10.11609/jott.2026.18.6.29003-29158
www.threatenedtaxa.org

26 June 2026 (Online & Print)
18(6): 29003–29158
ISSN 0974-7907 (Online)
ISSN 0974-7893 (Print)

Building evidence for conservation globally

Journal of Threatened Taxa

Open Access

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ISSN 0974-7907 (Online); ISSN 0974-7893 (Print)

Publisher
Wildlife Information Liaison Development Society
www.wild.zooreach.org

Host
Zoo Outreach Organization
www.zooreach.org

Srivari Illam, No. 61, Karthik Nagar, 10th Street, Saravanampatti, Coimbatore, Tamil Nadu 641035, India
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Cover: Nile Crocodile *Crocodylus niloticus* regulating body temperature on a warm day. Digital art on Procreate by © Aakanksha Komanduri.

Journal of Threatened Taxa | www.threatenedtaxa.org | 26 June 2026 | 18(6): 29146–29149
ISSN 0974-7907 (Online) | ISSN 0974-7893 (Print)
https://doi.org/10.11609/jott.10090.18.6.29146-29149
#10090 | Received 16 August 2025 | Final received 05 February 2026 | Finally accepted 07 May 2026
OPEN ACCESS
NOTE

First camera-trap records of three wild carnivores from Corbett Tiger Reserve, India

Mridula [1], Kamakshi S. Tanwar [2], Anurag Nashirabadkar [3], Sudip Banerjee [4], Anindita Bidisha Chatterjee [5], Shikha Bisht [6] & Yadvendradev V. Jhala [7]

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Global environmental changes driven by land use and climate change are causing shifts in species distributions, leading to shrinking and fragmented ranges (Schipper et al. 2008). Anthropogenic pressures and competition from invasive species cause habitat loss contributing to species extinctions and biodiversity loss (Ceballos et al. 2015). Certain species are more vulnerable to such local extinctions owing to their inherent biological traits like reproductive rate, habitat specialization, body size, and geographic range (Cardillo et al. 2008). Canids are one such group that are affected by urbanization and climate change, where some species may expand their ranges while others may contract due to differences in their climatic tolerance, behavioural flexibility, and habitat specialization (Filazzola et al. 2024). For instance, Indian Foxes *Vulpes bengalensis* are predicted to experience range contraction, while the range of Red Foxes *Vulpes vulpes* might expand owing to differences in their climatic tolerance (Porto et al. 2024).

The Indian Fox, or Bengal Fox, is a medium-sized canid endemic to the Indian subcontinent, preferring semiarid flats, grasslands, scrub, and dry deciduous forests (Gompper & Vanak 2006), and present in varying densities across its range (Home & Jhala 2010; Kumara & Singh 2012). In contrast, the Red Fox is a widespread generalist, found in both natural and human-dominated landscapes (Hoffmann & Sillero-Zubiri 2021), with a range extending across the Himalaya and deserts in India (Ghoshal et al. 2016). The Striped Hyena *Hyaena hyaena*, a nocturnal scavenger distributed in arid and semi-arid regions south of the Himalaya (Menon 2014), feeds mainly on carcasses but occasionally preys on live animals (Prater 1971; Alam & Khan 2015). Despite their dog-like appearance, hyenas are classified within the Feliformia suborder on the basis of their cranial, dental, and other anatomical features and are placed in the distinct family Hyaenidae (Agnarsson et al. 2010).

Major threats to these species include habitat loss,

Editor: Bhargavi Srinivasulu, Zoo Outreach Organisation, Hyderabad, Telangana, India. **Date of publication:** 26 June 2026 (online & print)

Citation: Mridula, K.S. Tanwar, A. Nashirabadkar, S. Banerjee, A.B. Chatterjee, S. Bisht & Y.V. Jhala (2026). First camera-trap records of three wild carnivores from Corbett Tiger Reserve, India. *Journal of Threatened Taxa* 18(6): 29146–29149. https://doi.org/10.11609/jott.10090.18.6.29146-29149

Funding: Uttarakhand State Forest Department and National Tiger Conservation Authority.

Competing interests: The authors declare no competing interests.

Acknowledgments: We would like to acknowledge Qamar Qureshi, V.B. Mathur and Virendra Tiwari from Wildlife Institute of India; Satyaprakash Yadav, Anup Nayak, Amit Mallick, Nishant Verma, Rajendra Garawad, Vaibhav C. Mathur, and Hemant Singh from National Tiger Conservation Authority; and Surendra Mehra, D.V.S. Khati, Samir Sinha, Dhananjay Mohan, Ranjan Mishra, Sanatan, Parag Dakate, Amit Verma, Rahul, Naresh Kumar, Dheeraj Pandey, and Saket Badola from Uttarakhand State Forest Department. We also thank AITE 2018 and 2022 researchers and field staff who worked in Corbett Tiger Reserve.

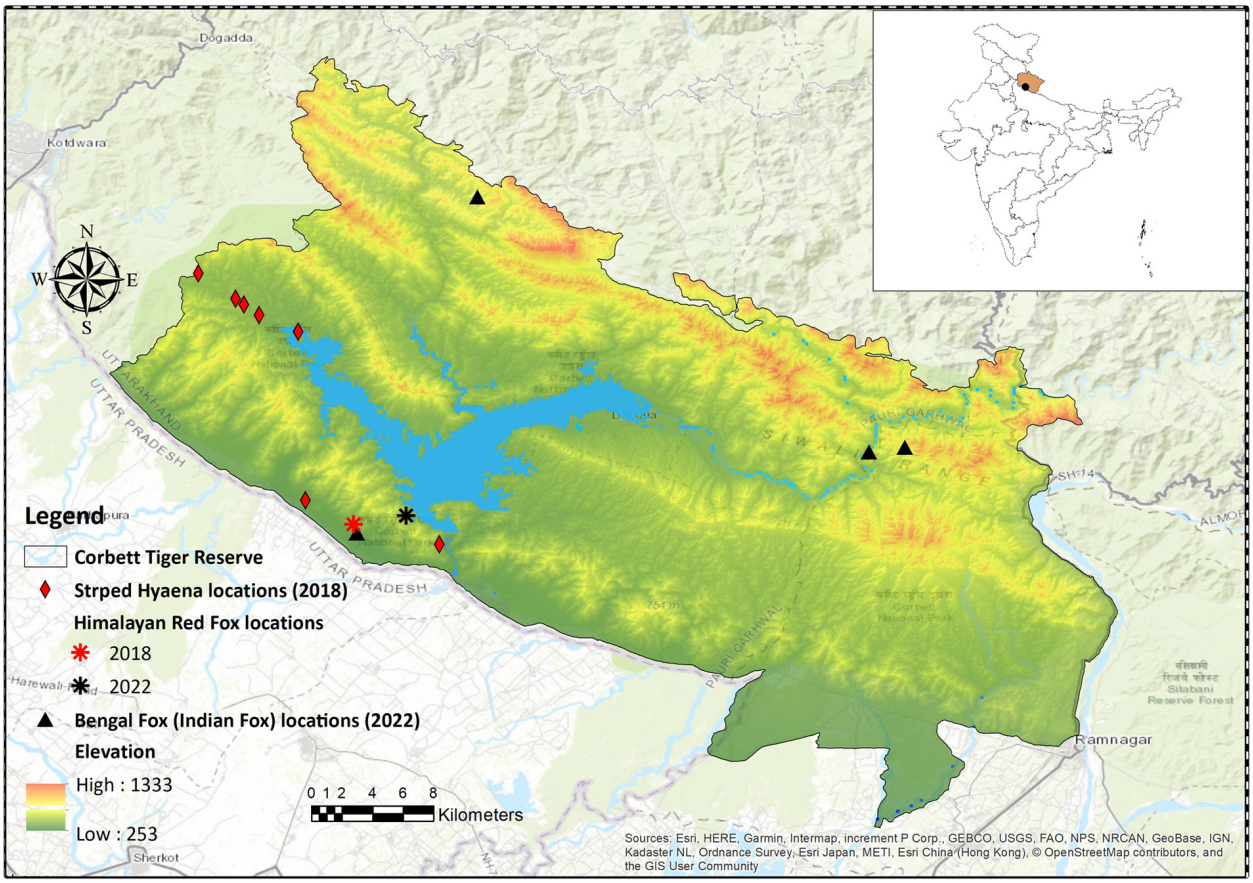

Image 1. A—Map showing the locations of camera trap captures of Indian Fox, Red Fox, and Striped Hyena in 2018 (Red) and 2022 (Black) in Corbett Tiger Reserve | B—Indian Fox | C—Red Fox | D—Striped Hyena.

Table 1. Detailed information on the location of first records of Indian Fox *Vulpes bengalensis*, Red Fox *Vulpes vulpes*, and Striped Hyena *Hyaena hyaena* in Corbett Tiger Reserve, Uttarakhand, India.

	Year	Date	Time	Vegetation type	Elevation (m)	Distance from settlement (m)
Species: Indian Fox *Vulpes bengalensis* (Least Concern)						
Capture 1	2022	13.ii.2022	1231 h	Khair Sissoo Forest	290	1,346
Capture 2	2022	27.ii.2022	0154 h	Moist Siwalik Saal Forest	756	1,774
Capture 3	2022	11.iii.2022	1946 h	Moist Siwalik Saal Forest	839	1,976
Capture 4	2022	11.iii.2022	0831 h	Moist Siwalik Saal Forest	506	3,488
Species: Red Fox *Vulpes vulpes* (Least Concern)						
Capture 1	2019	18.i.2019	2209 h	Dry deciduous scrub	313	1,538
Capture 2	2022	19.iii.2022	0130 h	Moist Siwalik Saal Forest	393	3,596
Species: Striped Hyena *Hyaena hyaena* (Near Threatened)						
Capture 1	2019	11.i.2019	2306 h	Dry Deciduous Scrub	402	8,926
Capture 2	2019	11.i.2019	2039 h	Moist Mixed Deciduous	375	10,058
Capture 3	2019	11.i.2019	2253 h	Dry Deciduous Scrub	395	9,121
Capture 4	2019	11.i.2019	2230 h	Dry Deciduous Scrub	384	9,377
Capture 5	2019	12.i.2019	1225 h	Moist Siwalik Sal	369	8,391
Capture 6	2019	17.i.2019	1758 h	Plantation	294	732
Capture 7	2019	26.ii.2019	1207 h	Moist Siwalik Sal	353	1,940

fragmentation, urbanization, and competition from free-ranging dogs (Macdonald & Reynolds 2004; Vanak & Gompper 2010; Bhandari et al. 2021). The Striped Hyena is also declining due to persecution, habitat destruction, and reduced food availability, partly because of the decline of sympatric carnivores whose kills they scavenge (Alam et al. 2015).

The study area, Corbett Tiger Reserve (hereafter CTR), is situated within the ecologically significant Bhabar-Terai belt, a transitional zone between the Himalayan foothills and the Indo-Gangetic plains, in Uttarakhand. It covers an area of 1,288.32 km², with an altitude ranging from 280–1,138 m. Temperatures vary from 23–46 ^{0}C in summer and 4–21 ^{0}C in winters. Annual rainfall varies from 1,400–2,800 mm, depending on altitude and topography. The climate is tropical, characterized by three distinct seasons: summer, monsoon, and winter. Vegetation of CTR consists of dry and moist deciduous forest, riverine forest, mixed or miscellaneous forest, alluvial grassland, open scrub and plantation. Three major types of forest are classified according to Champion & Seth (1968) namely, northern moist deciduous (3C), northern tropical dry deciduous (5B), and Himalayan subtropical pine forest. The Park is enriched with perennial water streams that support a thriving diversity of fauna.

As part of the All-India Tiger estimation exercise, camera trapping was carried out in CTR from October 2018 to March 2019 and from October 2021 to June 2022. Camera traps were deployed along trails at 520 and 514 locations, respectively, within 2 km² grid cells to maximize detections for tigers and leopards (Jhala et al. 2020; Qureshi et al. 2023). Cameras were placed in pairs facing each other on either side of the trails, and were run for an average of 54 days, resulting in an effort of 28,438 days in 2018–19 and for 70 days on average, constituting an effort of 36,407 days in 2022 (Jhala et al. 2020; Qureshi et al. 2023). On 11 January 2019, a Striped Hyena was photo-captured for the first time in CTR through camera traps. Subsequently, a Red Fox was recorded on 18 January 2019, followed by an Indian Fox on 13 February 2022, their first confirmed records in CTR through camera-trapping efforts. Hyena captures were recorded from seven camera-trap locations, but no subsequent captures were recorded during the 2021–2022 survey (Table 1, Image 1). Red Fox had singular captures in both 2019 and 2022 (Table 1, Image 1). The Indian Fox was photo-captured a total of four times from different locations in 2022 (Table 1, Image 1). Continued monitoring is essential to determine the status and activity of these transient species.

Sighting records such as those made during the present study are important as they expand the known range of these species, providing insights into their adaptability and highlighting the habitat suitability of CTR, which is primarily known for its tiger population.

The presence of tigers and leopards in high densities in CTR (Jhala et al. 2020) may also influence how mesopredators use the landscape, as apex predators are known to shape the spatial distribution, habitat use, and activity patterns of smaller carnivores through interference competition and risk avoidance (Ritchie & Johnson 2009; Ripple et al. 2014). Such observations emphasise the utility of data from targeted camera trap surveys in revealing the presence of lesser-studied species. These findings could significantly influence management and conservation strategies by promoting a more comprehensive approach that considers a multi-species perspective. This approach could lead to enhanced biodiversity monitoring programs and targeted studies on the interactions, population dynamics, and habitat requirements of these species.

References

Agnarsson, I., M. Kuntner & L.J. May-Collado (2010). Dogs, cats, and kin: a molecular species-level phylogeny of Carnivora. *Molecular phylogenetics and Evolution* 54(3): 726–745. https://doi.org/10.1016/j.ympev.2009.10.033

Alam, M.S. & J.A. Khan (2015). Food habits of Striped Hyena *Hyaena hyaena* in a semi-arid conservation area of India. *Journal of Arid Land* 7(6): 860–866. https://doi.org/10.1007/s40333-015-0007-2

Alam, M.S., J.A. Khan & B.J. Pathak (2015). Striped hyena (*Hyaena hyaena*) status and factors affecting its distribution in the Gir National Park and Sanctuary, India. *Folia Zoologica* 64(1): 32–39. https://doi.org/10.25225/fozo.v64.i1.a4.2015

Bhandari, S., D.R. Bhusal, M. Psaralexi & S. Sgardelis (2021). Habitat preference indicators for Striped Hyena *Hyaena hyaena* in Nepal. *Global Ecology and Conservation* 27: e01619. https://doi.org/10.1016/j.gecco.2021.e01619

Cardillo, M., G.M. Mace, J.L. Gittleman, K.E. Jones, J. Bielby & A. Purvis (2008). The predictability of extinction: biological and external correlates of decline in mammals. *Proceedings of the Royal Society B: Biological Sciences* 275(1641): 1441–1448. https://doi.org/10.1098/rspb.2008.0179

Ceballos, G., P.R. Ehrlich, A.D. Barnosky, A. García, R.M. Pringle & T.M. Palmer (2015). Accelerated modern human-induced species losses: Entering the sixth mass extinction. *Science Advances* 1(5): 9–13. https://doi.org/10.1126/sciadv.1400253

Champion, H.G. & S.K. Seth (1968). *A Revised Survey of The Forest Types of India Manager of Publications*. The Manager of Publications. New Delhi, 404 pp.

Filazzola, A., M.T. Johnson, K. Barrett, S. Hayes, N. Shrestha, L. Timms & J.S. MacIvor (2024). The great urban shift: climate change is predicted to drive mass species turnover in cities. *PLoS ONE* 19(3): e0299217. https://doi.org/10.1371/journal.pone.0299217

Ghoshal, A., Y.V. Bhatnagar, C. Mishra & K. Suryawanshi (2016). Response of the red fox to expansion of human habitation in the Trans-Himalayan mountains. *European Journal of Wildlife Research* 62(1): 131–136. https://doi.org/10.1007/s10344-015-0967-8

Gompper, M.E. & A.T. Vanak (2006). *Vulpes bengalensis*. *Mammalian Species* 795: 1–5. https://doi.org/10.1644/795.1

Hoffmann, M. & C. Sillero-Zubiri (2021). *Vulpes vulpes* (amended version of 2016 assessment). The IUCN Red List of Threatened Species: e.T23062A193903628. https://doi.org/10.2305/IUCN.UK.2021-1.RLTS.T23062A193903628.en. Accessed on 04.ii.2026.

Home, C. & Y.V. Jhala (2010). Estimating breeding pair densities of the Indian Fox in Kutch, Gujarat, India. *Canid News* 13(2): 1–6.

Jhala, Y.V., Q. Qureshi & A.K. Nayak (eds.) (2020). *Status of tigers, co-predators and prey in India*. National Tiger Conservation Authority, Government of India, New Delhi, and Wildlife Institute of India, Dehradun.

Kumara, H.N. & M. Singh (2012). Distribution, den characteristics and diet of the Indian Fox *Vulpes bengalensis* (Mammalia: Canidae) in Karnataka, India: preliminary observations. *Journal of Threatened Taxa* 4(14): 3349–3354. https://doi.org/10.11609/JoTT.o3046.3349-54

Macdonald, D.W. & J.C. Reynolds (2004). Red Fox *Vulpes vulpes*, pp. 129–136. In: Sillero-Zubiri, C., M. Hoffmann & D.W. Macdonald (eds.). *Canids*: *Foxes*, *Wolves*, *Jackals and Dogs Status Survey and Conservation Action Plan*. IUCN/SSC Canid Specialist Group, Gland, Switzerland, and Cambridge, UK.

Menon, V. (2014). *Indian Mammals*: *A Field Guide*. Hachette Book Publishing Pvt. Ltd., India. 528 pp.

Porto, L.M., D. Bennett, R. Maestri & R.S. Etienne (2024). Canids in a changing climate: predicting range shifts and evolutionary rescue under distinct future scenarios. *Biological Journal of the Linnean Society* 143(2): blae094. https://doi.org/10.1093/biolinnean/blae094

Prater, S.H. (1971). *The Book of Indian Animals*. Bombay Natural History Society, Bombay, 347 pp.

Qureshi, Q., Y.V. Jhala, S.P. Yadav & A. Mallick (eds.) (2023). Status of Tigers, Co-predators and Prey in India, 2022. National Tiger Conservation Authority, Government of India, New Delhi, and Wildlife Institute of India, Dehradun.

Ripple, W.J., J.A. Estes, R.L. Beschta, C.C. Wilmers, E.G. Ritchie M. Hebblewhite, J. Berger, B. Elmhagen, M. Letnic, M.P. Nelson, O.J. Schmitz, D.W. Smith, A.D. Wallach & A.J. Wirsing (2014). Status and ecological effects of the world's largest carnivores. *Science* 343(6167): 1241484. https://doi.org/10.1126/science.1241484

Ritchie, E.G. & C.N. Johnson (2009). Predator interactions, mesopredator release and biodiversity conservation. *Ecology Letters* 12(9): 982–998. https://doi.org/10.1111/j.1461-0248.2009.01347.x

Schipper, J., J.S. Chanson, F. Chiozza, N.A. Cox, M. Hoffmann, V. Katariya, J. Lamoreux, A.S.L. Rodrigues, S.N. Stuart, H.J. Temple, J. Baillie, L. Boitani, T.E. Lacher Jr, R.A. Mittermeier, A.T. Smith, D. Absolon, J.M. Aguiar, G.Amori, N. Bakkour, R. Baldi, R.J. Berridge, J. Bielby, P.A. Black, J.J. Blanc, T.M. Brooks, J.A. Burton, T.M. Butynski, G. Catullo, R. Chapman, Z. Cokeliss, B. Collen, J. Conroy, J.G. Cooke, G.A.B. da Fonseca, A.E. Derocher, H.T. Dublin, J.W. Duckworth, L. Emmons, R.H. Emslie, M. Festa-Bianchet, M. Foster, S. Foster, D.L. Garshelis, C. Gates, M. Gimenez-Dixon, S. Gonzalez, J.F. Gonzalez-Maya, T.C. Good, G. Hammerson, P.S. Hammond, D. Happold, M. Happold, J. Hare, R.B. Harris, C.E. Hawkins, M. Haywood, L.R. Heaney, S. Hedges, K.M. Helgen, C. Hilton-Taylor, S.A. Hussain, N. Ishii, T.A. Jefferson, R.K.B. Jenkins, C.H. Johnston, M. Keith, J. Kingdon, D.H. Knox, K.M. Kovacs, P. Langhammer, K. Leus, R. Lewison, G. Lichtenstein, L.F Lowry, Z. Macavoy, G.M. Mace, D.P. Mallon, M. Masi, M.W. McKnight, R.A. Medellín, P. Medici, G. Mills, P.D. Moehlman, S. Molur, A. Mora, K. Nowell, J.F. Oates, W. Olech, W.R. L. Oliver, M. Oprea, B.D. Patterson, W.F. Perrin, B.A. Polidoro, C. Pollock, A. Powel, Y. Protas, P. Racey, J. Ragle, P. Ramani, G. Rathbun, R.R. Reeves, S.B. Reilly, J.E. Reynolds 3rd, C. Rondinini, R.G. Rosell-Ambal, M. Rulli, A.B. Rylands, S. Savini, C.J. Schank, W. Sechrest, C. Self-Sullivan, A. Shoemaker, C. Sillero-Zubiri, N. De Silva, D.E. Smith, C. Srinivasulu, P.J. Stephenson, N. van Strien, B.K. Talukdar, B.L. Taylor, R. Timmins, D.G. Tirira, M.F. Tognelli, K. Tsytsulina, L.M. Veiga, Jean-Christophe Vié, E.A. Williamson, S.A. Wyatt, Y. Xie & B.E. Young (2008). The status of the world's land and marine mammals: diversity, threat, and knowledge. *Science* 322(5899): 225–230. https://doi.org/10.1126/science.1165115

Vanak, A.T. & M.E. Gompper (2010). Interference competition at the landscape level: the effect of free-ranging dogs on a native mesocarnivore. *Journal of Applied Ecology* 47(6): 1225–1232. https://doi.org/10.1111/j.1365-2664.2010.01870.x

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NAAS rating (India) 5.64

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Journal of Threatened Taxa

www.threatenedtaxa.org

ISSN 0974-7907 (Online) | ISSN 0974-7893 (Print)

June 2026 | Vol. 18 | No. 6 | Pages: 29003–29158
Date of Publication: 26 June 2026 (Online & Print)
DOI: 10.11609/jott.2026.18.6.29003-29158

Publisher & Host

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