just to display their obnoxious nature. Certain survival strategies such as Batesian and Mullerian mimicry by species have been largely evolved to confuse predators. Other anti-predatory escape strategies include partial scale degloving or cutaneous autotomy, catalepsy or being motionless, caudal autotomy or self amputation of tail and letisimulation or feigning dead known as thanatosis (Humpherys & Ruxton, 2018).

Among all these strategies catalepsy in certain lizards and thanatosis in snakes are comparatively well documented which is largely evolved to avoid visual detection from predators or to deter or repel non scavenging predators. Thanatosis have been reported from some western European non venomous snakes belonging to the genus *Natrix*, North American *Heterodon* species, South African monotypic spitting cobra *Hamachatus haemachatus*, widely distributed *Malpolon* and also among multiple Asian genera such as *Eryx*, *Fowlea*, *Coelognathus*, *Naja*, *Pseudoxenodon macrops* and in

*Lycodon aulicus* and *L. capucinus* (Mirza, Vaze and Sanap, 2011; Pandey, samal & Pattnaik, 2022). All these species if threatened coiled themselves upside down and pretend as if they are dead. However, this unusual survival strategy perhaps being acquired to avoid detection from visually oriented predators such as raptors or birds of prey. Thanatosis is recently reported in barred wolf snake *Lycodon striatus* and Common wolf snake *Lycodon aulicus* in Tilpath valley biodiversity park a part of earlier degraded Aravalli hill forests now ecologically restored and revived and it is also adjacent to Ashola bhatti Wildlife sanctuary located in South Delhi, National Capital of India.

Most non venomous *Lycodon* sp. largely mimics several deadly venomous krait species belonging to the genus *Bungarus* in sympatry. However, confusion or disorientation for a predator usually happens when two or more congeneric *Lycodon* species superficially mimics a krait in the same habitat; which perhaps reflect a complex evolutionary behavioural strategy where the perfect mimic is Batesian and the rest remains as Mullerian mimics. Although all these strategies fail when wolf snakes are severely threatened to death and in this circumstances they lastly opt for thanatosis.

Keen observation on *Lycodon striatus* showed that when threatened they first coiled their body and then hide the head inside the coil just like venomous kraits but if they are more disturbed they turned upside down, being motionless and pretend to be dead for few minutes and when the threat is over they become normal and escape fast in search of some hideouts.

## Conclusion

The observed behaviors in *Lycodon striatus* and other nonvenomous snakes emphasize the intricate evolutionary

strategies these species have developed to survive predator threats. From mimicry to feigning death, these tactics showcase the complexity of their survival mechanisms. Such ethological insights not only deepen our understanding of

species interactions in their ecosystems but also provide vital information for wildlife conservation, helping protect these species in their natural habitats.



**Photograph 1:** left *Lycodon striatus* is mimicking deadly venomous common krait *Bungarus caeruleus*



**Photograph 2:** barred wolf snake *Lycodon striatus* in death feigning behaviour

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