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Cover: Parts of *Vachellia nilotica*, medium - watercolours. © P Kritika



(DDA), a local government agency responsible for the development of the city, has established a network of seven biodiversity parks in Delhi in collaboration with Centre for Environmental Management of Degraded Ecosystems (CEMDE), University of Delhi. Yamuna Biodiversity Park (YBP), developed on the floodplain of the river Yamuna, is one of them. The restored wetlands, marshes, floodplain forests, and grasslands of YBP (Niangthianhoi & Khudsar 2015; Khudsar et al. 2025) support a diversity of faunal elements, including eight bat species.

STUDY AREA

The study was conducted at Yamuna Biodiversity Park (28.738° N, 77.212° E) on the floodplains of the Yamuna River in Delhi. Delhi has a semi-arid, subtropical climate with hot, dry summers and cold winters. The mean annual temperature is 25.5 °C, with May and June, the warmest months, and the mean maximum temperature is 39 °C. The area receives an average rainfall of 710 mm, of which 75% occurs during the monsoon season (June–September). The site spans 184 ha of the Yamuna Floodplain in northern Delhi and comprises two distinct phases: Phase I, with restored grasslands, floodplain forest communities, and marshes; and Phase II, with seasonally inundated active floodplain and riparian wetlands, marshes, and grasslands. A 200-m wildlife corridor connects the two phases (Image 1). Over two decades, restoration efforts have re-established the hydrological regime, enhanced native vegetation, and improved habitat quality.

As a result several rare and locally extinct faunal species have reappeared, such as, Hog Deer *Axis porcinus* (Singh et al. 2023), Leopard *Panthera pardus* (Singh et al. 2021), and Seibold's Snake *Ferania sieboldii* (Srivastava et al. 2020). Notable avifauna recorded from the site include crakes (Rallidae), Asian Paradise Flycatcher *Terpsiphone paradisi*, Eurasian Scops Owl *Otus* scops, a breeding population of Oriental Darter *Anhinga melanogaster* (Niangthianhoi & Khudsar 2015), Ferruginous Pochard *Aythya nyroca*, and White-browed Fantail *Rhipidura aureola*.

The present study reports the sighting of a rare bat species *Otomops wroughtonii* in the restored floodplain forest of the YBP, and provides supporting evidence of its occurrence.

OBSERVATION

On 26 November 2024, at 1500 h, a team of five researchers observed an individual of *Otomops wroughtoni* roosting on the trunk of a *Holoptelea*

integrifolia tree in the restored wildlife corridor of YBP. The tree was approximately 15 m tall, as measured with a range finder (Nikon Laser 550), with GBH of 81 cm and the surrounding canopy cover was estimated to be 70–80 %. The bat was positioned at a height of 3.2 m above ground level, clinging to the exposed trunk (Image 2). The associated tree assemblage comprised of *Gmelina arborea*, *Dalbergia sissoo*, and *Ehretia laevis*. At the same time, the ground layer was dominated by *Phyllanthus reticulata*, *Vitex negundo*, *Chrysopogon zizanioides*, *Panicum antidotale*, and *Saccharum spontaneum*, indicating a grass–shrub dominated understorey typical of semi-arid alluvial systems (Image 2).

The diagnostic traits included a large forearm length and forward-pointing ears joined across the forehead by a thin membranous band. The face was largely naked, with a prominent nostril pad, and the body was covered with short, velvety fur. The dorsal pelage was dark brown across the crown, back, and rump, while a distinct, narrow white border extends along each flank from the axilla to the groin and continues along the forearm membranes. The shoulders and nape exhibit a contrasting pale greyish-white coloration. Ventrally, the fur was dull brown, accentuated by a grey collar that extends onto the chin and upper chest. The tail extended well beyond the posterior margin of the narrow uropatagium—a characteristic feature that gives the group its common name, the free-tailed bats (family Molossidae).

These features correspond to published descriptions of *O. wroughtoni* (Ramakrishna et al. 2003). No attempt was made to capture the bat due to its conservation status. Photographs validate the first authenticated record of the species from Delhi.

DISCUSSION

The species was initially classified as 'Critically Endangered' by the IUCN Red List. However, due to a lack of information regarding its habitat, breeding, diet, distribution, and population, it was moved to the 'Data Deficient' category (Prabhukhanolkar 2016). In India, the species is listed under Schedule I of the Wildlife (Protection) Amendment Act, 2022, indicating its level of protection. This species was described from only one site – Barapede Caves in the Belgaum District of Karnataka, near the Bhimgad Wildlife Sanctuary in India (Thomas 1913). For nearly 88 years, this location has been the sole known habitat, indicating that the species is extremely rare and geographically restricted. However, subsequent records indicate a wider distribution area for *Otomops wroughtoni* (Image 3). For example, the next



Image 1. Google Earth map showing Yamuna Biodiversity Park Phase I, Phase II, and wildlife corridor.

sighting of the species was recorded from Cambodia in March 2001 (Walston & Bates 2001), followed by the Shella region near the Siju caves in Meghalaya (Thabah & Bates 2002). In 2014, several roosting sites were identified in the Jaintia Hills of Meghalaya (Ruedi et al. 2014). Recently, during acoustic and mist-net studies, a colony was observed on open limestone cliffs in the South Garo Hills, rather than in a typical cave habitat (Patel et al. 2024). Acoustic detection from Maharashtra and Sri Lanka also suggest that the species may have a wider, but still poorly documented, distribution across the Indian subcontinent, although further confirmation is required (Jayakumar & Chakravarty 2025; Kusuminda et al. 2025). The sighting of *O. wroughtoni* in YBP, indicates its northward record into the Indo-Gangetic plains, suggesting the possibility of wider distribution than previously recognised. Although the morphological features confirm the identity of the same species, there is a need for morphometric, molecular, and echolocation studies for authentication.

The Delhi individual may represent a dispersing bat rather than a resident. Nevertheless, the presence within a restored floodplain suggests that such landscapes can serve as foraging or stopover habitats. Restored wetlands, riparian woodlands, and grassland mosaics in YBP likely provide favourable conditions for aerial insectivores such as *O. wroughtoni*.

Whether the sighting in YBP, Delhi reflects vagrancy, exploratory movement, or evidence of an unrecognised northern population remains unclear. However, the accumulation of multiple sightings from different geographical regions indicates the species' broader tolerance and high ecological amplitude is now more evident. However, long-term and systematic monitoring would be necessary to confirm sustained habitat use and ecological significance.

Conservation Implications

The Delhi record further refines the species' distribution, indicating that *O. wroughtoni* may occupy a broader ecological range than previously recognised. The presence of this bat species and several other faunal elements indicates that restored floodplain ecosystems, such as those of Yamuna Biodiversity Park, support rare and specialised fauna and offer resilience to the faunal diversity. As climate pressures and urban expansion intensify, scientifically restored landscapes will serve as places of refuge harbouring native biodiversity, natural habitats connecting with others, and supporting wildlife movement across the larger landscapes. Further, documenting such occurrences is significant for understanding species distribution dynamics and for providing critical inputs to assess extinction risk and inform conservation strategies.



Image 2. A–C—Wroughton's Free-tailed Bat *Otomops wroughtoni* hanging on the trunk of *Holoptelea integrifolia* | D—restored wildlife corridor in the Yamuna Biodiversity Park. © Mohan Singh, YBP.

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Image 3. Known occurrences of *Otomops wroughtoni*.

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