

Building evidence for conservation globally

# Journal of Threatened Taxa

10.11609/jott.2023.15.6.23283-23462

[www.threatenedtaxa.org](http://www.threatenedtaxa.org)

26 June 2023 (Online & Print)

15(6): 23283-23462

ISSN 0974-7907 (Online)

ISSN 0974-7893 (Print)



Open Access







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, 5<sup>th</sup> 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](http://www.threatenedtaxa.org)  
Email: [sanjay@threatenedtaxa.org](mailto:sanjay@threatenedtaxa.org)

#### EDITORS

##### Founder & Chief Editor

**Dr. Sanjay Molur**

Wildlife Information Liaison Development (WILD) Society & Zoo Outreach Organization (ZOO),  
43/2 Varadarajulu Nagar, 5<sup>th</sup> 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 Illustration, 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. Ilangoan**, 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

##### 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. Karthikeyan, 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 Banos, 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, Ilandudno, North Wales, LL30 1UP

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

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

Mr. Jatishwor Singh Irungbam, Biology Centre CAS, Branišovská, Czech Republic.

For Focus, Scope, Aims, and Policies, visit [https://threatenedtaxa.org/index.php/JoTT/aims\\_scope](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](https://threatenedtaxa.org/index.php/JoTT/policies_various)

continued on the back inside cover

Cover: Marine invertebrates - made with acrylic paint. © P. Kritika.



## Putting wetland science to practice: a review

Review by **Tiasa Adhya**<sup>1</sup>  & **Partha Dey**<sup>2</sup> 

<sup>1,2</sup>The Fishing Cat Project, Fishing Cat Conservation Alliance, PO Box 1488, Navasota, Texas 77868, USA.

<sup>1</sup>adhya@yaho.com (corresponding author), <sup>2</sup>parthamarsh2@gmail.com

In these unprecedented times, we find ourselves amidst the sixth mass extinction while simultaneously embarking on the United Nations Decade on Ecosystem Restoration, spanning from 2021 to 2030. As if the stakes were not high enough, this timeframe serves as the ultimate countdown for achieving the Sustainable Development Goals (SDGs), vociferously advocated by scientists as the last window of opportunity to prevent the catastrophic climate change. Amidst this critical juncture, no other ecosystem plays a more pivotal role in achieving SDGs and buffering our civilization against climate change as wetlands. With their ability to regulate floods, purify and store water, produce oxygen, sequester carbon, provide food and showcase unrivalled biodiversity, wetlands stand as the veritable champions of our planet. It is in this regard that Dr. Paul Keddy's 'Causal factors for Wetland Management and Restoration: A Concise Guide' could not be more timely. Through this insightful book, he seeks to equip park managers, landscape architects, consultants, planners and engineers with a succinct and invaluable resource that will enable them to make tangible differences in the conservation and revitalization of wetlands.

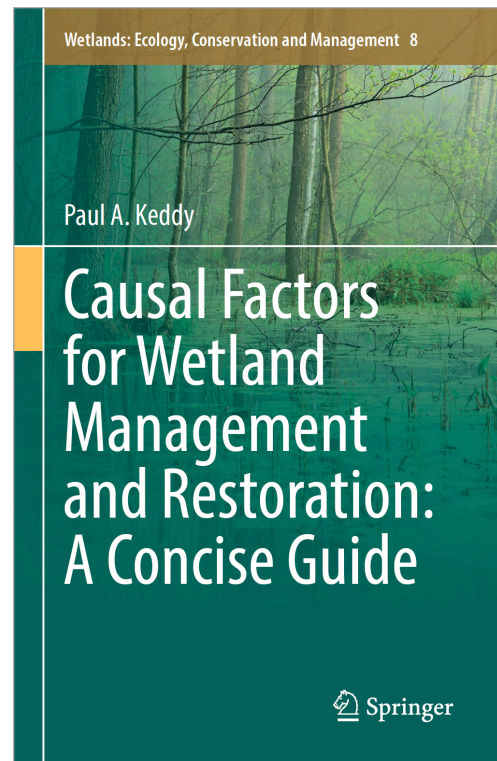
General public and policy makers, mostly, assume that wetlands are just waterbodies due to a weak understanding of what wetlands truly are. Dr Keddy, at the onset, irons out this deficit and provides a solid ecological foundation by defining what a wetland is. It is "an ecosystem that arises when inundation by water produces soils dominated by anaerobic processes, which, in turn, forces the biota, particularly rooted plants, to adapt to flooding." Inundation is the predominant feature that characterizes wetlands. These could be seasonally inundated with an ephemeral presence of water for half the year and look like grasslands during the other half. Flooding cuts off aerial oxygen supply to the soil. Wetland life forms must thus adapt to survive both inundation and low oxygen levels. Such wetlands can be categorized into six major types: swamp, marsh,

eBook ISBN 978-3-031-21788-3

Published: 11 March 2023

Pages: XIII, 158 pp.

Publisher: Springer Cham.



**Date of publication:** 26 June 2023 (online & print)

**Citation:** Adhya, T. & P. Dey (2023). Book Review - Putting wetland science to practice: a review. *Journal of Threatened Taxa* 15(6): 23461–23462. <https://doi.org/10.11609/jott.8556.15.6.23461-23462>

**Copyright:** © Adhya & Dey 2023. Creative Commons Attribution 4.0 International License. JoTT allows unrestricted use, reproduction, and distribution of this article in any medium by providing adequate credit to the author(s) and the source of publication.

**Acknowledgements:** We acknowledge the continued inspiration provided by the Fishing Cat, an apex predator of wetlands. The species has been guiding us in our journey and we hope to not only learn with it but also to dedicate ourselves towards its conservation.

bog, fen, wet meadow and aquatic –each experiencing different intensities and duration of inundation.

The second chapter of the book is what might be Dr. Keddy's notable and a seminal contribution to the budding field of wetland ecology—'the causal factor approach'. This approach revolves around identifying and understanding the environmental factors that govern the very essence of wetlands—their composition and functionality. Therefore, this chapter provides a key to a small set of essential tools, offering a simplified lens to comprehend the complexities of wetland ecosystems. In areas where wetlands remain relatively unscathed, managers can focus on preserving the existing state by safeguarding the causal factors at play. In other areas, where wetlands have suffered damage, tweaking these causal factors will be paramount in the pursuit of restoring them to their desired state. The trifecta of flooding, nutrients and natural disturbances (through biomass removal) emerge as the pivotal forces, wielding significant influence over the rich tapestry of wetland variation.

Within the realm of the 'causal factor approach', duration of flooding is the most important factor creating a variety of wetland types along a spectrum of varying water depths – from permanently flooded to temporarily flooded. The link between ecological concepts and their application in conservation is also swiftly described. For instance, it has been advised that while creating new wetlands, a variety of water depths and gentle slopes should be incorporated into the design that will then sustain a matrix of different wetland vegetation types and provide a sanctuary to a plethora of life forms. Such concepts are especially important to perceive wetlands as ecosystems that are implicitly tied to the fate of rivers. Even subtle fluctuation in water depths created by the varying duration of floods holds the power to metamorphose a wetland from a marsh to a swamp, orchestrating a shift from a plant community dominated by tree-less, herbaceous forms to a reign of woody plants. This understanding provides the basis for realizing the effect of dams and river diversion projects on the persistence of wetlands. A single glance at the easily graspable conceptual diagrams that characterize the book helps us to answer questions and anticipate the far-reaching consequences of policies that continue to change the wet landscapes.

The latter portion of the book delves into a myriad of other factors that mould the character of wetlands, including the intriguing dynamics of plant competition, the impact of herbivory, the transformative effects of burial or sedimentation, the influence of salinity, the ramification of roads, the challenges posed by invasive species, and the crucial interplay with human population size. Throughout these chapters, the author skillfully provides tailored guidelines for wetland managers with different objectives – whether their aim is to maintain the existing state of wetlands or to embark on the ambitious journey of restoring them to a desired condition.

As we approach the book's culmination, the concluding chapters weave together a comprehensive synthesis of concepts, shedding light on the interconnectedness of individual wetlands within a vast global network. We come to understand that each wetland, be it nestled within a protected area, situated along a buffer zone, or forming part of a landscape-spanning corridor, contributes to a greater whole, a magnificent continuum that extends far beyond the boundaries of any single site. The last chapter serves as an invaluable exercise for wetland managers, presenting a thought-provoking series of questions that once answered by invoking the general principles introduced in the beginning, will pave the way towards achieving practical objectives in the protection and restoration of local wetlands.

Most river basins of Asia are severely degraded and fragmented because of river diversion projects. Based on the principles elucidated in the book, it might be worthwhile to predict how the dynamics of wetlands and wetland complexes strung together to the fate of the rivers might be affected due to decreasing water flow and increasing sedimentation. This will set the stage to examine corresponding impact on the ecological community and society. For instance, what happens when an aquatic wetland progresses towards a marsh and a marsh towards a swamp? Understanding the nature and pace of such a change will enable us to perceive the effect of this change on both biodiversity and dependent human communities (especially fishing communities) as well as the consequence for larger societies. This might then expedite restoration efforts if the change and/or degradation of wetland ecological functions has alarming consequences for biodiversity and society.



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. Aashesh 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. Niyal, 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. Rajeesh 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, Taleigao 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 Sundev, 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. Gokul, 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. Karin 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 paucity 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, 5<sup>th</sup> Street West, Ganapathy, Coimbatore,  
Tamil Nadu 641006, India  
ravi@threatenedtaxa.org





[www.threatenedtaxa.org](http://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](http://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)

June 2023 | Vol. 15 | No. 6 | Pages: 23283–23462

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

DOI: 10.11609/jott.2023.15.6.23283-23462

## Communications

**Presence of medium and large sized terrestrial mammals highlights the conservation potential of Patharia Hill Reserve in Bangladesh**

– M. Aminur Rahman, Ai Suzuki, M. Sunam Uddin, M. Motalib, M. Rezaul Karim Chowdhury, Ameer Hamza & M. Abdul Aziz, Pp. 23283–23296

**Diversity and abundance of aquatic birds in Koonthankulam village pond, Tamil Nadu, India**

– Selvam Muralikrishnan, Esakkimuthu Shanmugam, Natarajan Arun Nagendran & Duraisamy Pandiaraja, Pp. 23297–23306

**Plastral deossification zones in the Endangered Spiny Hill Turtle *Heosemys spinosa* (Testudines: Geoemydidae) on Borneo**

– Siti Nor Baizurah & Indraneil Das, Pp. 23307–23314

**Addition of four new records of pit vipers (Squamata: Crotalinae) to Manipur, India**

– Premjit Singh Elangbam, Lal Biakzuala, Parag Shinde, Ht. Decemson, Mathipi Vabeiryureilai & Hmar Tlawmte Lalremsanga, Pp. 23315–23326

**Addition to the Odonata fauna of Tripura, India**

– Dhiman Datta, B.K. Agarwala & Joydeb Majumder, Pp. 23327–23337

**Occurrence and distribution of two new libellulids (Odonata: Insecta) of the Kashmir Valley, India: *Orthetrum sabina* (Drury, 1770) and *Palpopleura sexmacaluta* (Fabricius, 1787)**

– Tahir Gazanfar & Mehreen Khaleel, Pp. 23338–23343

**Rayed Thistle Fly *Tephritis cometa* Loew (Diptera: Tephritidae) a new record to India**

– Rayees Ahmad, Tariq Ahmad & Barkat Hussain, Pp. 23344–23349

**New state records of some Dermaptera De Geer, 1773 (Insecta) species in India**

– Tanusri Das, Kochumackel George Emiliyamma & Subhankar Kumar Sarkar, Pp. 23350–23358

**Moth diversity of Guindy, Chennai, India and DNA barcoding of selected erebid moths**

– Sreeramulu Bhuvaregavan, Mani Meenakumari, Ramanathan Nivetha & Sundaram Janarthanan, Pp. 23359–23372

**New record of the sphingid moth *Acherontia styx* Westwood, its parasitoid *Trichogramma achaeae* in Jasmine *Jasminum sambac* L., and its bioecology**

– I. Merlin K. Davidson, Pp. 23373–23381

**Identification and phylogenetic analysis of various termite species distributed across southern Haryana, India**

– Bhanupriya, Shubhankar Mukherjee, Nidhi Kakkar & Sanjeev K. Gupta, Pp. 23382–23396

**Survey of Black Band Disease-affected scleractinian corals via drone-based observations in Okinawa, Japan**

– Rocktim Ramen Das, Parviz Tavakoli-Kolour, Sanaz Hazraty-Kari & James Davis Reimer, Pp. 23397–23402

**Trace elements in *Penaeus* shrimp from two anthropized estuarine systems in Brazil**

– Ana Paula Madeira Di Benedetto, Inácio Abreu Pestana & Cássia de Carvalho, Pp. 23403–23407

**Aquatic Hemiptera inhabiting rice fields in Karaikal, Puducherry, India**

– M. Kandibane & L. Gopianand, Pp. 23408–23415

**Leaf defoliation and *Tabernaemontana rotensis* (Asterids: Gentianales: Apocynaceae) flower induction and fruit development**

– Thomas E. Marler, Pp. 23416–23424

## Short Communications

**First record and DNA barcode of a scarab beetle, *Adoretus kanarensis* Arrow, 1917 (Coleoptera: Scarabaeidae: Rutelinae), from Maharashtra, India**

– Pranil Jagdale, Sujata Magdum, Aparna Sureshchandra Kalawate, Swapnil Kajale & Yogesh Shouche, Pp. 23425–23430

**New record of *Lucilia cuprina* (Wiedemann, 1830) (Diptera: Calliphoridae) from the Trans-Himalayan Region, cold arid desert of Kargil Ladakh, India**

– Mohd Hussain, Altaf Hussain Mir, Hidayatullah Tak & Nassreen Fatima Kacho, Pp. 23431–23435

**On the occurrence of *Nitella myriotricha* A.Braun ex Kützing, 1857 ssp. *acuminata* D.Subramanian, 1999 (Charophyceae: Charales: Characeae), from eastern India**

– Kailash Mondal & Jai Prakash Keshri, Pp. 23436–23440

## Notes

**Dark Clouds Ahead? Anecdotal evidence for an illegal live trade in Sunda *Neofelis diardi* and Indochinese *N. nebulosa* Clouded Leopards (Mammalia: Carnivora: Felidae)**

– Anthony J. Giordano, Leah M. Winstead, Muhammad Ali Imron, Rustam, Jephthe Sompud, Jayaraj Vijaya Kumaran & Kurtis Jai-Chyi Pei, Pp. 23441–23445

**Further photographic record of Asiatic Brush-tailed Porcupine *Atherurus macrourus* Linnaeus, 1758 (Mammalia: Rodentia: Hystricidae) from Manas National Park, Assam, India**

– Urjit Bhatt, Bilal Habib & Salvador Lyngdoh, Pp. 23446–23448

**Predation of the Nicobar Shrew *Crociodura nicobarica* by a Cattle Egret *Bubulcus ibis***

– G. Gokulakrishnan, C.S. Vishnu & Manokaran Kamalakannan, Pp. 23449–23451

**War prompts distress symptoms in Israeli Blind Snake**

– Shahr Dubiner, Shai Meiri & Eran Levin, Pp. 23452–23454

**Further distribution records of *Varadia ambolensis* (Stylommatophora: Helicarioidea) from the state of Goa**

– Nitin Sawant, Shubham Rane, Sagar Naik, Seema Vishwakarma & Mayur Gawas, Pp. 23455–23457

***Eleocharis acutangula* ssp. *neotropica* D.J.Rosen (Cyperaceae): a new record for southern Western Ghats, India**

– Kavya K. Nair & A.R. Viji, Pp. 23458–23460

## Book Review

**Putting wetland science to practice: a review**

– Review by Tiasa Adhya & Partha Dey, Pp. 23461–23462

Publisher & Host

