



Defensive Behavior by a Derafshi Snake, *Lytorhynchus ridgewayi* Boulenger 1887, and a Review of Defensive Behaviors of Awl-headed Snakes in the genus *Lytorhynchus*

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The genus *Lytorhynchus* comprises seven species distributed across the deserts and xeric shrublands from the Atlantic coast of Africa to northwestern India, including the Sahara Desert, Arabian Peninsula, Iranian Plateau, and southern Turanian Plain (Sindaco et al. 2013). Behavioral observations of snakes in this genus remain scarce, with defensive behaviors reported for the Derafshi Snake (*Lytorhynchus ridgewayi*) limited to Khan (2002), who noted that “when disturbed, individuals dive into soft soil or coil defensively on hard substrate, hiding the head between coils.”

A Derafshi Snake collected in August 2024 in Isfahan Province, Iran (33.01331, 51.26876) was maintained in a terrarium with UVB lighting, appropriate shelter, and adequate space for several days before we conducted behavioral observations when it was removed in order to take photographs. The snake initially attempted to escape but, when restrained, it exhibited the following defensive behaviors: intermittent hissing, tail vibrations in a horizontal plane (side-to-side motion), and biting and chewing when held for an extended period (Fig. 1); the last resulted in a minor injury. Additional observations of conspecifics include another individual found in Kerman Province, Iran, in 2015, that vibrated its tail in a horizontal plane while being photographed, but did not hiss or attempt to bite. In 2010, another individual elevated its head and bent its neck in an S-shape; it did not hiss or vibrate its tail but did attempt to bite (Moradi et al. 2013).

The variation in defensive responses in the three individuals suggests a degree of behavioral plasticity in this species’ defensive repertoire, which differs from Khan’s (2002) description of snakes in nature and, in particular, the combination of hissing and horizontal tail vibration had not been reported for *L. ridgewayi*, although similar behaviors occur in congeners (Table 1).



Figure 1. Defensive biting and chewing behavior by a Derafshi Snake (*Lytorhynchus ridgewayi*). Photograph by Reza Pirhadi.

Also, that two individuals bit or attempted to bite is inconsistent with the non-aggressive nature reported for Sindh Awl-headed Snakes (*L. paradoxus*) (Khan 2002; Agarwal and Srikanthan 2013; Basri and Rehan 2025), suggesting that we still have much to learn about defensive behaviors in Awl-headed Snakes.

Literature Cited

Agarwal, I. and A.N. Srikanthan. 2013. Further records of the Sindh Awl-Headed Snake, *Lytorhynchus paradoxus* (Günther, 1875), from India with notes on its habitat and natural history. *Russian Journal of Herpetology* 20: 165–170. <https://doi.org/10.30906/1026-2296-2013-20-3-165-170>.

Table 1. A review of defensive behaviors reported for species of Awl-headed Snakes in the genus *Lytorhynchus*.

Species	Defensive behavior (reference)
Crowned Leaf-nosed Snake (<i>L. diadema</i>)	When captured by its tail, it elevated the anterior third of its body and flattened its neck in a cobra-like manner (Riaño et al. 2023) During an initial encounter, this individual flattened its neck and raised its head and body ~5 cm off the ground in a cobra-like fashion; the entire display lasted 15–20 sec. (Busack et al. 2015) Shifted, coiled, hissed, and thrashed its tail back and forth vertically (Greene 1973) 1. Cobra-like display: flattening its neck and raising its head and body about 10 cm off the ground; 2. Head protective response: head is in contact with the ground with the entire body coiled and covering the head while shaking its body and hissing; 3. Sand burrowing escape: burrowing into sand and moving away quickly under the sand; 4. Malodorous secretions from cloacal glands when trapped and unable to escape (Sivan et al. 2016) Shares a blotched pattern resembling sympatric venomous viperids of the genera <i>Bitis</i>, <i>Cerastes</i>, <i>Daboia</i>, <i>Echis</i>, <i>Macrovipera</i>, and <i>Pseudocerastes</i>, as well as another Batesian-mimicking snake, <i>Malpolon moileensis</i> (e.g., Busack et al. 2015); also, when threatened, will assume a defensive cobra-like posture, although escape is the most common response (Talavera et al. 2019)
Maynard's Long-nosed Sandsnake (<i>L. maynardii</i>)	Bad tempered, does not allow easy handling, coils defensively, neck in S-shape, attacks rapidly, vibrating its tail (Khan 2002)
Sindh Awl-headed Snake (<i>L. paradoxus</i>)	When alarmed, throws itself in a ball, hides head under coils and vibrates its tail, does not attempt to bite; escapes by diving into sand (Khan 2002) Initially attempt rapid escape, followed by diving into sand; if provoked further, coil bodies, hide heads, and hiss, some vibrating tails; after perceived threat passed, snakes quickly escaped; tail-curling by some, but none attempted to bite (Basri and Rehan 2025) Tightly coiled tails (Greene 1973) Hissing by one individual, others were non-aggressive, coiled or tried to burrow into sand (Agarwal and Srikanthan 2013)
Derafshi Snake (<i>L. ridgewayi</i>)	First reaction is to dive into soft soil; if on hard soil, it hides its head beneath coiled body (Khan 2002)

Basri, M. and M. Rehan. 2025. Ecological observations and new distribution records of *Lytorhynchus paradoxus* (Günther, 1875): Expanding its range beyond the desert regions of Punjab, Pakistan. *Iranian Journal of Animal Biosystematics* 21: 101–110. <https://doi.org/10.22067/ijab.2025.91795.1093>.

Busack, S.D., J. Sivan, P. Geniez, and J.M. Pleguezuelos. 2015. *Lytorhynchus diadema* (Awl-headed Snake). Defensive behavior. *Herpetological Review* 46: 647.

Greene, H.W. 1973. Defensive tail display by snakes and amphisbaenians. *Journal of Herpetology* 7: 143–161. <https://doi.org/10.2307/1563000>.

Khan, M.S. 2002. *A Guide to the Snakes of Pakistan*. Edition Chimaira, Frankfurt am Main, Germany.

Moradi, N., S. Shafiei, and M.E. Sehhatiasabet. 2013. The snake fauna of Khabr National Park, southeast of Iran. *Iranian Journal of Animal Biosystematics* 9: 41–55. <https://doi.org/10.22067/ijab.v9i1.33305>.

Riaño, G., A. Talavera, B. Burriel-Carranza, B., M. Estarellas, and S. Carranza. 2023. *Lytorhynchus diadema* (Crowned Leaf-nosed Snake). Defensive behavior and mimicry. *Herpetological Review* 54: 488–489

Sindaco, R., A. Venchi, and C. Grieco. 2013. *The Reptiles of the Western Palearctic. 2. Annotated checklist and distributional atlas of the snakes of Europe, North Africa, Middle East and Central Asia, with an update to the Vol. 1*. Edizioni Belvedere, Latina, Italy.

Sivan, J., I. Tesler, A.A. Degan, M. Kam, and A. Rosenstrauch. 2016. Escape-defensive behaviors in the Awl-headed Snake (*Lytorhynchus diadema*) (Colubridae). Poster. ESA Annual Meeting, Fort Lauderdale, Florida, USA (August 2016).

Talavera, A., M. Albiac, and A. Ibarzabal. 2019. New records of cobra-like mimicry in *Lytorhynchus diadema* from Morocco. *Boletín de la Asociación Herpetológica Española* 30: 16–18.