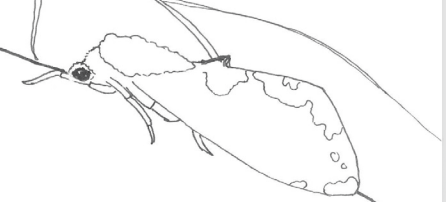
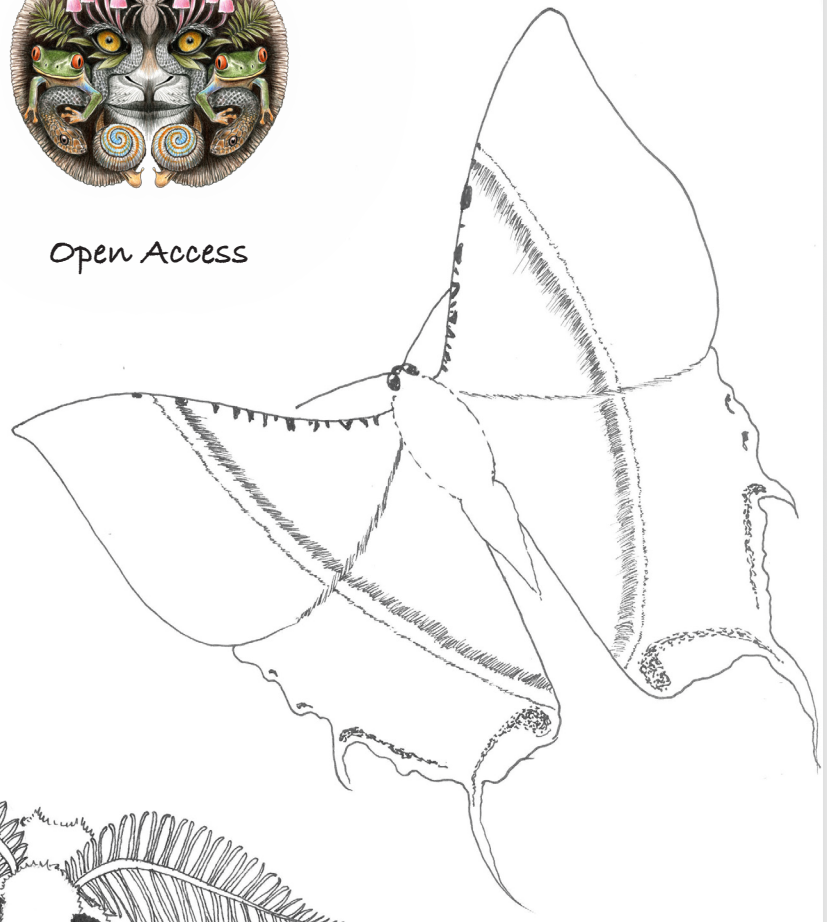
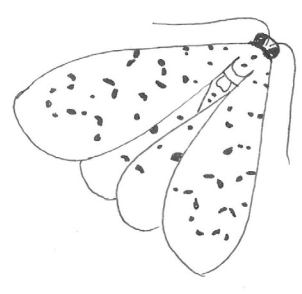


Building evidence for conservation globally

Journal of Threatened Taxa



Open Access



10.11609/jott.2023.15.7.23463-23630
www.threatenedtaxa.org

26 July 2023 (Online & Print)
15(7): 23463-23630
ISSN 0974-7907 (Online)
ISSN 0974-7893 (Print)



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

43/2 Varadarajulu Nagar, 5th Street West, Ganapathy, Coimbatore, Tamil Nadu 641006, India
Registered Office: 3A2 Varadarajulu Nagar, FCI Road, Ganapathy, Coimbatore, Tamil Nadu 641006, India
Ph: +91 9385339863 | www.threatenedtaxa.org
Email: sanjay@threatenedtaxa.org

EDITORS

Founder & Chief Editor

Dr. Sanjay Molur

Wildlife Information Liaison Development (WILD) Society & Zoo Outreach Organization (ZOO),
43/2 Varadarajulu Nagar, 5th Street West, Ganapathy, Coimbatore, Tamil Nadu 641006, India

Deputy Chief Editor

Dr. Neelesh Dahanukar

Noida, Uttar Pradesh, India

Managing Editor

Mr. B. Ravichandran, WILD/ZOO, Coimbatore, Tamil Nadu 641006, India

Associate Editors

Dr. Mandar Paingankar, Government Science College Gadchiroli, Maharashtra 442605, India

Dr. Ulrike Streicher, Wildlife Veterinarian, Eugene, Oregon, USA

Ms. Priyanka Iyer, ZOO/WILD, Coimbatore, Tamil Nadu 641006, India

Dr. B.A. Daniel, ZOO/WILD, Coimbatore, Tamil Nadu 641006, India

Editorial Board

Dr. Russel Mittermeier

Executive Vice Chair, Conservation International, Arlington, Virginia 22202, USA

Prof. Mewa Singh Ph.D., FASC, FNA, FNASC, FNAPsy

Ramanna Fellow and Life-Long Distinguished Professor, Biopsychology Laboratory, and Institute of Excellence, University of Mysore, Mysuru, Karnataka 570006, India; Honorary Professor, Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore; and Adjunct Professor, National Institute of Advanced Studies, Bangalore

Stephen D. Nash

Scientific Illustrator, Conservation International, Dept. of Anatomical Sciences, Health Sciences Center, T-8, Room 045, Stony Brook University, Stony Brook, NY 11794-8081, USA

Dr. Fred Pluthero

Toronto, Canada

Dr. Priya Davidar

Sigur Nature Trust, Chadapatti, Mavinhalla PO, Nilgiris, Tamil Nadu 643223, India

Dr. Martin Fisher

Senior Associate Professor, Battcock Centre for Experimental Astrophysics, Cavendish Laboratory, JJ Thomson Avenue, Cambridge CB3 0HE, UK

Dr. John Fellowes

Honorary Assistant Professor, The Kadoorie Institute, 8/F, T.T. Tsui Building, The University of Hong Kong, Pokfulam Road, Hong Kong

Prof. Dr. Mirco Solé

Universidade Estadual de Santa Cruz, Departamento de Ciências Biológicas, Vice-coordenador do Programa de Pós-Graduação em Zoologia, Rodovia Ilhéus/Itabuna, Km 16 (45662-000) Salobrinho, Ilhéus - Bahia - Brasil

Dr. Rajeev Raghavan

Professor of Taxonomy, Kerala University of Fisheries & Ocean Studies, Kochi, Kerala, India

English Editors

Mrs. Mira Bhojwani, Pune, India

Dr. Fred Pluthero, Toronto, Canada

Mr. P. Ilangovan, Chennai, India

Ms. Sindhura Stothra Bhashyam, Hyderabad, India

Web Development

Mrs. Latha G. Ravikumar, ZOO/WILD, Coimbatore, India

Typesetting

Mrs. Radhika, ZOO, Coimbatore, India

Mrs. Geetha, ZOO, Coimbatore India

Fundraising/Communications

Mrs. Payal B. Molur, Coimbatore, India

Subject Editors 2020–2022

Fungi

Dr. B. Shivaraju, Bengaluru, Karnataka, India

Dr. R.K. Verma, Tropical Forest Research Institute, Jabalpur, India

Dr. Vatsavaya S. Raju, Kakatiya University, Warangal, Andhra Pradesh, India

Dr. M. Krishnappa, Jnana Sahyadri, Kuvempu University, Shimoga, Karnataka, India

Dr. K.R. Sridhar, Mangalore University, Mangalagangothri, Mangalore, Karnataka, India

Dr. Gunjan Biswas, Vidyasagar University, Midnapore, West Bengal, India

Dr. Kiran Ramchandra Ranadive, Annasaheb Magar Mahavidyalaya, Maharashtra, India

Plants

Dr. G.P. Sinha, Botanical Survey of India, Allahabad, India

Dr. N.P. Balakrishnan, Ret. Joint Director, BSI, Coimbatore, India

Dr. Shonil Bhagwat, Open University and University of Oxford, UK

Prof. D.J. Bhat, Retd. Professor, Goa University, Goa, India

Dr. Ferdinando Boero, Università del Salento, Lecce, Italy

Dr. Dale R. Calder, Royal Ontario Museum, Toronto, Ontario, Canada

Dr. Cleofas Cervancia, Univ. of Philippines Los Baños College Laguna, Philippines

Dr. F.B. Vincent Florens, University of Mauritius, Mauritius

Dr. Merlin Franco, Curtin University, Malaysia

Dr. V. Irudayaraj, St. Xavier's College, Palayamkottai, Tamil Nadu, India

Dr. B.S. Kholia, Botanical Survey of India, Gangtok, Sikkim, India

Dr. Pankaj Kumar, Department of Plant and Soil Science, Texas Tech University, Lubbock, Texas, USA.

Dr. V. Sampath Kumar, Botanical Survey of India, Howrah, West Bengal, India

Dr. A.J. Solomon Raju, Andhra University, Visakhapatnam, India

Dr. Vijayasankar Raman, University of Mississippi, USA

Dr. B. Ravi Prasad Rao, Sri Krishnadevaraya University, Anantpur, India

Dr. K. Ravikumar, FRLHT, Bengaluru, Karnataka, India

Dr. Aparna Watve, Pune, Maharashtra, India

Dr. Qiang Liu, Xishuangbanna Tropical Botanical Garden, Yunnan, China

Dr. Noor Azhar Mohamed Shazili, Universiti Malaysia Terengganu, Kuala Terengganu, Malaysia

Dr. M.K. Vasudeva Rao, Shiv Ranjani Housing Society, Pune, Maharashtra, India

Prof. A.J. Solomon Raju, Andhra University, Visakhapatnam, India

Dr. Mandar Datar, Agharkar Research Institute, Pune, Maharashtra, India

Dr. M.K. Janarthanam, Goa University, Goa, India

Dr. K. Karthigeyan, Botanical Survey of India, India

Dr. Errol Vela, University of Montpellier, Montpellier, France

Dr. P. Lakshminarasimhan, Botanical Survey of India, Howrah, India

Dr. Larry R. Noblick, Montgomery Botanical Center, Miami, USA

Dr. K. Haridasan, Pallavur, Palakkad District, Kerala, India

Dr. Analinda Manila-Fajard, University of the Philippines Los Baños, Laguna, Philippines

Dr. P.A. Sinu, Central University of Kerala, Kasaragod, Kerala, India

Dr. Afroz Alam, Banasthali Vidyapith (accredited A grade by NAAC), Rajasthan, India

Dr. K.P. Rajesh, Zamorin's Guruvayurappan College, GA College PO, Kozhikode, Kerala, India

Dr. David E. Boufford, Harvard University Herbaria, Cambridge, MA 02138-2020, USA

Dr. Ritesh Kumar Choudhary, Agharkar Research Institute, Pune, Maharashtra, India

Dr. A.G. Pandurangan, Thiruvananthapuram, Kerala, India

Dr. Navendu Page, Wildlife Institute of India, Chandrabani, Dehradun, Uttarakhand, India

Dr. Kannan C.S. Warriar, Institute of Forest Genetics and Tree Breeding, Tamil Nadu, India

Invertebrates

Dr. R.K. Avasthi, Rohtak University, Haryana, India

Dr. D.B. Bastawade, Maharashtra, India

Dr. Partha Pratim Bhattacharjee, Tripura University, Suryamaninagar, India

Dr. Kailash Chandra, Zoological Survey of India, Jabalpur, Madhya Pradesh, India

Dr. Ansie Dippenaar-Schoeman, University of Pretoria, Queenswood, South Africa

Dr. Rory Dow, National Museum of Natural History Naturalis, The Netherlands

Dr. Brian Fisher, California Academy of Sciences, USA

Dr. Richard Gallon, Llandudno, North Wales, LL30 1UP

Dr. Hemant V. Ghate, Modern College, Pune, India

Dr. M. Monwar Hossain, Jahangirnagar University, Dhaka, Bangladesh

For Focus, Scope, Aims, and Policies, visit https://threatenedtaxa.org/index.php/JoTT/aims_scope

For Article Submission Guidelines, visit <https://threatenedtaxa.org/index.php/JoTT/about/submissions>

For Policies against Scientific Misconduct, visit https://threatenedtaxa.org/index.php/JoTT/policies_various

continued on the back inside cover

Cover: Celebrating the unsung heroes—moths, our nocturnal pollinators. © Priyanka Iyer.

INTRODUCTION

A small-sized bat *Pipistrellus ceylonicus* was initially recorded from Rajasthan at Mt. Abu during the mammal surveys of India, Burma, and Ceylon in 1911–1923 conducted by the Bombay Natural History Society (BNHS). In this survey two males and one female of this species were collected in March–July 1913 (Ryley 1914). Since that time, a large number of surveys targeting the chiropteran fauna of the state were undertaken e.g., Garg (1955); Prakash (1961, 1963, 1973); Agrawal (1967); Biswas & Ghosh (1968); Sinha (1975, 1976a,b, 1977, 1978, 1979, 1980a,b, 1981, 1983, 1996); Gaur (1981); Advani (1982); Ramaswami & Kumar (1963); Kumar (1965); Wason (1978); Agarwal & Gupta (1982); Lall (1985); Bhupathy (1987); Gupta & Trivedi (1989); Trivedi & Lall (1989); Sharma (1986); Agarwal et al. (1981); Trivedi (1991); Purohit & Senacha (2002, 2004a,b); Senacha (2003, 2006); Trivedi et al. (2003); Dookia (2004); Dookia & Tak (2004); Senacha & Purohit (2004); Trivedi & Lall (2004, 2006); Senacha et al. (2006); Srinivasulu & Srinivasulu (2006); Purohit et al.

(2006); and Khandal et al. (2022). However, *Pipistrellus ceylonicus* was not recorded in any of these surveys (Figure 1).

MATERIAL AND METHODS

In November 2021, an injured adult male *Pipistrellus* was rescued from Kusthala village (25.9694°N, 76.2929°E) in Sawai Madhopur, Rajasthan (Image 1 & 2). The bat was treated at home and kept in a box but did not survive. The specimen collection site is near the state highway close to the village of Kusthala, in the district of Sawai Madhopur. The landscape is dominated by agricultural fields close to a small human settlement. The area lies near a very significant ecosystem, i.e., the forests of Ranthambhore Tiger Reserve which is barely 4.5 km away. Specimen and habitat photographs were taken with a Nikon D850 DSLR equipped with a 17–35 mm lens. Morphological data was taken by manual examination in which measurements were taken with a digital caliper.



Figure 1. Map showing the new and old distribution localities for Kelaart's Pipistrelle in Rajasthan state.



© Dharmendra Khandal

Image 1. Portrait of Kelaart's Pipistrelle *Pipistrellus ceylonicus* (Kelaart, 1852) (present study)



© Dharmendra Khandal

Image 2. Close up of Kelaart's Pipistrelle *Pipistrellus ceylonicus* (Kelaart, 1852) (present study)

Table 1. Morphological, cranial and dental measurements of *Pipistrellus ceylonicus* (Kelaart, 1852) (all measurements are in millimeters)

	Measurement (mm)	Bates & Harrison (1997)	Korad & Yardi (2004) (n=7)	Present study (n=1)
1	Head and body length (HB)	45.5 - 64.0	46-51.4	41.2
2	Tail length (T)	30.0 - 45.0	29-38.5	31
3	Hind foot length, including claw (HF)	6.0 - 11.0	6-8.5	8.4
4	Forearm length (FA)	33.0 - 42.0	35-38.2	39
5	Wingspan (WSP)	227-262	227-252	243
6	5th Metacarpal length (5MT)	30.7 - 36.7	33.0-34.5	33.7
7	4th Metacarpal length (4MT)	32.6 - 38.5	34.4-35.8	34.8
8	3rd Metacarpal length (3MT)	33.0 - 39.0	34.5-36.4	33.1
9	Ear length (E)	9.5 - 14.0	9.5-14	11.2
10	Tibia length (Tb)	NA	13.5-15.0	14.1
11	Greatest length of skull (GTL)	14.4 - 15.8	13.5-15.5	14.9
12	Condylacanine length (CCL)	13.1 - 14.3	13.0-14.0	13.6
13	Zygomatic breadth (ZB)	9.2 - 11.0	9.0-10.0	9.2
14	Breadth of braincase (BB)	6.8 - 7.8	7.7-8.0	7.1
15	Postorbital constriction (PC)	3.7-4.3	3.8-4.5	3.9
16	Maxillary toothrow length (CM ³)	5.2 - 5.9	5.4-6	5.8
17	Mandibular toothrow length (CM ₃)	5.7 - 6.5	5.6-6.6	6.2
18	Width across third molars (M ³ -M ³)	6.2 - 7.2	6.6-7.8	6.8
19	Mandible length (M)	10.6 - 12.0	10.6-11.6	10.9
20	Width of rostrum (RW)	5.7-7.1	5.5-7.0	5.9

The specimen was preserved in 70% ethanol. Standard morphological measurements of the specimen and cranio-dental measurements of the extracted skull were taken using a digital calliper accurate to the nearest 0.1 mm and 0.01 mm, respectively. The morphological and craniodental description (Table 1) of the bat matched with descriptions provided by Bates & Harrison (1997) and Korad & Yardi (2004) confirming the specimen as *Pipistrellus ceylonicus* (Kelaart, 1852).

RESULTS AND DISCUSSION

Kelaart's Pipistrelle, *Pipistrellus ceylonicus* is a large sized *Pipistrellus* with a forearm length of 33–42 mm (Bates & Harrison 1997). They have variable dorsal pelage coloration ranging from grey-brown to chestnut, reddish or golden-brown colour. The ears, naked areas of the face, wings and interfemoral membrane are a uniform dark brown. The present specimen was grayish-brown dorsally and had dark hairs with pale grey tips on the ventrum (Image 1 & 2). The skull is robust with condylo-canine length of 13.6 mm and the upper toothrow length (cm³) is 5.8 mm (Image 3 A & B). The

first upper incisor (i²) is bicuspidate; the second incisor (i³) is larger in size and two-thirds the height of i². The first small premolar (pm²) intruded into the toothrow, and was not visible on the outside (Image 4 A & B). The upper canine and posterior premolar (pm⁴) are almost in contact. The lower incisors are trifid and overlap slightly (Image 5).

Three subspecies under *P. ceylonicus* recognized from India by Ellerman & Morrison-Scott (1951), viz., *Vesperugo indicus* Dobson, 1878 (type from Mangalore, Malabar Coast, Karnataka), *Pipistrellus chrysothrix* Wroughton, 1899 (type from Mheskatri, Surat Dangs, Gujarat) and *P.c. subcanus* Thomas, 1915 (type from Yalala, Junagarh, Kathiawar, Gujarat). Individual body color variation was observed in individuals of the same colony of *P. ceylonicus* by Brosset (1962). Based on variation in colour, Khajuria (1978, 1980) has synonymised *chrysothrix* with *indicus*. Lal (1984) has considered both *chrysothrix* and *subcanus* as synonyms of *Pipistrellus ceylonicus indicus*. Moratelli & Burgain (2019) considered all populations of *P. ceylonicus* from the mainland Indian subcontinent with distribution in eastern and southeastern Pakistan, India and Bangladesh are to represent a single subspecies,



Image 3. *Pipistrellus ceylonicus* skull: A—Dorsal view | B—Ventral view. © Dharmendra Khandal.

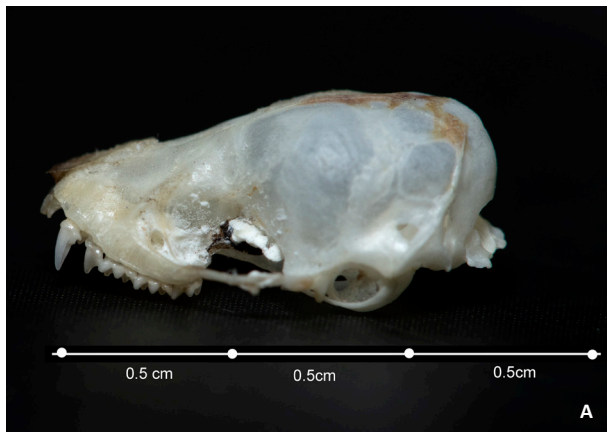


Image 4. *Pipistrellus ceylonicus*, skull: A—Lateral view | B—Front view. © Dharmendra Khandal.



Image 5. *Pipistrellus ceylonicus*, lower jaw with dental arrangement. © Dharmendra Khandal.

Pipistrellus ceylonicus indicus Dobson, 1878.

Some of the earlier works on taxonomy, biology and ecology of bats of Rajasthan (Prakash 1961; Agrawal 1967; Biswas & Ghosh 1968; Sinha 1976a,b, 1978, 1980a,b) did not report any new occurrence data of *P. ceylonicus* from the state. Ghosh (2008), while preparing a catalogue of bats specimens available in the National Zoological Collection at Zoological Survey of India, Kolkata, mentioned the distribution of the species in Rajasthan based only on the past record by Ryley (1914) and without any new collection data.

In view of its widespread distribution and adaptable

nature, IUCN Red List categorized the species as 'Least Concern' (LC) (Srinivasulu & Srinivasulu 2019). It is apparently of rare occurrence and extensive surveys are needed to determine the status of the species in the state.

REFERENCES

- Advani, R. (1982).** Distribution and status of Chiroptera species in Rajasthan, India. *Saugetierkundliche Mitteilungen* 30(1): 49–52.
- Agarwal, A. & B.B. Gupta (1982).** The gastric morphology and histology of an insectivorous bat—*Rhinopoma kinneari*. *Lynx* 21: 5–14.
- Agarwal, R.L., J. Agarwal, C.K. Nagar & S. Bhasin (1981).** Perforating injury of cornea by flying bat. *Indian Journal of Ophthalmology* 29: 39–40.
- Agrawal, V.C. (1967).** New mammal records from Rajasthan. *Labdev* 5(4): 342–344.
- Kumar, T.C.A. (1965).** Reproduction in the Rat-tailed Bat *Rhinopoma kinneari*. *Journal of Zoology London* 147(2): 137–155.
- Bates, P.J.J. & D.L. Harrison (1997).** *Bats of the Indian Subcontinent*. Harrison Zoological Museum Publication, Seven oaks, Kent, 258 pp.
- Bhupathy, S. (1987).** Occurrence of the Bicoloured leaf-nosed Bat (*Hipposideros fulvus*) in Rajasthan. *Journal of the Bombay Natural History Society* 84(1): 199–200.
- Biswas, B. & R.K. Ghosh (1968).** New records of mammals from Rajasthan, India. *Journal of the Bombay Natural History Society* 65: 481–482.
- Brosset, A. (1962).** The bats of Central and Western India. Part III. *Journal of the Bombay Natural History Society* 59(3): 707–746.
- Dookia, S. (2004).** Occurrence of the Short-nosed Fruit Bat (*Cynopterus sphinx* Vahl, 1799) in the Thar Desert of Rajasthan. *Zoos' Print Journal* 19(9): 1629. <https://doi.org/10.11609/JoTT.ZPJ.1137.1629>
- Dookia, S. & J.R. Tak (2004).** Status and distribution of Indian Flying Fox (*Pteropus giganteus* Brunnich) in Thar Desert of Rajasthan. *Bat Net—CCINSA Newsletter* 5(1): 7–8.
- Ellerman, J.R. & T.C.S. Morrison-Scott (1951).** *Checklist of Palaearctic and Indian mammals 1758 to 1946*. British Museum (Natural History), 810 pp.
- Garg, B.L. (1955).** Significance of the orbitotemporal region in the skulls of the small bats of Ajmer. *Current Science* 24(2): 55–56. <https://www.jstor.org/stable/24055001>.
- Gaur, B.S. (1981).** Ecology of Bats of the Indian Desert. Unpublished Ph.D. Thesis, Jodhpur University, Jodhpur, India, 110 pp.
- Ghosh, M.K. (2008).** *Catalogue of Chiroptera in the collection of the Zoological Survey of India, Part II: Microchiroptera*. Records of the Zoological Survey of India, Occasional Paper No. 281. Zoological Survey of India, Kolkata, 339 pp.
- Gupta, S.K. & K.K. Trivedi (1989).** Nematode parasites of vertebrates. On two new species of the genus *Litomosoides* Chandler, 1931 (Family: Dipetalonematidae Wehr, 1935) from microbats of Udaipur, Rajasthan, India. *Indian Journal of Helminthology* 41(Suppl): 152–161.
- Khajuria, H. (1978).** Extension of distributional ranges of some rare south Indian bats. *Cheetal* 19(2&3): 16–20.
- Khajuria, H. (1980).** *Taxonomical and ecological studies on the bats of Jabalpur dist. Madhya Pradesh, India, Part II (Families Megadermatidae, Rhinolophidae and Vespertilionidae)*. Records of the Zoological Survey of India, Miscellaneous Publication, Occasional Paper No. 19. Zoological Survey of India, Calcutta, 69 pp.
- Khandal, D., I. Dhar, D.L. Bohra & S.S. Talmale (2022).** Natural history notes on three bat species. *Journal of Threatened Taxa* 14(8): 21501–21507. <https://doi.org/10.11609/jott.7995.14.8.21501-21507>
- Korad, V.S. & K.D. Yardi (2004).** Ecological study and faunistic survey of bats from Pune Corporation limits, Maharashtra state, India. *Records of the Zoological Survey of India* 102 (Part 1–2): 115–136.
- Lal, J.P. (1984).** Taxonomic status of the Kelaart's pipistrelle *Pipistrellus ceylonicus* Kelaart (Chiroptera: Vespertilionidae). *Bulletin of the Zoological Survey of India* 6(1–3): 159–161.
- Lall, S.B. (1985).** Folliculogenesis in *Rhinopoma kinneari* Wroughton (Microchiroptera: Mammalia). *Myotis* 23–24: 37–44.
- Moratelli, R. & C. J. Burgain (2019).** Family Vespertilionidae (Vesper Bats) pp. 716–981. In: Wilson, D.E. & R.A. Mittermeier (eds.). *Handbook of the Mammals of the World. Vol. 9. Bats*. Lynx Edicions, Barcelona.
- Prakash, I. (1961).** Taxonomic and biological observations on the bats of the Rajasthan desert. *Records of the Indian Museum* 59(1–2): 149–170.
- Prakash, I. (1963).** Zoogeography and evolution of the mammalian fauna of Rajasthan desert. *Mammalia* 27: 342–351. <https://doi.org/10.1515/mamm.1963.27.3.342>
- Prakash, I. (1973).** The ecology of vertebrates of the Indian desert, pp. 369–420. In: Mani, M.S. (ed.). *Ecology and Biogeography in India*. W. Junk, The Hague, 725 pp.
- Purohit, A.K. & K.R. Senacha (2002).** A review of microchiropteran eco-status in Mandore Garden, Jodhpur. *Journal of Nature Conservators* 14: 251–262.
- Purohit, A.K. & K. R. Senacha (2004a).** Demographic changes among bats in and around Jaisalmer of Great Indian Desert. *Cheetal* 42(1–2): 25–34.
- Purohit, A.K. & K.R. Senacha (2004b).** Distribution of bats in and around Jaisalmer of Great Indian Desert, India. *Vespertilio* 8: 99–104.
- Purohit, A.K., K.B. Vyas & K.R. Senacha (2006).** Population dynamics of bats in and around Jodhpur of Great Indian Desert. *Tiger Paper* 33(3): 15–22.
- Ramaswami, L.S. & T.C.A. Kumar (1963).** Differential implantation of twin blastocysts in *Megaderma* (Microchiroptera). *Experientia* 19(12): 641–642. <https://doi.org/10.1007/BF02151294>
- Ryley, K.V. (1914).** Bombay Natural History Society's Mammal Survey of India. Report No. 12. Palanpur and Mt. Abu. *Journal of the Bombay Natural History Society* 22(4): 684–699.
- Senacha, K.R. (2003).** Eco-status and demographic changes among the chiropterans of the Thar Desert with special reference to Jodhpur. Ph.D. Thesis, J.N.V. University, Jodhpur, India, 175 pp.
- Senacha, K.R. (2006).** Opportunistic survey of Indian Flying Fox *Pteropus giganteus* (Brunnich, 1782). *BatNet—CCINSA Newsletter* 7(1–2): 27–29.
- Senacha, K.R. & A.K. Purohit (2004).** Possible twin birth in the Indian flying fox *Pteropus giganteus*. *Bat Research News* 45(4): 199.
- Senacha, K.R., K.B. Vyas & A.K. Purohit (2006).** New records of Short-nosed Fruit Bat *Cynopterus sphinx* (Vahl, 1797) from Thar Desert, Rajasthan. *Zoos' Print Journal* 21(10): 2419–2420. <https://doi.org/10.11609/JoTT.ZPJ.1428.2419-20>
- Sharma, S.K. (1986).** Painted bats and nests of Baya Weaver Bird. *Journal of the Bombay Natural History Society* 81: 196.
- Sinha, Y.P. (1975).** New records of Bats (Chiroptera) from Rajasthan. *Science & Culture* 41: 608–610.
- Sinha, Y.P. (1976a).** Notes on food and reproduction of some Rajasthan bats. *Geobios* 3(2): 37–40.
- Sinha, Y. P. (1976b).** Bacula of Rajasthan bats. *Mammalia* 40(1): 97–103.
- Sinha, Y.P. (1977).** A new and a rare record of fruit bat (Pteropidae) from Rajasthan (Mammalia: Chiroptera). *Science & Culture* 43: 264–265.
- Sinha, Y.P. (1978).** Sex ratios and sexual segregation in Rajasthan bats. *Science & Culture* 44: 326–327.
- Sinha, Y.P. (1979).** Studies on Taxonomy, Distribution, Zoogeography, Osteology and Field Ecology of Bats of Rajasthan, specially the Indian Desert. Unpublished Ph.D. Dissertation, Jodhpur University, 204 pp.
- Sinha, Y.P. (1980a).** Further observations on the field ecology of Rajasthan bats. *Journal of the Bombay Natural History Society* 77(3): 465–470.

- Sinha Y.P. (1980b).** The bats of Rajasthan: taxonomy and zoogeography. *Records of the Zoological Survey of India* 76(1-4): 7-63.
- Sinha, Y.P. (1981).** New record of Black-bearded Tomb Bat, *Taphozous melanopogon melanopogon* Temminck from Rajasthan. *Geobios* 8(5): 225-226.
- Sinha, Y.P. (1983).** Notes on bacula of some Indian bats. *Geobios new Reports* 2: 134-136.
- Sinha, Y.P. (1996).** Bats in Indian Thar Desert, pp. 349-352. In: Ghosh, A.K., Q.H. Baqri & I. Prakash (eds.). *Faunal Diversity in the Thar Desert: Gaps in Research*. Scientific Publication, Jodhpur, 410 pp.
- Srinivasulu, C. & B. Srinivasulu (2006).** Biodiversity assessment survey of Hadoti Region, Rajasthan. Part I. Birds and other wildlife of Jhalawar and Kota districts. Unpublished report submitted to Maharana Pratap University of Agriculture and Technology, Udaipur, 24 pp.
- Srinivasulu, B. & C. Srinivasulu (2019).** *Pipistrellus ceylonicus*. The IUCN Red List of Threatened Species 2019: e.T17332A22130600. Accessed on 14 March 2023. <https://doi.org/10.2305/IUCN.UK.2019-3.RLTS.T17332A22130600.en>
- Trivedi, S. (1991).** Seasonal histochemical and histoenzymological alterations in the ovary and uterus of certain Chiroptera (Mammalia) of Rajasthan. Ph.D. Thesis, M.L. Sukhadia University, Udaipur, India, 227 pp.
- Trivedi, S. & S.B. Lall (1989).** Histological and histochemical alterations in the ovary of nulliparous and parous bat: *Megaderma lyra*, exhibiting absolute sinistral dominance of genital tract, pp. 153-160. In: Hanak, V., I. Horacek & J. Gaisler (eds.). *European Bat Research*. Charles University Press, Praha, 720 pp.
- Trivedi, S. & S.B. Lall (2004).** Ovarian dehydrogenases of the non-pregnant, pregnant and lactating *Rhinopoma microphyllum kinneari* (Chiroptera: Rhinopomatidae). *Vespertilio* 8: 105-112.
- Trivedi, S. & S.B. Lall (2006)** Histochemical pattern of ovarian 5 c-nucleotidase in *Rhinopoma microphyllum* during different reproductive states. *Vespertilio* 9-0: 175-181.
- Trivedi, S., K. Naruka, P. Singh, I. Dabi, S. Rathore & A. Rathore (2003).** Differential leukocyte profile of *Rhinopoma microphyllum kinneari*. *Vespertilio* 7: 169-176.
- Wason, A. (1978).** Observations on homing ability of some insectivorous bats. *Zeitschrift für Säugetierkunde* 43: 305-306.



Mr. Jatishwor Singh Irungbam, Biology Centre CAS, Branišovská, Czech Republic.
Dr. Ian J. Kitching, Natural History Museum, Cromwell Road, UK
Dr. George Mathew, Kerala Forest Research Institute, Peechi, India
Dr. John Noyes, Natural History Museum, London, UK
Dr. Albert G. Orr, Griffith University, Nathan, Australia
Dr. Sameer Padhye, Katholieke Universiteit Leuven, Belgium
Dr. Nancy van der Poorten, Toronto, Canada
Dr. Kareen Schnabel, NIWA, Wellington, New Zealand
Dr. R.M. Sharma, (Retd.) Scientist, Zoological Survey of India, Pune, India
Dr. Manju Siliwal, WILD, Coimbatore, Tamil Nadu, India
Dr. G.P. Sinha, Botanical Survey of India, Allahabad, India
Dr. K.A. Subramanian, Zoological Survey of India, New Alipore, Kolkata, India
Dr. P.M. Sureshan, Zoological Survey of India, Kozhikode, Kerala, India
Dr. R. Varatharajan, Manipur University, Imphal, Manipur, India
Dr. Eduard Vives, Museu de Ciències Naturals de Barcelona, Terrassa, Spain
Dr. James Young, Hong Kong Lepidopterists' Society, Hong Kong
Dr. R. Sundararaj, Institute of Wood Science & Technology, Bengaluru, India
Dr. M. Nithyanandan, Environmental Department, La Ala Al Kuwait Real Estate. Co. K.S.C., Kuwait
Dr. Himender Bharti, Punjabi University, Punjab, India
Mr. Purnendu Roy, London, UK
Dr. Saito Motoki, The Butterfly Society of Japan, Tokyo, Japan
Dr. Sanjay Sondhi, TITLI TRUST, Kalpavriksh, Dehradun, India
Dr. Nguyen Thi Phuong Lien, Vietnam Academy of Science and Technology, Hanoi, Vietnam
Dr. Nitin Kulkarni, Tropical Research Institute, Jabalpur, India
Dr. Robin Wen Jiang Ngiam, National Parks Board, Singapore
Dr. Lionel Monod, Natural History Museum of Geneva, Genève, Switzerland.
Dr. Asheesh Shivam, Nehru Gram Bharti University, Allahabad, India
Dr. Rosana Moreira da Rocha, Universidade Federal do Paraná, Curitiba, Brasil
Dr. Kurt R. Arnold, North Dakota State University, Saxony, Germany
Dr. James M. Carpenter, American Museum of Natural History, New York, USA
Dr. David M. Claborn, Missouri State University, Springfield, USA
Dr. Kareen Schnabel, Marine Biologist, Wellington, New Zealand
Dr. Amazonas Chagas Júnior, Universidade Federal de Mato Grosso, Cuiabá, Brasil
Mr. Monsoon Jyoti Gogoi, Assam University, Silchar, Assam, India
Dr. Heo Chong Chin, Universiti Teknologi MARA (UiTM), Selangor, Malaysia
Dr. R.J. Shiel, University of Adelaide, SA 5005, Australia
Dr. Siddharth Kulkarni, The George Washington University, Washington, USA
Dr. Priyadarsanan Dharma Rajan, ATREE, Bengaluru, India
Dr. Phil Alderslade, CSIRO Marine And Atmospheric Research, Hobart, Australia
Dr. John E.N. Veron, Coral Reef Research, Townsville, Australia
Dr. Daniel Whitmore, State Museum of Natural History Stuttgart, Rosenstein, Germany.
Dr. Yu-Feng Hsu, National Taiwan Normal University, Taipei City, Taiwan
Dr. Keith V. Wolfe, Antioch, California, USA
Dr. Siddharth Kulkarni, The Hormiga Lab, The George Washington University, Washington, D.C., USA
Dr. Tomas Ditrich, Faculty of Education, University of South Bohemia in Ceske Budejovice, Czech Republic
Dr. Mihaly Foldvari, Natural History Museum, University of Oslo, Norway
Dr. V.P. Uniyal, Wildlife Institute of India, Dehradun, Uttarakhand 248001, India
Dr. John T.D. Caleb, Zoological Survey of India, Kolkata, West Bengal, India
Dr. Priyadarsanan Dharma Rajan, Ashoka Trust for Research in Ecology and the Environment (ATREE), Royal Enclave, Bangalore, Karnataka, India

Fishes

Dr. Neelesh Dahanukar, IISER, Pune, Maharashtra, India
Dr. Topiltzin Contreras MacBeath, Universidad Autónoma del estado de Morelos, México
Dr. Heok Hee Ng, National University of Singapore, Science Drive, Singapore
Dr. Rajeev Raghavan, St. Albert's College, Kochi, Kerala, India
Dr. Robert D. Sluka, Chiltern Gateway Project, A Rocha UK, Southall, Middlesex, UK
Dr. E. Vivekanandan, Central Marine Fisheries Research Institute, Chennai, India
Dr. Davor Zanella, University of Zagreb, Zagreb, Croatia
Dr. A. Biju Kumar, University of Kerala, Thiruvananthapuram, Kerala, India
Dr. Akhilesh K.V., ICAR-Central Marine Fisheries Research Institute, Mumbai Research Centre, Mumbai, Maharashtra, India
Dr. J.A. Johnson, Wildlife Institute of India, Dehradun, Uttarakhand, India
Dr. R. Ravinesh, Gujarat Institute of Desert Ecology, Gujarat, India

Amphibians

Dr. Sushil K. Dutta, Indian Institute of Science, Bengaluru, Karnataka, India
Dr. Annemarie Ohler, Muséum national d'Histoire naturelle, Paris, France

Reptiles

Dr. Gernot Vogel, Heidelberg, Germany
Dr. Raju Vyas, Vadodara, Gujarat, India
Dr. Pritpal S. Soorae, Environment Agency, Abu Dhabi, UAE.
Prof. Dr. Wayne J. Fuller, Near East University, Mersin, Turkey
Prof. Chandrashekhar U. Rivonker, Goa University, Taleigão Plateau, Goa, India
Dr. S.R. Ganesh, Chennai Snake Park, Chennai, Tamil Nadu, India
Dr. Himansu Sekhar Das, Terrestrial & Marine Biodiversity, Abu Dhabi, UAE

Journal of Threatened Taxa is indexed/abstracted in Bibliography of Systematic Mycology, Biological Abstracts, BIOSIS Previews, CAB Abstracts, EBSCO, Google Scholar, Index Copernicus, Index Fungorum, JournalSeek, National Academy of Agricultural Sciences, NewJour, OCLC WorldCat, SCOPUS, Stanford University Libraries, Virtual Library of Biology, Zoological Records.

NAAS rating (India) 5.64

Birds

Dr. Hem Sagar Baral, Charles Sturt University, NSW Australia
Mr. H. Byju, Coimbatore, Tamil Nadu, India
Dr. Chris Bowden, Royal Society for the Protection of Birds, Sandy, UK
Dr. Priya Davidar, Pondicherry University, Kalapet, Puducherry, India
Dr. J.W. Duckworth, IUCN SSC, Bath, UK
Dr. Rajah Jayapal, SACON, Coimbatore, Tamil Nadu, India
Dr. Rajiv S. Kalsi, M.L.N. College, Yamuna Nagar, Haryana, India
Dr. V. Santharam, Rishi Valley Education Centre, Chittoor Dt., Andhra Pradesh, India
Dr. S. Balachandran, Bombay Natural History Society, Mumbai, India
Mr. J. Praveen, Bengaluru, India
Dr. C. Srinivasulu, Osmania University, Hyderabad, India
Dr. K.S. Gopi Sundar, International Crane Foundation, Baraboo, USA
Dr. Gombobaatar Sunde, Professor of Ornithology, Ulaanbaatar, Mongolia
Prof. Reuven Yosef, International Birding & Research Centre, Eilat, Israel
Dr. Taej Mundkur, Wetlands International, Wageningen, The Netherlands
Dr. Carol Inskipp, Bishop Auckland Co., Durham, UK
Dr. Tim Inskipp, Bishop Auckland Co., Durham, UK
Dr. V. Gokula, National College, Tiruchirappalli, Tamil Nadu, India
Dr. Arkady Lelej, Russian Academy of Sciences, Vladivostok, Russia
Dr. Simon Dowell, Science Director, Chester Zoo, UK
Dr. Mário Gabriel Santiago dos Santos, Universidade de Trás-os-Montes e Alto Douro, Quinta de Prados, Vila Real, Portugal
Dr. Grant Connette, Smithsonian Institution, Royal, VA, USA
Dr. P.A. Azeez, Coimbatore, Tamil Nadu, India

Mammals

Dr. Giovanni Amori, CNR - Institute of Ecosystem Studies, Rome, Italy
Dr. Anwaruddin Chowdhury, Guwahati, India
Dr. David Mallon, Zoological Society of London, UK
Dr. Shomita Mukherjee, SACON, Coimbatore, Tamil Nadu, India
Dr. Angie Appel, Wild Cat Network, Germany
Dr. P. O. Nameer, Kerala Agricultural University, Thrissur, Kerala, India
Dr. Ian Redmond, UNEP Convention on Migratory Species, Lansdown, UK
Dr. Heidi S. Riddle, Riddle's Elephant and Wildlife Sanctuary, Arkansas, USA
Dr. Rario Schwartz, George Mason University, Fairfax, Virginia.
Dr. Lala A.K. Singh, Bhubaneswar, Orissa, India
Dr. Mewa Singh, Mysore University, Mysore, India
Dr. Paul Racey, University of Exeter, Devon, UK
Dr. Honnavalli N. Kumara, SACON, Anaikatty P.O., Coimbatore, Tamil Nadu, India
Dr. Nishith Dharaiya, HNG University, Patan, Gujarat, India
Dr. Spartaco Gippoliti, Socio Onorario Società Italiana per la Storia della Fauna "Giuseppe Altobello", Rome, Italy
Dr. Justus Joshua, Green Future Foundation, Tiruchirappalli, Tamil Nadu, India
Dr. H. Raghuram, The American College, Madurai, Tamil Nadu, India
Dr. Paul Bates, Harison Institute, Kent, UK
Dr. Jim Sanderson, Small Wild Cat Conservation Foundation, Hartford, USA
Dr. Dan Challender, University of Kent, Canterbury, UK
Dr. David Mallon, Manchester Metropolitan University, Derbyshire, UK
Dr. Brian L. Cypher, California State University-Stanislaus, Bakersfield, CA
Dr. S.S. Talmale, Zoological Survey of India, Pune, Maharashtra, India
Prof. Karan Bahadur Shah, Budhanilakantha Municipality, Kathmandu, Nepal
Dr. Susan Cheyne, Borneo Nature Foundation International, Palangkaraja, Indonesia
Dr. Hemanta Kafley, Wildlife Sciences, Tarleton State University, Texas, USA

Other Disciplines

Dr. Aniruddha Belsare, Columbia MO 65203, USA (Veterinary)
Dr. Mandar S. Paingankar, University of Pune, Pune, Maharashtra, India (Molecular)
Dr. Jack Tordoff, Critical Ecosystem Partnership Fund, Arlington, USA (Communities)
Dr. Ulrike Streicher, University of Oregon, Eugene, USA (Veterinary)
Dr. Hari Balasubramanian, EcoAdvisors, Nova Scotia, Canada (Communities)
Dr. Rayanna Hellem Santos Bezerra, Universidade Federal de Sergipe, São Cristóvão, Brazil
Dr. Jamie R. Wood, Landcare Research, Canterbury, New Zealand
Dr. Wendy Collinson-Jonker, Endangered Wildlife Trust, Gauteng, South Africa
Dr. Rajeshkumar G. Jani, Anand Agricultural University, Anand, Gujarat, India
Dr. O.N. Tiwari, Senior Scientist, ICAR-Indian Agricultural Research Institute (IARI), New Delhi, India
Dr. L.D. Singla, Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana, India
Dr. Rupika S. Rajakaruna, University of Peradeniya, Peradeniya, Sri Lanka
Dr. Bahar Baviskar, Wild-CER, Nagpur, Maharashtra 440013, India

Reviewers 2020–2022

Due to pausivity of space, the list of reviewers for 2018–2020 is available online.

The opinions expressed by the authors do not reflect the views of the Journal of Threatened Taxa, Wildlife Information Liaison Development Society, Zoo Outreach Organization, or any of the partners. The journal, the publisher, the host, and the partners are not responsible for the accuracy of the political boundaries shown in the maps by the authors.

Print copies of the Journal are available at cost. Write to:
The Managing Editor, JoTT,
c/o Wildlife Information Liaison Development Society,
43/2 Varadarajulu Nagar, 5th Street West, Ganapathy, Coimbatore,
Tamil Nadu 641006, India
ravi@threatenedtaxa.org



www.threatenedtaxa.org

OPEN ACCESS



The Journal of Threatened Taxa (JoTT) is dedicated to building evidence for conservation globally by publishing peer-reviewed articles online every month at a reasonably rapid rate at www.threatenedtaxa.org. All articles published in JoTT are registered under [Creative Commons Attribution 4.0 International License](https://creativecommons.org/licenses/by/4.0/) unless otherwise mentioned. JoTT allows unrestricted use, reproduction, and distribution of articles in any medium by providing adequate credit to the author(s) and the source of publication.

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

July 2023 | Vol. 15 | No. 7 | Pages: 23463–23630

Date of Publication: 26 July 2023 (Online & Print)

DOI: 10.11609/jott.2023.15.7.23463-23630

Articles

Predicting suitable habitat for the endangered Javan Gibbon in a submontane forest in Indonesia

– Rahayu Oktaviani, Amaël Borzée, Andi Nugraha Cahyana, Susan Lappan, Ani Mardiasuti & Misbah Satria Giri, Pp. 23463–23471

Babesa Sewage Treatment Plant as a vital artificial wetland habitat for a multitude of avian species

– Pelden Nima, Mahendra Timsina, Tenzin Jamtsho & Pema Khandu, Pp. 23472–23486

Communications

Proximate nutrients of selected forage and the diet composition of adult elephants in Udawalawe National Park, Sri Lanka, a preliminary study

– I.V. Dinithi Hemachandra, C. Dilrukshi Wijayarathna & P. Nihal Dayawansa, Pp. 23487–23498

Does small mammal species richness have a bimodal elevation gradient in Sikkim Himalaya?

– Sunita Khatiwara, Joya Thapa & Ajith Kumar, Pp. 23499–23506

Re-sighting record of Kelaart's Pipistrelle *Pipistrellus ceylonicus* (Kelaart, 1852) (Mammalia: Chiroptera: Vespertilionidae) from Rajasthan, India

– Dharmendra Khandal, Dau Lal Bohra & Shyamkant S. Talmale, Pp. 23507–23513

An assessment of the diet of Brown Fish-Owl *Ketupa zeylonensis* (J.F. Gmelin, 1788) (Aves: Strigiformes: Strigidae) from two localities in the foothills of the Western Ghats of Goa, India

– Stephen Jonah Dias & Atul Sinai Borker, Pp. 23514–23520

Tree cover and built-up area regulate the territory size in Eurasian Magpie *Pica pica* in Ladakh, India

– Iqbal Ali Khan, Anil Kumar, Dinesh Bhatt & Prakhar Rawal, Pp. 23521–23528

Birds of Kanetiya area - inventory, notable sightings, and overview of seasonal changes in reporting frequency of bird species in an unprotected area of Himachal Pradesh, India

– Samakshi Tiwari, Pp. 23529–23544

A preliminary assessment of Odonata (dragonflies & damselflies) across an elevation gradient – insights from Shiwaliks to Alpines, northwestern Himalaya, India

– Neeraj Sharma, Dinesh Singh, Shakha Sharma & Ajaz Ansari Pp. 23545–23556

Checklist of soil nematode diversity from Udupi District, Karnataka, India

– M.V. Keshava Murthy & A. Shwetha, Pp. 23557–23566

Checklist of the genus *Dendrobium* Sw. (Orchidaceae) in Manipur, India

– Hidangmayum Bishwajit Sharma & Debjyoti Bhattacharyya, Pp. 23567–23574

Status of macrofungal diversity in the wet evergreen forests of Agasthyamala Biosphere Reserve, Western Ghats, India

– Kurunnan Kandy Akshaya, Arumugam Karthikeyan & Cheravengat Kunhikannan, Pp. 23575–23586

Developing a fast, reproducible, and simple protocol for virtual lichen herbarium using barcoding and QR code techniques

– S. Jeya Preethi & P. Ponnurugan, Pp. 23587–23595

Short Communications

Population status of Oriental Darter *Anhinga melanogaster* Pennant, 1769 (Aves: Suliformes: Anhingidae) in Keoladeo National Park, India

– Neha Imtiyaz & Satish Kumar, Pp. 23596–23600

Breeding of Himalayan Vulture *Gyps himalayensis* Hume, 1869 (Aves: Accipitriformes: Accipitridae) in the Assam State Zoo, Guwahati, Assam, India

– Sachin Ranade, Jay Gore & Ashwini Kumar, Pp. 23601–23605

Notes

Unusual foraging behaviour of the Bengal Slow Loris *Nycticebus bengalensis* (Lacépède, 1800) (Mammalia: Primates: Lorisidae) in the Shan Highlands, Myanmar

– Sai Sein Lin Oo, Khun Aung Naing Oo & Paul Jeremy James Bates, Pp. 23606–23609

Powerline pylons: an unusual nesting success of White-bellied Sea-Eagle *Haliaeetus leucogaster* (Gmelin, 1788) (Aves: Accipitriformes: Accipitridae) from Ramanathapuram, southeastern coast of India

– H. Byju, N. Raveendran & A.J. Mathiyazhagan, Pp. 23610–23614

First record of Horned Grebe *Podiceps auritus* (Linnaeus, 1758) (Aves: Passeriformes: Podicipedidae) from Jammu & Kashmir, India

– Bilal Nasir Zargar, Umer Nazir & Zakir Hussain Najjar, Pp. 23615–23617

First photographic record of White Royal *Tajuria illurgis illurgis* (Hewitson, [1869]) (Insecta: Lepidoptera: Lycaenidae) from Arunachal Pradesh, India

– Ruksha Limbu, Roshan Upadhaya, Renu Gogoi & Jyoti Gaur, Pp. 23618–23620

Preliminary observations of moth fauna of Purna Wildlife Sanctuary, Gujarat, India

– Preeti Choudhary & Indu Sharma, Pp. 23621–23626

Argyreia lawii C.B. Clarke (Convolvulaceae) – an extended distribution record in the Western Ghats of Kerala

– A. Raja Rajeswari & M.K. Nisha, Pp. 23627–23630

Publisher & Host

