

Building evidence for conservation globally

Journal of Threatened Taxa

10.11609/jott.2024.16.2.24615-24818
www.threatenedtaxa.org

26 February 2024 (Online & Print)
16(2): 24615-24818
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, 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: Common Keeled Skink *Eutropis carinata* in oil pastels, colour pencils, & micron pen adapted from photograph by H. Byju © Pooja Ramdas Patil.



OPEN
ACCESS



SHORT COMMUNICATION

Plagiochila javanica (Sw.) Nees & Mont. (Marchantiophyta: Plagiochilaceae) rediscovered from the Western Ghats after 180 years

M.S. Sajitha¹ , C.N. Manju² , B. Mufeed³ , K.P. Rajesh⁴ & K.K. Rawat⁵

^{1,2,3}Bryology Division, Department of Botany, University of Calicut, Calicut University P.O, Malappuram District, Kerala 679635, India.

⁴Department of Botany, the Zamorin's Guruvayurappan College (affiliated to the University of Calicut), GA College PO, Kozhikode, Kerala 673014, India.

⁵Plant Diversity, Systematics and Herbarium Division, CSIR-National Botanical Research Institute (NBRI), Lucknow, Uttar Pradesh 226001, India.

¹sajimenon.saradha@gmail.com (corresponding author), ²manjucali@gmail.com, ³mufeednaja@gmail.com,

⁴kprajesh.botany@gmail.com, ⁵drkkrawat@rediffmail.com

Abstract: *Plagiochila javanica*, a widespread Asiatic member of the liverwort family Plagiochilaceae, is rediscovered from Western Ghats of Kerala, India after about 180 years of its first record from the country. The present discovery is a new record for Kerala state. A detailed description along with illustrations and images of the species are provided.

Keywords: 900 kandi, India, Kerala, liverwort, new record, Wayanad district.

Plagiochilaceae, one of the largest families of liverworts, consists of 82 members from India (Singh et al. 2016). The present taxon, *Plagiochila javanica* (Sw.) Nees & Mont. (sect. *Vagae* Lindenb.; Söderström et al. 2016) was described over 240 years ago from Indonesia (Java) as *Jungermannia javanica* Sw. (Swartz 1781: 35) and was transferred to the genus *Plagiochila* by Nees von Esenbeck & Montagne (1836: 52). Montagne (1842)

subsequently reported the species from Nilgiri Hills from Western Ghats, where it had been collected from avalanche by the Swiss botanist and horticulturalist George Samuel Perrottet (1790–1870). Chopra (1943) and Parihar et al. (1994) wrongly listed the species from western Himalayas; Bapna & Kachroo (2000) described it from both western Himalaya and Nilgiri Hills but the taxon is totally omitted by Kachroo (1973) in his enumerations. Verma et al. (2015) mentioned the occurrence of this species in Nilgiri hills based on Montagne (1842). After the original collection, there is no other report of this species based on fresh collections from anywhere in India. Hence the present collection of this species from Wayanad district of Kerala is its rediscovery in Indian bryoflora after more than 180 years and is a new record for Kerala state.

Editor: Tamás Pócs, Eszterházy Károly University, Eger, Hungary.

Date of publication: 26 February 2024 (online & print)

Citation: Sajitha, M.S., C.N. Manju, B. Mufeed, K.P. Rajesh & K.K. Rawat (2024). *Plagiochila javanica* (Sw.) Nees & Mont. (Marchantiophyta: Plagiochilaceae) rediscovered from the Western Ghats after 180 years. *Journal of Threatened Taxa* 16(2): 24807–24811. <https://doi.org/10.11609/jott.8853.16.2.24807-24811>

Copyright: © Sajitha et al. 2024. 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.

Funding: Council of Scientific & Industrial Research (CSIR).

Competing interests: The authors declare no competing interests.

Acknowledgements: Sajitha is thankful to CSIR, New Delhi for the award of Research Fellowship. Manju and Mufeed are thankful to the DST-SERB for funding the Core Research Grant in the Department of Botany, University of Calicut. We acknowledge the authorities of the Department of Botany, University of Calicut for the facilities provided. We thank the Kerala Forest & Wildlife Department for giving permission to visit the field and its staff members at Meppadi range in Wayanad district for the support during the field studies. We also thank the Aranyakam Nature Foundation for the support during the field study. KPR & KKR are thankful respectively to the authorities of the Zamorin's Guruvayurappan College, Kozhikode, Kerala, India and CSIR-National Botanical Research Institute (NBRI), Lucknow, Uttar Pradesh, India for the support.



MATERIALS AND METHODS

The plant was collected from “900 Kandi”, a tourist spot in Wayanad District in the Western Ghats of Kerala, India. The specimen was collected in June 2023 from a rock surface. Its morphological characters were studied using a Leica S Apo Stereo Microscope and anatomical features with an Olympus CX21liLED Compound microscope. The digital images with appropriate scales were made using a Magcam DC5 5.1MP, 1/2.5 CMOS Sensor camera with Magnus Analytics MagVision (x64.4.8.15674.2-01991008) software. Line diagrams were based on digital microscopic images. The collected specimens were air dried and kept in herbarium packets of standard size. The voucher specimens were deposited in the University of Calicut Herbarium (CALI).

Taxonomic treatment

Plagiochila javanica (Sw.) Nees & Mont., Ann. Sci. Nat., Bot., sér. 2, 5: 52. 1836. *Jungermannia javanica* Sw., Meth. Musc. 35. 1781. – Type: Indonesia, Java, *Thunberg s.n.* (ex herb. Swartz, S, H-SOL) (Figure 1; Image 1).

Plants medium sized, 3.0–3.6 cm long and 5 mm wide (with leaves), yellowish-green, soft textured, not glossy; leafy stems erect from short creeping rhizomatous caulids, branching terminal (dichotomous) as well as lateral-intercalary (only to one side), rhizoids absent on aerial shoots, stem light brown, dorsally exposed and fully hidden ventrally. Branches as strong as main stem, apices attenuate. Stem in cross section 11–13 cells across, cortex 2–3 layered, cells 9.8–14 x 4.2–12 µm, thick-walled; medullary cells 13.9–20.5 x 10.0–16.0 µm, thin-walled. Leaves imbricate to contiguous normally and towards the tip it is contiguous to remote, obliquely horizontally spreading, oblong-ovate to broadly ovate, 1.5–1.7 mm long, 0.8–1.2 x 0.5–0.6 mm wide, dorsal margin straight with a partially concave basal part, longly decurrent, entire or with 1–2 teeth near apex, ventral margin arched, slightly overlapping with opposite leaf base, moderately decurrent, incurved at base, with 9–11 teeth; teeth 2–5 cells long, 2–3 cells wide at base, leaf apex toothed with 2–3 small teeth, the apical teeth not larger than those of the ventral margin 2 cells long and 2 cells wide. Cells near leaf apex 16.5–22.8 x 11.2–16.5 µm, median cells 21.5–30.0 x 11.5–19.0 µm, basal cells 23.0–34.8 x 16–22.5 µm, trigones small in median leaf cells, medium-sized in basal cells; paraphyllia absent; underleaves very small, 2–3 lobed. Sexual and asexual reproductive structures not observed.

Habitat: The species was found in west coast semi evergreen forest at an altitude of 1,180 m, growing

in a rocky patch, associated with a number of other bryophytes like *Racopilum orthocarpum* Wilson ex Mitt., *Thuidium koelzii* H. Rob., *Cephalozia darjeelingensis* Udar & D. Kumar, *Pinnatella* sp., *Trichostomum tortelloides* (Broth. & Dixon) R.H. Zander, and *Fissidens pallidinervis* Mitt.

Distribution: In India this species was earlier known from the Western Ghats of Nilgiri hills (Montagne 1842). The present record is from “900 Kandi” in Wayanad District. *Plagiochila javanica* is widely distributed in southeastern Asia and the Pacific, where it is known from Thailand (Sukkharak et al. 2014), Vietnam (GBIF), Malaysia, Indonesia (Sumatra, Java, Kalimantan, Sulawesi, Bali, Sunda Islands), Papua New Guinea, Solomon Islands, Fiji and Samoa (Piippo 1989, 1993).

Representative specimens examined: India, Kerala: Wayanad District, on the way to “900 Kandi”, on rock, 1,180 m elevation, 10.vi.2023, Mufeed B. & K.P. Rajesh 195157, 195180a (CALI).

DISCUSSION

A total of 17 species of *Plagiochila* are distributed all over southern Western Ghats (Nilgiri Hills) (Srivastava et al. 2006; Verma et al. 2015), with a maximum number coming under section *Vagae* Lindenb., viz., *Plagiochila beddomei* Steph., *P. indica* Mitt. ex Steph., *P. nepalensis* Lindenb., *P. peradenyensis* Schiffn., *P. subtropica* Steph., *P. junghuhniana* Sande Lac. and *P. javanica* (Sw.) Nees & Mont. (Söderström et al. 2016). *P. palangiensis* S.C. Srivast., K.K. Rawat & P.K. Verma coming under sec. *Zanteniae* (Inoue) Inoue is endemic to the southern Western Ghats (Nilgiri Hills) (Srivastava et al. 2006) and *P. sisparensis* Steph. under sect. *Tayloriae* is endemic to Western Ghats-Sri Lanka hotspot (Verma et al. 2015). According to Inoue (1984), *P. javanica* is characterized by its distinct rhizomatous caulids, terminal and intercalary branching, contiguous to imbricate leaves with a shouldered but not amplified ventral base, ventral margin curved at basal half with variable number of teeth and with teeth at leaf apex not larger than those of the leaf margin, and with vestigial underleaves. *P. javanica* has frequent branching as described by Inoue (1984) and the present collection shows very few branching. The Indian plants are comparatively smaller than the description by Inoue (1984), this may be due to the habitat variation. The large number of synonyms (see Inoue 1984; Piippo 1989; So 2000) indicates that the species is morphologically highly variable.

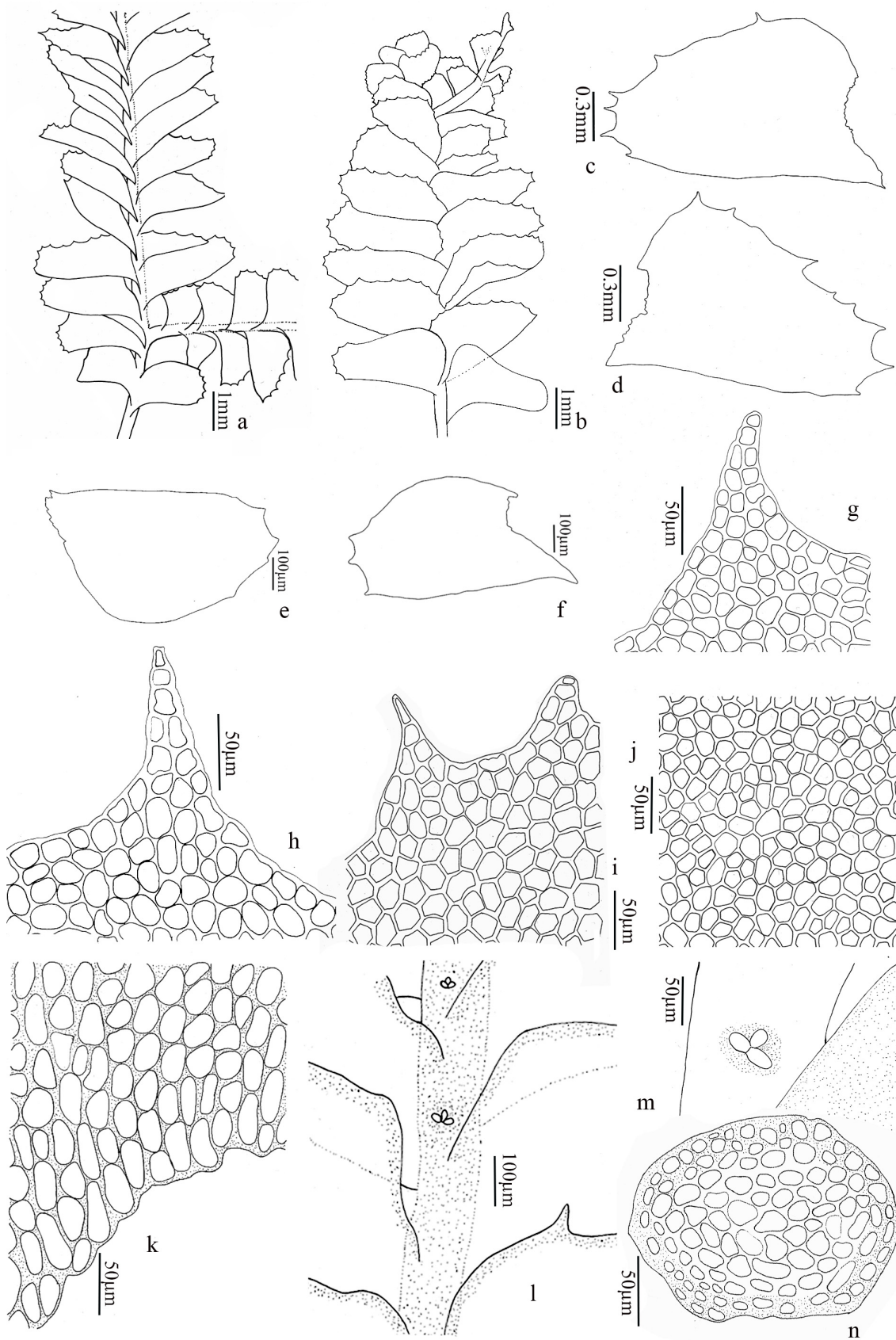


Figure 1. *Plagiochila javanica* (Sw.) Nees & Mont.: a—dorsal view of plant | b—ventral view of plant | c–f—leaves | g–i—apical spines of leaf | j—median cells of leaf | k—basal cells of leaf | l & m—underleaves on stem surface | n—stem cross section. Illustration by M.S. Sajitha.

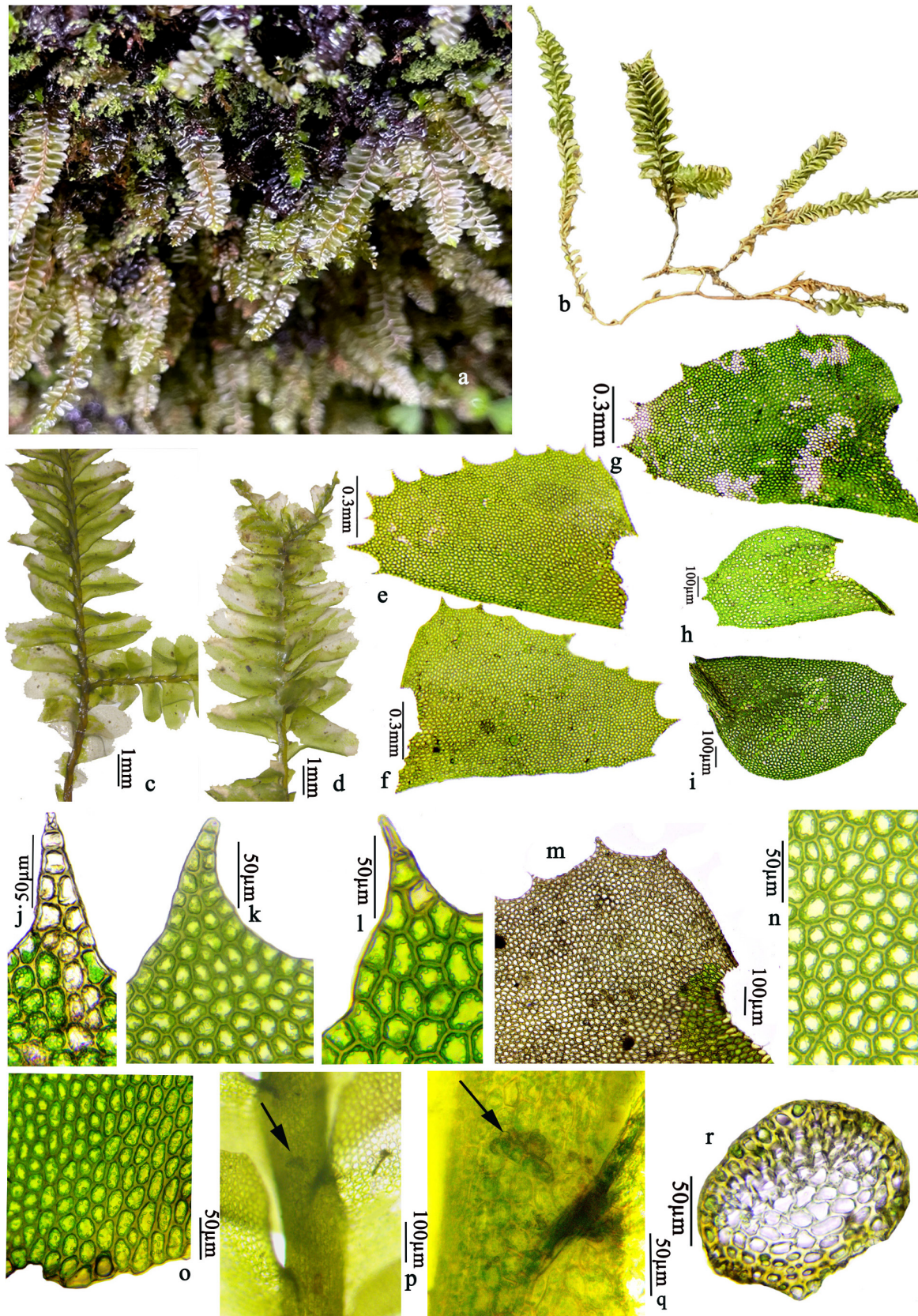


Image 1. *Plagiochila javanica* (Sw.) Nees & Mont.: a—habit | b—plant | c—dorsal view of shoot | d—ventral view of shoot | e—i—leaves | j—l—leaf marginal teeth | m—basal part of leaf | n—median cells of leaf | o—basal cells of leaf | p—underleaf on stem | q—underleaf enlarged | r—stem cross section. © M.S. Sajitha.

REFERENCES

- Bapana, K.R. & P. Kachroo (2000).** *Hepaticology in India – I*. Himanshu Publications, Udaipur, 491 pp.
- Chopra, R.S. (1943).** A census catalogue of Indian hepatics. *Journal of the Indian Botanical Society* 22: 237–259.
- Inoue, H. (1984).** *The Genus Plagiochila (Dum.) Dum. In Southeast Asia*. Academia Scientific Book, Tokyo, 142 pp. <https://doi.org/10.18942/bunruichiri.KJ00001078477>
- Kachroo, P. (1973).** Hepaticae of India – a taxonomic survey and census III. Plagiochilaceae through Pleuroziaceae. *Kashmir Journal of Science* 1: 141–161.
- Montagne, C. (1842).** Cryptogamae Nilgherrienses seu plantarum cellularium in montibus peninsulae indicae Neel-Gherries dictis à Cl. Perrottet. *enumeration Annales des Sciences Naturelles Botaniques* 17: 12–23.
- Parihar, N.S., B. Lal & N. Katiyar (1994).** *Hepatics and Anthocerotae of India. A new annotated checklist*. Indian Universities Press, Allahabad, 106 pp.
- Piippo, S. (1989).** Bryophyte flora of the Huon Peninsula, Papua New Guinea. XXX. Plagiochilaceae (Hepaticae). *Annales Botanici Fennici* 26: 183–236.
- Piippo, S. (1993).** Hepatics from the Solomon Islands I. *Nova Hedwigia* 56: 355–365.
- Singh, D.K., S.K. Singh & D. Singh (2016).** *Liverwort and Hornworts of India, An Annotated Checklist*. Botanical Survey of India, Kolkata, 439 pp.
- So, M.L. (2000).** *Plagiochila* sect. *Contiguae* (Hepaticae) in Australasia and the Pacific, with description of *Plagiochila subjavanica* sp. nov. *Australian Systematic Botany* 13(5): 808–815. <https://doi.org/10.1071/SB00011>
- Söderström, L., A. Hagborg, M.V. Konrat, S. Bartholomew-Began, D. Bell, L. Briscoe, E. Brown, D.C. Cargill, D.P. Costa, B.J. Crandall-Stotler, E.D. Cooper, G. Dauphin, J.J. Engel, K. Feldberg, D. Glenny, S.R. Gradstein, X. He, J. Heinrichs, J. Hentschel, A.L. Ilkiu-Borges, T. Katagiri, N.A. Konstantinova, J. Larrain, D.G. Long, M. Nebel, T. Pócs, F. Puche, E. Reiner-Drehwald, M.A.M. Renner, A. Sass-Gyarmati, A. Schäfer-Verwimp, J.G.S. Moragues, R.E. Stotler, P. Sukkharak, B.M. Thiers, J. Uribe, J. Vana, J.C. Villarreal, M. Wigginton, L. Zhang & R.L. Zhu (2016).** World checklist of Hornworts and Liverworts. *Phytokeys* 59: 1–828. <https://doi.org/10.3897/phytokeys.59.6261>
- Srivastava, S.C., K.K. Rawat & P.K. Verma (2006).** An interesting *Plagiochila* from Kodaikanal (India). *National Academy Science Letters* 29: 267–270.
- Sukkharak, P., A. Likananonn & S. He (2014).** A preliminary study of bryophytes in the Khao Soi Dao wildlife sanctuary, Chanthaburi Province, Thailand. *Songklanakarin Journal of Science and Technology* 36(5): 527–534.
- Verma, P.K., K.K. Rawat & A. Alam (2015).** *Plagiochila sisparensis* Steph.—a vulnerable liverwort from Nilgiri Hills, Western Ghats. *Plant Science Today* 2(4): 151–153. <https://doi.org/10.14719/pst.2015.2.4.147>



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 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. 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. 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 Challenger, 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 2020–2022 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



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)

February 2024 | Vol. 16 | No. 2 | Pages: 24615–24818

Date of Publication: 26 February 2024 (Online & Print)

DOI: 10.11609/jott.2024.16.2.24615-24818

www.threatenedtaxa.org

Articles

Unearthing calf burials among Asian Elephants *Elephas maximus* Linnaeus, 1758 (Mammalia: Proboscidea: Elephantidae) in northern Bengal, India

– Parveen Kaswan & Akashdeep Roy, Pp. 24615–24629

Coexistence of Indian Pangolin *Manis crassicaudata* (Geoffroy, 1803) (Mammalia: Pholidota: Manidae) and Indian Crested Porcupine *Hystrix indica* (Kerr, 1792) (Mammalia: Rodentia: Hystricidae) in Purulia District, West Bengal, India

– Debosmita Sikdar, Shwetadri Bhandari & Sanjay Paira, Pp. 24630–24645

Avifaunal assemblage patterns in Bharathapuzha River Basin, Kerala, India

– Pazhayattuparambil Narayanan Anoop Raj, Avadhoot Dilip Velankar & Padmanabhan Pramod, Pp. 24646–24657

Desmids of Brahmaputra valley, a major southern Asian river basin

– Soumin Nath & Partha Pratim Baruah, Pp. 24658–24693

Communications

Distribution status and roost characteristics of Indian Flying Fox *Pteropus medius* Temminck, 1825 (Mammalia: Chiroptera: Pteropodidae) in Kurukshetra district, Haryana, India

– Ritu Devi & Parmesh Kumar, Pp. 24694–24706

Avifauna of four protected areas of Terai-Arc Landscape, India: significant records and a checklist of species

– Shariq Safi, Tanveer Ahmed, Junid Nazeer Shah, Meraj Anwar & Kamlesh K. Maurya, Pp. 24707–24729

Monitoring observations of the southernmost breeding population of Long-billed Vultures *Gyps indicus* (Scopoli, 1786) (Aves: Accipitriformes: Accipitridae) in the Nilgiri Biosphere Reserve, India

– S. Manigandan, H. Byju & P. Kannan, Pp. 24730–24736

Observations on Indian Skimmer *Rynchops albigollis* Swainson, 1838 (Aves: Charadriiformes: Laridae) breeding colonies in Middle Ganges stretch, India

Kumar Ankit, Mujahid Ahmad, Vivek Ranjan, Sanjay Kumar, Syed Ainul Hussain & Govindan Veeraswami Gopi, Pp. 24737–24745

Avifaunal diversity in urban greenspaces within Cotabato city, Mindanao Island, Philippines

– Joan Rhea Mae L. Baes, Peter Jan D. de Vera, John Paul A. Catipay, Marian Dara T. Tagoon & Elsa May Delima-Baron, Pp. 24746–24751

Waterbird count at Narathali waterbody, Buxa Tiger Reserve in northern Bengal for a decade (2009–2019) with a note on raptors

– Sachin Ranade & Soumya Sundar Chakraborty, Pp. 24752–24759

First confirmed reproduction by a translocated female Siamese Crocodile *Crocodylus siamensis* (Crocodylidae: Crocodylia) with observations of nest attendance and nest-associated fauna

– Steven G. Platt, Sounantha Boutxakittilath, Oudomxay Thongsavath, Samuel C. Leslie, Lonnie D. McCaskill, Randeep Singh & Thomas R. Rainwater, Pp. 24760–24768

Erode Ground Gecko *Cyrtodactylus speciosus* (Beddome, 1870) (Squamata: Gekkonidae) from peri-urban common-lands of Coimbatore, India, with comments on habitat associations

– S.R. Ganesh, N.A. Swaathi & Usha Ravindra, Pp. 24769–24774

Assessment of diversity of Odonata fauna in selected sites of Purba Bardhaman district, West Bengal, India

– Sulagna Mukherjee & Rabindranath Mandal, Pp. 24775–24785

A preliminary assessment of butterfly diversity from Mekhliganj town, Cooch Behar District, West Bengal, India

– Abhirup Saha, Prapti Das & Dhiraj Saha, Pp. 24786–24794

Utilization of *Azelia africana* Sm. ex Pers. (Magnoliopsida: Fabales: Fabaceae) in Nigeria and its implications for conservation

– Samuel Oloruntoba Bamigboye, Muhali Olaide Jimoh, Falilat Abeni Lawal, Zainab Temitope Osiyemi, Charles Petrus Laubscher & Learnmore Kambizi, Pp. 24795–24803

Short Communications

Gastrointestinal parasites of the Indian Flying Fox *Pteropus medius* in Nagpur City: a seasonal study through faecal sample analysis

– Ruchika R. Sangale & Priya Gawande, Pp. 24804–24806

***Plagiochila javanica* (Sw.) Nees & Mont. (Marchantiophyta: Plagiochilaceae) rediscovered from the Western Ghats after 180 years**

– M.S. Sajitha, C.N. Manju, B. Mufeed, K.P. Rajesh & K.K. Rawat, Pp. 24807–24811

A new record of genus *Synedrus* Graham, 1956 with description of male of *Synedrus kasparyani* Tselikh, 2013 from India

– Mubashir Rashid & Arvind Kumar, Pp. 24812–24815

Note

***Hunteria zeylanica* (Retz.) Gardner ex Thwaites (Magnoliopsida: Gentianales: Apocyanaceae)—new addition and first genus record to the flora of Karnataka**

– G. Ramachandra Rao, Pp. 24816–24818

Publisher & Host



Threatened Taxa