REPTILES & AMPHIBIANS

# Observations of Nocturnal Activity in Diurnal Indian Snakes

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In animal communities, many species are active during different times of day. These temporal niches are largely shaped by the environment and resources on which the species is dependent (Kronfeld-Schor and Dayan 1999; Levy et al. 2012). Environmental factors like temperature, light-dark cycles, precipitation, anthropogenic activities, and interspecific interactions like predation and competition (Ikeda et al. 2016) may induce facultative or opportunistic variation in temporal activity patterns of animals. In snakes, shifts between diel temporal niches have been documented in many species (e.g., Krysko 2002; Abom et al. 2012; DeGregorio et al. 2014; Ghosh et al. 2020). In India, shifts in activity have been observed in Indian Ratsnakes (*Ptyas mucosa*) and Buff-striped Keelbacks *(Amphiesma stolatum*) (Dutta et al. 2017; Ghosh et al. 2020).

Herein we report six observations in 2009 and 2010, during which seven snakes, generally considered to be diurnally active (Gharat et al. 2021), were observed active or foraging at night in proximity to artificial lighting at the

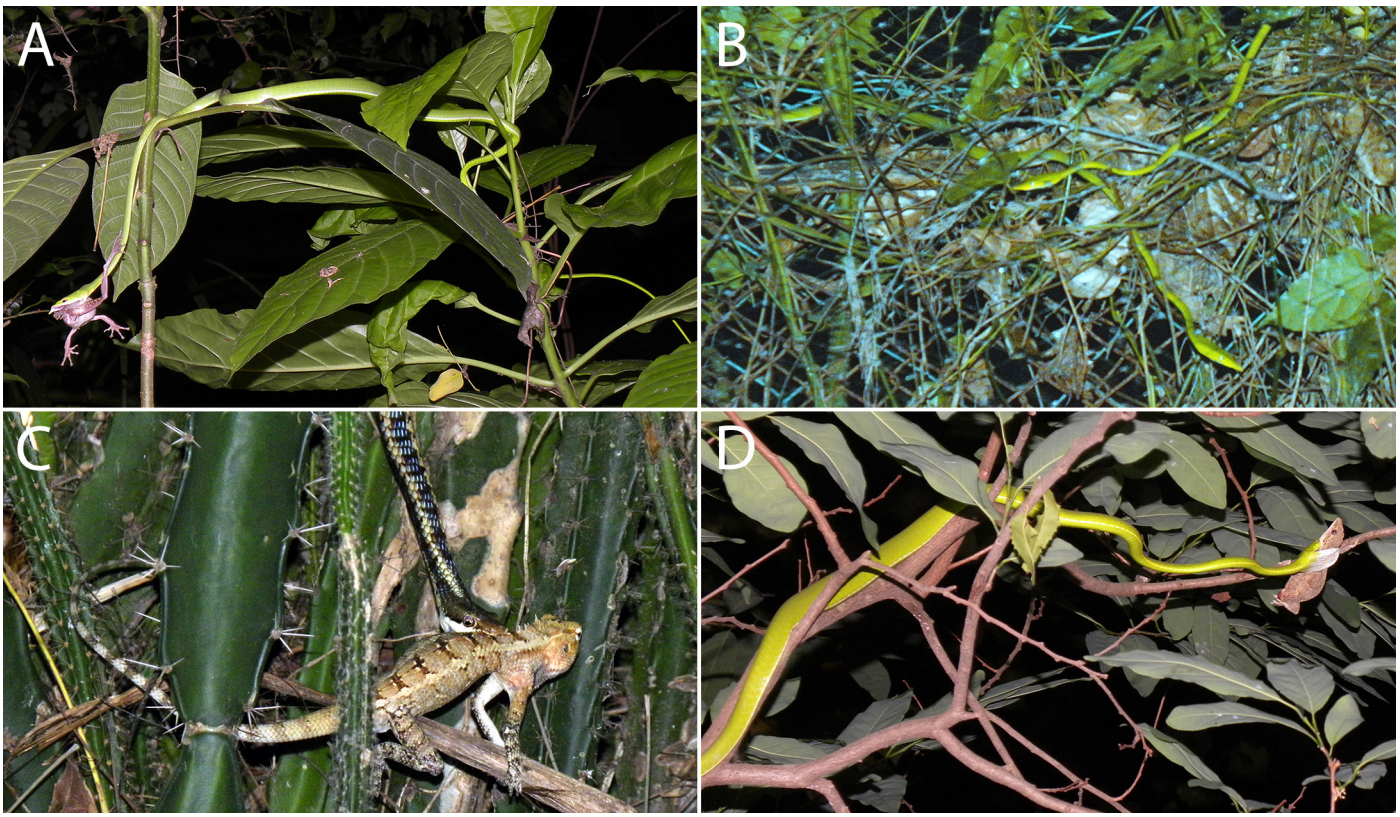


**Fig. 1.** A Common Vinesnake (*Ahaetulla oxyrhyncha*) feeding on a Common Indian Treefrog (*Polypedates maculatus*) at 2345 h on 16 June 2010 (A); two Common Vinesnakes (*Ahaetulla oxyrhyncha*) active and presumably foraging at 2250 h on 19 June 2010 (B); a Common Bronze-backed Treesnake (*Dendrelaphis tristis*) feeding on a subadult Oriental Garden Lizard (*Calotes versicolor*) at 2142 h on 20 June 2010 (C); and a Common Vinesnake (*Ahaetulla oxyrhyncha*) feeding on an Indian Bark Gecko (*Hemidactylus leschenaultii*) at 2310 h on 25 July 2010 (D). All were near artificial lights at the Madras Crocodile Bank Trust and Centre for Herpetology, Mamallapuram, Tamil Nadu, India. Photographs by Soham Mukherjee.





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At 2045 h on 18 March 2009, we encountered an Indian Ratsnake (*Ptyas mucosa*) (total length [TL] 180–200 cm) feeding on a Common Asian Toad (*Duttaphrynus melanostictus*). At 2345 h on 16 June 2010, we observed a Common Vinesnake (*Ahaetulla oxyrhyncha*) (TL ca. 75 cm) 70 cm above the ground on the branches of a Sugar Apple (*Anona squamosa*) near a light feeding on a Common Indian Treefrog (*Polypedates maculatus*) (Fig. 1A). At 2200 h on 18 June 2010, we found a Common Vinesnake (TL 90 cm) crossing a road. At 2250 h on 19 June 2010, we observed two Common Vinesnakes (TL 100 cm and 85 cm) active and apparently searching for prey 2 m above the ground on a Spreading Hogweed (*Boerhaavia diffusa*) growing on a fence near artificial light sources (Fig. 1B). At 2142 h on 20 June 2010, we encountered a Common Bronze-backed Treesnake (*Dendrelaphis tristis*) (TL 130 cm) that had caught a subadult Oriental Garden Lizard (*Calotes versicolor*) that might have been sleeping or foraging for invertebrate prey attracted to a nearby security light (Fig. 1C). At 2310 h on 25 July 2010, we observed a Common Vinesnake (TL 90 cm) preying on an Indian Bark Gecko (*Hemidactylus leschenaultii*) 2.1 m above the ground on an Elephant Apple (*Dillenia indica*) near an artificial light in close proximity to the previous sighting (Fig. 1D). The gecko had lost its tail in a vain attempt to escape the snake. These observations include the first records of nocturnal activity and foraging in *A. oxyrhyncha,* and *D. tristis*.

Common Vinesnakes have horizontal pupils, binocular vision, and a visual fovea that are best adapted for diurnal activity (Tang et al. 2021), and *D. tristis* and *P. mucosa* have large eyes with round pupils typically associated with diurnally active snakes (González-Martín-Moro et al. 2014). These snakes, which rely heavily on vision for finding prey, can obviously exploit the night-light niche (Perry and Fisher 2006; Perry et al. 2008) to search for small reptiles and amphibians that congregate near light sources where invertebrate prey is abundant (e.g., Perry and Lazell 2000; Powell 2015; Powell and Henderson 2008). This ability of urban wildlife to adjusted to anthropogenic changes in their environment appears to be beneficial for species that can exploit it, but not for their prey (Schwartz and Henderson 1991; Longcore and Rich 2004).

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