

Caudal Luring by a Captive Common Boa (*Boa sp.*)

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Introduction

Caudal luring is a predatory behaviour whereby a snake undulates or waves the distal portion of its tail, producing a deceptive signal and aggressively mimicking an invertebrate. The intention is to attract prey to the snake (Heatwole & Davison 1976; Nelson et al. 2010). Caudal luring has been recorded in snakes from the families Boidae, Colubridae, Elapidae, Pythonidae, and Viperidae (Heatwole & Davison 1976; Murphy et al. 1978; Radcliffe & Chiszar 1980; Chiszar et al. 1990; Leal & Thomas 1994; Rabatsky & Farrell 1996; Tiebout III 1997; Reiserer 2002; Reiserer & Schuett 2008). Among species in the genus *Boa*, captive sub adult Argentine boas (*Boa constrictor occidentalis* PHILLIPI 1873) have been observed caudal luring, primarily when rodent prey disappears from view (Radcliffe & Chiszar 1980). Here I describe an instance of caudal behaviour in a *Boa sp.* in a captive habitat.

Observation

At 1722 h on 14 March 2017, a captive female common boa (*Boa sp.*) measuring 98 cm snout-vent length (SVL) was observed demonstrating caudal behaviour. The individual was three years and one month old, amelanistic, and of unknown lineage. Owing to the ambiguous heritage of boas in captivity, and in the light of

recent species delineations by Reynolds et al. (2014), the species has been left unknown. The specimen had last eaten a weaned domesticated rat (*Rattus norvegicus* BERKENHOUT 1769), 21 days previously and had not been offered food in the interim. She had sloughed the previous night and appeared to be actively foraging within the vivarium. As I approached the vivarium, the snake began slowly flicking and waving its tail at intervals of approximately one second, producing waves moving posteriorly from just below the vent, and coming to rest between motions. During this period the tail of the snake was slapping against a faux rock hide and some artificial foliage, producing noise audible at a distance of two metres. This behaviour continued for six minutes. Throughout the observation the snake's head was at the opposite end of the vivarium, approximately 75 cm from the tail, and no tongue flicks were observed.

Discussion

There is uncertainty surrounding the function of some caudal behaviours employed by snakes. *Boa constrictor* generally uses short strikes of <10 cm to attack prey (Cock Buning, 1983; Cundall and Deufel, 1999), and the common boa described here can certainly strike much further, up to approximately one third of SVL (pers. obs). Usually, the snake's head

is within strike range of the tail when snakes exhibit caudal luring (Murphy et al. 1978; Chiszar et al. 1990; Sazima 1991). Here, the head of the specimen was 75 cm from the tail, likely outside of strike range. This contrasts to numerous instances of caudal luring in other species (Heatwole & Davison 1976; Murphy et al. 1978; Chiszar et al. 1990; Leal & Thomas 1994; Rabatsky & Farrell 1996; Tiebout III 1997; Reiserer 2002; Reiserer & Schuett 2008). Mullin (1999) recorded a behaviour in the yellow ratsnake (*Pantherophis obsoletus* UTIGER et al 2002), referred to as caudal distraction. After detecting prey nearby, the snake began loudly slapping the tail against the substrate, despite the tail being outside of strike range. A behaviour distinct from the defensive tail vibration employed by ratsnakes. Mullin (1999) postulated that this may serve as a distraction, as opposed to a lure, to divert attention away from the head of the snake prior to a strike. A similar behaviour was noted in the horned adder (*Bitis caudalis* FITZSIMONS & BRAIN 1958), another species which displays caudal luring (Reiserer 2002). Moving snakes undulated the tail in the air as they moved, seemingly to distract attention away from the head, both in the presence and absence of prey.

As with *B. caudalis*, the purpose of the behaviour documented here is unclear. To better understand the cognitive interplay between the snake and its prey, the tail movement of common boas should be compared to the movement of their prey species (Reiserer & Schuett 2008). This would aid in elucidating the exact function of the behaviour as either distraction or aggressive mimicry. This note represents the first published record of this behaviour

in an individual over two years old from the genus *Boa*.

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References

- Chiszar, D., Boyer, D., Lee, R., Murphy, J. B., Radcliffe, C. W. (1990) Caudal luring in the southern death adder, *Acanthophis antarcticus*. *Journal of Herpetology*, **24**(3), p. 253.
- Cock Buning, T. (1983). Thresholds of infrared sensitive tectal neurons in *Python reticulatus*, *Boa constrictor* and *Agkistrodon rhodostoma*. *Journal of Comparative Physiology A: Neuroethology, Sensory, Neural, and Behavioral Physiology*, **151**(4), pp. 461-467.
- Cundall, D., & Deufel, A. (1999). Striking patterns in booid snakes. *Copeia*, **4**, pp. 868-883.
- Heatwole, H. & Davison, E. (1976) A review of caudal luring in snakes with notes on its occurrence in the Saharan sand viper, *Cerastes vipera*. *Herpetologica*, **32**(3), pp. 332 – 336.
- Janzen, D. H. (1970). Altruism by coatis in the face of predation by *Boa constrictor*. *Journal of Mammalogy*, **51**(2), pp. 387-389.
- Leal, M. & Thomas, R. (1994) Notes on the feeding behavior and caudal luring by

- juvenile *Alsophis portoricensis* (Serpentes: Colubridae). *Journal of Herpetology*, **28**(1), p. 126.
- Mullin, S. (1999) Caudal distraction by rat snakes (Colubridae, Elaphe): a novel behavior used when capturing mammalian prey. *The Great Basin Naturalist*, **59**(4), pp. 361 – 367.
- Murphy, J.B., Carpenter, C.C. & Gillingham, J.C. (1978) Caudal luring in the green tree Python, *Chondropython viridis* (Reptilia, Serpentes, Boidae). *Journal of Herpetology*, **12**(1), p. 117.
- Nelson, X.J., Garnett, D.T. & Evans, C.S. (2010) Receiver psychology and the design of the deceptive caudal luring signal of the death adder. *Animal Behaviour*, **79**(3), pp. 555 – 561.
- Rabatsky, A.M. & Farrell, T.M. (1996) the effects of age and light level on foraging posture and frequency of caudal luring in the rattlesnake, *Sistrurus miliarius barbouri*. *Journal of Herpetology*, **30**(4), p. 558.
- Radcliffe, C. & Chiszar, D. (1980) Prey-induced caudal movements in Boa constrictor with comments on the evolution of caudal luring. *Bulletin of the Maryland Herpetological Society*, **16**, pp. 19 – 22.
- Reiserer, R. (2002) Stimulus control of caudal luring and other feeding responses: a program for research on visual perception in vipers. In *Biology of the Vipers*. pp. 361 – 383.
- Reiserer, R.S. & Schuett, G.W. (2008) Aggressive mimicry in neonates of the sidewinder rattlesnake, *Crotalus cerastes* (Serpentes: Viperidae): stimulus control and visual perception of prey luring. *Biological Journal of the Linnean Society*, **95**(1), pp. 81 – 91.
- Reynolds, R.G., Niemiller, M.L. & Revell, L.J. (2014) Toward a tree-of-life for the boas and pythons: Multilocus species-level phylogeny with unprecedented taxon sampling. *Molecular Phylogenetics and Evolution*, **71**, pp. 201 – 213.
- Sazima, I. (1991) Caudal Luring in Two Neotropical Pitvipers, *Bothrops jararaca* and *B. jararacussu*. *Copeia*, **1991**(1), p. 245.
- Tiebout III, H.M. (1997) Caudal luring by a temperate colubrid snake, *Elaphe obsoleta*, and its implications for the evolution of the rattle among rattlesnakes. *Journal of Herpetology*, **31**(2), p. 290