



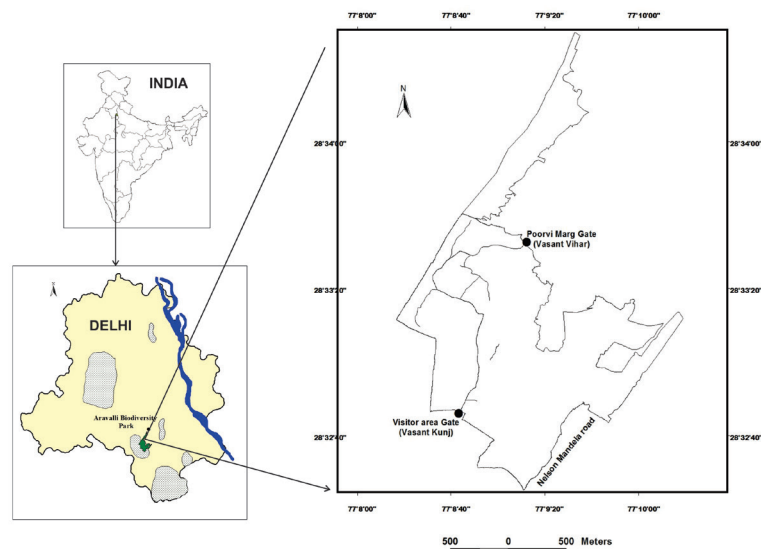
## Bat species conservation in Aravalli Biodiversity Park, Delhi, India

The Dusky Leaf-nosed Bat *Hipposideros ater* was first described by Templeton in 1848. According to Saikia (2018) this species has been recorded in Maharashtra and Kerala only but Srinivasulu & Srinivasulu (2006) recorded it from Andhra Pradesh, India also, and described it as a new subspecies *Hipposideros ater nallamalaensis* while other subspecies *Hipposideros ater ater* (India and Sri Lanka) and *Hipposideros ater nicobarulae* (Nicobar Islands, India) are also known from the Indian subcontinent. This bat was not recorded from the northern region of India, so the present record of this species from Delhi is an extant distribution also (Armstrong 2021).

*Hipposideros ater* was sighted and photographed first time on 20 October 2018 at Delhi Development Authority's Aravalli Biodiversity Park (ABP), Delhi during dusk time. Later monitoring confirmed its permanent roosting site in the cave along with *Rhinolophus lepidus*. The record of *Hipposideros ater* from ABP is the upgradation of a new species in the checklist



The mined cave that has been restored for bat conservation in Aravalli Biodiversity Park, Delhi, India. (© Aisha Sultana)



Map of the study area, Aravalli Biodiversity Park, Delhi, India.

of bat species of Delhi. Morphometric details were not taken due to some unavoidable circumstances.

ABP, part of Delhi's ridge, suffered extensive mining

(mica, sandstone, and kaolin) and invasive infestation by *Prosopis juliflora*, leading to the loss of its native flora and fauna (Sultana et al. 2013). Spanning 692 acres, it is situated between 77.131E-



*Pteropus giganteus*

© Aisha Sultana



*Cynopterus sphinx*

© Aisha Sultana



*Rhinolophus lepidus*

© Prof. Jens Rydell



*Hipposideros ater*

© Prof. Jens Rydell

77.180 E and 28.574 N-28.573 N. Due to mining many caves were formed and in due course of time these caves started supporting biodiversity when the restoration work started. ABP has various native plant communities, with notable species such as *Terminalia chebula*, *Limonia acidissima*, *Alangium salvifolium*, *Ficus racemosa*, *Artocarpus lacucha*, *Butea monosperma*. The park also has rejuvenated ditches and caves, some of which host water bodies and plant species like *Ficus racemosa*, *Bombax ceiba*, *Pterygota alata*, *Syzygium cumini*, and *Mimusops elengii*.

The continuous monitoring revealed the presence of four species of bats in the park, i.e., Indian Flying Fox *Pteropus medius*, Greater Short-nosed Fruit Bat *Cynopterus sphinx*,

Blyth's Horseshoe Bat *Rhinolophus lepidus*, and Dusky Leaf-nosed Bat *Hipposideros ater*. Earlier Srinivasulu & Srinivasulu (2007) and later Mishra & Dookia (2015) updated the list of bat species in Delhi. *Rhinolophus lepidus* was mentioned as a record from ABP only (Mishra et al. 2018) whereas *Hipposideros ater* was not recorded in either of the studies.

As key pollinators, seed dispersers, and insect predators, bats are susceptible to habitat disruption and can serve as indicator species. Urban restoration sites like ABP, offer the potential to support diverse ecosystems in densely populated cities (Sharma et al. 2022). The restoration of mining pits in Delhi's ABP has significantly benefited frugivorous and insectivorous bats. By restoring vegetation,



The updated list of bat species of Delhi along with new record\* (Srinivasulu & Srinivasulu 2007; Mishra & Dookia 2015).

Bat species	Family	Habitat type	IUCN Status	Population trend (Global) (IUCN)
1 Indian Flying Fox <i>Pteropus medius</i> Temminck 1825	Pteropodidae	Forest	NT	Decreasing (Last assessed 2024)
2 Greater Short-nosed Fruit Bat <i>Cynopterus sphinx</i> Vahl, 1797	Pteropodidae	Forest	LC	Increasing (Last assessed 2019)
3 Leschenault's Rousette <i>Rousettus leschenaultii</i> Desmarest, 1820	Pteropodidae	Forest, caves	NT	Decreasing (Last assessed 2021)
4 Greater Mouse-tailed Bat <i>Rhinopoma microphyllum</i> Brunnich, 1782	Rhinopomatidae	Shrubland, caves	LC	Stable (Last assessed 2017)
5 Lesser Mouse-tailed Bat <i>Rhinopoma hardwickii</i> Gray, 1831	Rhinopomatidae	Shrubland, grassland, caves	LC	Stable (Last assessed 2017)
6 Egyptian Free-tailed Bat <i>Tadarida aegyptiaca</i> E. Geoffroy, 1818	Molossidae	Shrubland, grassland	LC	Unknown (Last assessed 2017)
7 Black-bearded Tomb Bat <i>Taphozous melanopogon</i> Temminck, 1841	Emballonuridae	Forest, shrubland, caves	LC	Stable (Last assessed 2019)
8 Greater False Vampire <i>Lyroderma lyra</i> (E. Geoffroy, 1810)	Megadermatidae	Forest, shrubland, caves	LC	Unknown (Last assessed 2020)
9 Blyth's Horseshoe Bat <i>Rhinolophus lepidus</i> Blyth, 1844	Rhinolophidae	Forest, caves	LC	Unknown (Last assessed 2019)
10 *Dusky Leaf-nosed Bat <i>Hipposideros ater</i> Templeton, 1848	Hipposideridae	Forest, shrubland, caves	LC	Unknown (Last assessed 2021)
11 Indian Pipistrelle <i>Pipistrellus coromandra</i> Gray, 1838	Vespertilionidae	Forest, caves	LC	Unknown (Last assessed 2019)
12 Least Pipistrelle or Indian Pygmy Bat <i>Pipistrellus tenuis</i> Temminck, 1840	Vespertilionidae	Forest, shrubland, grassland	LC	Stable (Last assessed 2019)
13 Greater Asiatic Yellow House Bat <i>Scotophilus heathii</i> Horsfield, 1831	Vespertilionidae	Forest, shrubland	LC	Stable (Last assessed 2019)
14 Lesser Asiatic Yellow Bat <i>Scotophilus kuhlii</i> Leach, 1821	Vespertilionidae	Forest, shrubland	LC	Stable (Last assessed 2019)

LC = Least Concern, NT = Near Threatened



water bodies, and roosting spaces, the once-degraded pits now provide native fruits like *Ficus*, *Madhuca*, and *Aegle*, supporting frugivorous bats. Additionally, restored water bodies help maintain insect populations, benefiting insectivorous bats. These efforts have boosted bat activity, breeding success, and population growth by creating a habitat that closely mimics natural conditions.

The occurrence of *Hipposideros ater* in ABP showed a way to further research in the long-term bat population in Delhi. Whereas monitoring bat behaviour, breeding, and interactions across the years will reveal restoration sustainability in ABP. Collaborative efforts from ecologists, bat specialists, and restoration experts will holistically update future habitat restoration for effective bat

#### References

**Armstrong, K.N. (2021).** *Hipposideros ater*. *The IUCN Red List of Threatened Species* 2021: e.T80457009A22097974. <https://doi.org/10.2305/IUCN.UK.2021-3.RLTS.T80457009A22097974.en>. Accessed on 12 March 2025.

**Mishra, R. & S. Dookia (2015).** Bats of Delhi, *Small Mammal Mail* 7(1): 15–17.

**Mishra, R., S. Dookia, M.K. Singh, A. Sultana & P. Bhattacharya (2018).** Ecological and Acoustic-call Characteristics of Blyth's horseshoe bat, *Rhinolophus lepidus* in Delhi, India. *Ambient Science* 5(1) online. <http://doi:10.21276/ambi.2018.05.1.ra02>.

**Saikia, U. (2018).** A review of chiropterological studies and a distributional list of the bat fauna of India. *Records of the Zoological Survey of India* 118(3): 242–280.

**Sharma, H., A. Sultana & M.S. Hussain (2022).** Status of summer birds in Delhi, India. Bird-o-soar #171. In: *Zoo's Print* 37(7): 20–30.

**Srinivasulu, C. & B. Srinivasulu (2006).** First record of *Hipposideros ater* Templeton, 1848 from Andhra Pradesh, India with a description of a new subspecies. *Zoos' Print Journal* 21(5): 2241–2244.

**Srinivasulu, C. & B. Srinivasulu (2007).** Bats of Delhi: An Update. *Bat Net* 8(1–2): 30–31.

**Sultana, A., M.S. Hussain & Y. Arafat (2013).** Nesting of Indian Eagle Owl *Bubo bengalensis* in Aravalli Biodiversity Park, a restored site in Delhi. *Indian BIRDS* 18(3): 84.

**Aisha Sultana\*, Mohammad Shah Hussain, Dinesh Albertson W., Dushyant Kumar Rathore, Mohammad Rizwan Khan & Girish Chandra Pathak**

Biodiversity Parks Programme, Centre for Environmental Management of Degraded Ecosystems, University of Delhi, Delhi, India.

\*Corresponding author email: aishasultana28@yahoo.com.

#### Acknowledgements

The authors are grateful to the Delhi Development Authority (DDA) for all its financial help. Thanks to Prof. Jens Rydell, Lund University, Sweden for taking pictures of the bat species in Aravalli Biodiversity Park and identifying *Hipposideros ater*. Thanks are due to colleagues and other multi-tasking staff for their help.

**Citation:** Sultana, A., M.S. Hussain, Dinesh, A.W., D.K. Rathore, M.R. Khan & G.C. Pathak (2025). Bat species conservation in Aravalli Biodiversity Park, Delhi, India. *Small Mammal Mail* #125, In: *Zoo's Print* 40(5): 33–36.