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A record of *Indotyphlops braminus* (brahminy blind snake) from Cheethwari and Kaladera Villages, Northern Part of Jaipur City, Rajasthan

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Abstract
During the July 2025 monsoon season, *Indotyphlops braminus* (Daudin, 1803), a parthenogenetic fossorial snake species belonging to the family Typhlopidae, was opportunistically recorded from two separate locations - Cheethwari and Kaladera villages in Jaipur district, Rajasthan. In both instances, individuals were observed on the surface of moist soil following nocturnal rainfall, suggesting rainfall-induced emergence behavior. The first sighting occurred on 22 July 2025 in Cheethwari village, and the second on 30 July 2025 in Kaladera village. Both specimens measured approximately 7-13 cm in length and displayed typical worm-like morphology with indistinct heads and tails. These incidental records represent new locality data for *I. braminus* within semi-arid, human-modified agro-ecosystems in eastern Rajasthan. The observations highlight the ecological influence of rainfall on subterranean reptile activity and underline the importance of documenting such rare, cryptic species to better understand their distribution and behavior. According to the IUCN Red List, the conservation status of this species is Least Concern.

Keywords: *Indotyphlops braminus*, Jaipur, fossorial reptiles, rainfall emergence, typhlopidae

Introduction
Indotyphlops braminus (Daudin, 1803) [8], commonly known as the Brahminy Blind Snake, is one of the smallest and most widely distributed fossorial snakes in the world. Belonging to the family Typhlopidae, the species is characterized by a worm-like cylindrical body, smooth shiny scales, reduced vestigial eyes, and indistinct head and tail regions. Native to South and Southeast Asia, it has attained a cosmopolitan distribution through anthropogenic dispersal, especially via potted plants, nursery soil, and horticultural materials (Wall, 1921; Whitaker & Captain, 2004) [1, 2]. Remarkably, *I. braminus* is an obligate parthenogenetic species - all known individuals are females that reproduce without males. This reproductive strategy facilitates rapid colonization and establishment in new regions (Zug *et al*., 2001) [4]. Because of its small size, burrowing habits, and superficial resemblance to earthworms, this snake is rarely observed and is often overlooked in biodiversity surveys (Das, 2002) [3]. Ecologically, *I. braminus* is a generalist fossorial predator that feeds primarily on soft-bodied invertebrates, such as ant larvae and termites, thus contributing to soil ecosystem regulation (Whitaker & Captain, 2004) [2]. It is known to inhabit a variety of habitats, including forests, agricultural lands, gardens, and urban areas.

In India, most distribution records are from moist tropical regions, particularly southern and northeastern states. Reports from drier northern states, including Rajasthan, are sparse (Meetei *et al*., 2016) [4]. Given the state's arid to semi-arid climate and low rainfall, sightings are rare and often occur during monsoon-triggered surface activity.

Recent advances have significantly expanded knowledge of this species. The first full-length transcriptome of *I. braminus* was published in 2024, revealing potential genome duplication and offering resources for evolutionary genomics (BMC Genomic Data, 2024) [6]. A draft genome assembly has also been made available (PMC, 2022). Globally, *I. braminus* continues to expand its introduced range, with the first South American record reported from Ecuador in 2025, illustrating its invasive potential via plant trade (Carvajal and Cisneros, 2025) [8]. It has also been confirmed in North America, Central America, and the Caribbean (Uetz et. al. 2028) [10]. In Rajasthan, the first confirmed record outside this study area was from Todgarh-Raoli Wildlife Sanctuary (Rathore and Sharma 2022) [9]. These findings emphasize the importance of documenting new localities such as Cheethwari and Kaladera villages.

Materials and Methods

Study area

The study was conducted in Cheethwari Village (27°09'02.1"N, 75°48'54.3"E) and Kaladera Village (27°11'37.9"N, 75°37'49.2"E) in northern Jaipur district, Rajasthan. The region experiences a semi-arid climate with hot summers, mild winters, and moderate monsoonal rainfall.

Cheethwari: Predominantly agricultural land with crops such as mustard, wheat, and pearl millet, interspersed with *Prosopis juliflora* and *Acacia nilotica*.

Kaladera: A mosaic of cultivated fields, scrub vegetation, small-scale industries, and temporary monsoon water bodies.

Fig 1: Dorsal view of *I. braminus* observed from Cheethwari Village, Jaipur

Fig 2: Dorsal view of *I. braminus* observed from Kaladera Village, Jaipur

Methodology

Opportunistic surveys were conducted between 22 and 30 July 2025 during early mornings after monsoon rainfall. Potential microhabitats, including moist soil surfaces, under bricks, flower pots, decaying logs, and compost heaps, were inspected. Specimens were photographed, measured using Vernier calipers, and observed for behavioral traits. Morphological identification followed Whitaker & Captain (2004) [2] and Das (2002) [3], with emphasis on scalation, coloration, and body proportions.

Results

Species Identification: Specimens exhibited diagnostic traits of *I. braminus*: cylindrical body, smooth scales, uniform glossy brown-black dorsal coloration, and slightly lighter ventral side. Blunt head and tail, indistinct from body, with a small terminal spine. Vestigial eyes is visible as faint dark spots beneath ocular scales. Both specimens exhibited slow serpentine locomotion and attempted burrowing when placed on loose soil, consistent with fossorial adaptations.

Morphometric data

This species is known as the Brahminy blindsnake and is the only known obligate parthenogenetic snake species in the world.

Characteristic	Measurement
Total Length (TL)	~ 92 mm
Mid-body Diameter	~1.5 mm
Head Shape	Blunt, slightly conical, not distinct from neck
Tail Length	~1.5 mm, ending in a small conical spine (tail spine present)
Body Shape	Cylindrical, uniform thickness along most of the length
Coloration (Dorsal Surface)	Uniform glossy blackish-brown
Coloration (Ventral Surface)	Slightly lighter brown with a faint sheen
Scalation	Dorsal scales smooth, imbricate, arranged in 20 scale rows at mid-body, Rostral scale large, rounded, covering snout and extending to upper side of head, Eyes vestigial, visible as faint dark spots beneath ocular scales.
Mouth	Small, terminal, suited for fossorial feeding habits.
Behavioral Observation	The specimen exhibited slow, serpentine movement, typical of fossorial snakes; burrowing tendency was observed when placed on loose soil.

Discussion

The opportunistic records from Cheethwari and Kaladera extend the known distribution of *I. braminus* in Rajasthan. Previous literature suggests its occurrence is more common in moist tropical areas, with limited data from arid and semi-arid zones (Meetei *et al*., 2016) [4]. Rainfall events likely play a crucial role in surface emergence, facilitating detection in regions where subterranean microhabitats remain dry for most of the year.

Recent genomic studies (BMC Genomic Data, 2024; PMC, 2022) [6] offer a new dimension to understanding the evolutionary success and adaptability of this species. Its expanding global range, with recent records from Ecuador and other continents, reinforces its high dispersal potential through human-mediated transport. Given its parthenogenetic nature, small size, and adaptability, *I. braminus* may be more widely distributed in Rajasthan than current records suggest. Focused surveys, particularly during monsoon periods, could reveal additional populations and microhabitats.

Significance of study

These new locality records contribute valuable baseline data for herpetofaunal mapping in Rajasthan's semi-arid agro-ecosystems. While *I. braminus* is currently listed as Least Concern by the IUCN, documenting its presence in marginal habitats is crucial for understanding distribution dynamics, ecological roles, and responses to climatic variability.

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