



HAL
open science

**Schoenoplectiella erecta (Poir.) Lye ssp. raynalii
(Schuyler) Beentje (Cyperaceae) – a new record to India
from Ossudu Bird Sanctuary, Villupuram District, Tamil
Nadu**

Pradeep Chandrasegrane, P Umamaheswari, Natesan Balachandran, Raphael
Mathevet

► **To cite this version:**

Pradeep Chandrasegrane, P Umamaheswari, Natesan Balachandran, Raphael Mathevet. *Schoenoplectiella erecta* (Poir.) Lye ssp. *raynalii* (Schuyler) Beentje (Cyperaceae) – a new record to India from Ossudu Bird Sanctuary, Villupuram District, Tamil Nadu. *Journal of Threatened Taxa*, 2023, 15 (2), pp.22741-22745. 10.11609/jott.7988.15.2.22741-22745 . hal-04080960

HAL Id: hal-04080960

<https://hal.science/hal-04080960>

Submitted on 24 Jul 2023

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



Distributed under a Creative Commons Attribution 4.0 International License

Building evidence for conservation globally

Journal of Threatened Taxa

10.11609/jott.2023.15.2.22559-22770
www.threatenedtaxa.org

26 February 2023 (Online & Print)
15(2): 22559-22770
ISSN 0974-7907 (Online)
ISSN 0974-7893 (Print)



Open Access

2000





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 641035, India

Deputy Chief Editor

Dr. Neelesh Dahanukar

Noida, Uttar Pradesh, India

Managing Editor

Mr. B. Ravichandran, WILD/ZOO, Coimbatore, 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 641035, India

Dr. B.A. Daniel, ZOO/WILD, Coimbatore, Tamil Nadu 641035, 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 2019–2021

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. 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 Banos, Laguna, Philippines

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

Dr. Afroz Alam, Banasthali Vidyapeeth (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. Navendu Page, Wildlife Institute of India, Chandrabani, Dehradun, Uttarakhand, India

Dr. Kannan C.S. Warrior, 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.

Dr. Ian J. Kitching, Natural History Museum, Cromwell Road, UK

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: Pseudo-flying animals and wind-dependent seed & spore dispersers – made with digital painting in Krita. © Melito Prinson Pinto



Schoenoplectiella erecta (Poir.) Lye ssp. *raynalii* (Schuyler) Beentje (Cyperaceae) – a new record to India from Ossudu Bird Sanctuary, Villupuram District, Tamil Nadu

Chandrasegrane Pradeep¹ , Paneerselvam Umamaheswari² , Natesan Balachandran³  & Raphael Mathevet⁴ 

^{1–4} Ecology Department, French Institute of Pondicherry, Pondicherry 605001, India.

² Department of Botany, Kanchi Mamunivar Government Institute for Postgraduate Studies and Research, Puducherry 605008, India.

⁴ UMR 5175 Centre d'Ecologie Fonctionnelle et Evolutive (CEFE), Campus CNRS, 1919 route de Mende, 34293 Montpellier, France.

¹pradeep.c@ifpindia.org, ²umamaheswari@ifpindia.org, ³balachandran.n@ifpindia.org (corresponding author),

⁴raphael.mathevet@ifpindia.org

Abstract: *Schoenoplectiella erecta* subsp. *raynalii* (Cyperaceae) is recorded for the first time from India and Asia. This taxon was collected in Ossudu Bird Sanctuary, Villupuram district of Tamil Nadu, southern India. Detailed description including microscopic study of the glume and nutlets with digital images, morphological characters, habitat, and key characters between the two subspecies are provided.

Keywords: Coromandel coast, India, migratory birds, new record, Pondicherry, wetland.

A new genus *Schoenoplectiella* was established by Lye (2003) with 26 species and it was separated from the genus *Schoenoplectus* (Rchb.) Palla. based on the rbcL suprageneric phylogeny (Muasya et al. 1998) both the genera were differentiated from the heterogeneous and un-natural genus, *Scirpus* L. Characteristically, *Schoenoplectiella* has members that are annuals, rarely perennial, rhizome very short hidden among the culm-bases, prostrate or elongate, glumes entire at apex, and nutlets transversely rugulose to sharply ridged whereas *Schoenoplectus* has perennial, rhizome elongate,

creeping or ascending, glumes notched or emarginate or bifid, and nutlets generally smooth (Hayasaka 2012). Currently, the genus has 65 accepted species (POWO 2022) and these are distributed from warm temperate to tropical regions of Africa, America, Asia, and Madagascar (Verloove et al. 2016). In India, 10 species were recorded (Mao & Dash 2020) and only five species are known from Tamil Nadu (Narasimhan & Sheeba 2021).

During recurrent botanical surveys for the last three year (from September 2018 to August 2021) an interesting plant belonging to the genus *Schoenoplectiella* was collected from the shores of the freshwater Lake Ossudu, in Ossudu Bird Sanctuary, a protected area, in Tamil Nadu and Pondicherry regions, southeastern India. On critical microscopic examination and referring to available literatures (Smith 2003; Xanthos & Browning 2015) the collected voucher specimen was identified as *Schoenoplectiella erecta* ssp. *raynalii*. Our identification was confirmed further by comparing the isotype image deposited at K (A.M.Yalala 425–K000416875). Further

Editor: Pankaj Kumar, Department of Plant and Soil Science, Texas Tech University, Lubbock, Texas, USA. **Date of publication:** 26 February 2023 (online & print)

Citation: Pradeep, C., P. Umamaheswari, N. Balachandran & R. Mathevet (2023). *Schoenoplectiella erecta* (Poir.) Lye ssp. *raynalii* (Schuyler) Beentje (Cyperaceae) – a new record to India from Ossudu Bird Sanctuary, Villupuram District, Tamil Nadu. *Journal of Threatened Taxa* 15(2): 22741–22745. <https://doi.org/10.11609/jott.7988.15.2.22741-22745>

Copyright: © Pradeep et al. 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.

Funding: AFD [Project: RUSE].

Competing interests: The authors declare no competing interests.

Acknowledgements: We thank Dr. D. Barboni for a careful review of the manuscript; RUSE AFD, France for the financial support for the survey; the head of forest force and wildlife, Chennai, and district forest officer, Villupuram district, Tamil Nadu granted permission to do botanical survey at Ossudu and Kazuveli wetlands; to the board of trustees, RBG, KEW for the digital image; University of South Florida Herbarium for their digital herbarium image and AURO herbarium for referring the *S. lateriflora* specimens. We also thanks to the anonymous reviewer(s) that shaped this manuscript in better form.



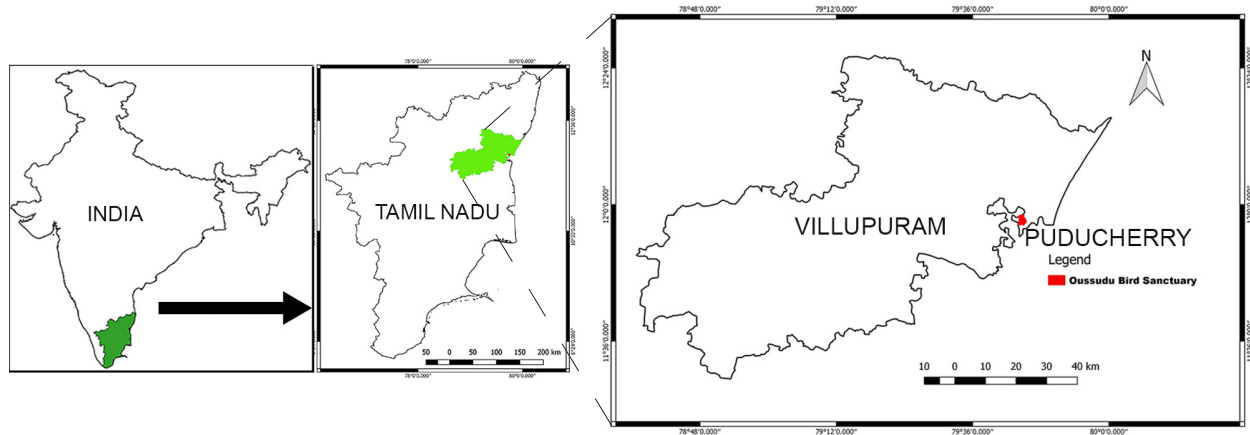


Figure 1. Study area – Ossudu Bird Sanctuary.

perusal of literatures (Cook 1998; Panda et al. 2002; Prasad & Singh 2002; Ansari et al. 2016; Kar et al. 2016; Mao & Dash 2020; Narasimhan & Sheeba 2021) we come to know that this taxon was not yet recorded in Asia, India, and regional floras; however, *Schoenoplectiella erecta* ssp. *erecta* was recorded from northern India. In the Lake Ossudu Bird Sanctuary, three *Schoenoplectiella* species also occur: *S. atriculata* (L.) Lye, *S. lateriflora* (J.F.Gmel.) Lye, and *S. juncooides* (Roxb.) Lye.

MATERIALS AND METHODS

Botanical exploration and ecological studies were conducted from September 2018 to August 2021 in Ossudu (Figure 1) along the Coromandel Coast, Villupuram district of Tamil Nadu. Ossudu Bird Sanctuary falls in two political boundaries, viz., Union Territory of Pondicherry and Villupuram district of Tamil Nadu. During the survey an unfamiliar sedge was found and collected from the eastern shores of Ossudu Lake and the collected specimen was processed and deposited at Herbarium, French Institute of Pondicherry (HIFP) for further studies. Camera attached light microscope was used to examine the morphological features of glume and nutlets to understand the morphological differences. Recent publications (Mao & Dash 2020; Narasimhan & Sheeba 2021) and consultation of herbaria (Madras Herbarium (MH), Rapinath Herbarium Tiruchirapalli (RHT), Deccan Regional Centre (DRC), Auroville Herbarium (AURO)) for the occurrence and international datasets (GBIF- the Global Biodiversity Information Facility—<https://www.gbif.org>, COL- Catalogue of Life—<https://www.catalogueoflife.org>, POWO- Plants of the World Online—<https://powo.science.kew.org/> and USDA- United States Department of Agriculture—<https://plants.usda.gov>) were referred for the global distribution

range of this species.

RESULTS

The inflorescence of *Schoenoplectiella* is capitata or anthellate. The anthella of spikelets are simple to decompound due to the presence of branched or unbranched peduncles with few to numerous sessile spikelets and they are densely crowded. This characteristic feature was recorded in both the inflorescence of *S. lateriflora* and *S. erecta*. On critical examination of the herbarium specimens deposited at AURO (4751, 10317, 11940), *S. lateriflora* was 10–20 cm high with decompound inflorescence, peduncles 3–15 mm high, style 3-branched, achene trigonous whereas *S. erecta* is more than 30 cm high, inflorescence decompound, peduncles 15–65 mm long, secondary peduncles to 8–12 mm long, style 2-branched and nutlet plano-convex.

The two known subspecies, *Schoenoplectiella erecta* ssp. *raynalii* is similar to *S. erecta* ssp. *erecta* but differs by its style and nutlets. Following key can be used to differentiate them:

- 1. Nutlet biconvex, style 2-fid, slightly wrinkled
..... *S. erecta* ssp. *erecta*
- 1. Nutlet plano-convex, style 3-fid, distinctly rugose *S. erecta* ssp. *raynalii*

Taxonomic treatment

Schoenoplectiella erecta (Poiret) Lye ssp. *raynalii* (Schuyler) Beentje Fl. Trop. E. Africa, Cyperaceae, 34, 2010. (Image 1)

Schoenoplectus erectus (Poiret) Palla ex J. Raynal ssp. *raynalii* (Schuyler) Lye, Nordic J. Bot. 3(2): 243. 1983.

Scirpus raynalii Schuyler, Notul. Nat. Acad. Nat. Sci.



Image 1. *Schoenoplectiella erecta* subsp. *raynalii*: **A**—The present collection | **B**—Isotype image from KEW | **C**—inflorescence in close view | **D**—plant in natural condition | **E**—dorsal, ventral and lateral view of glumes | **F**—gynoecium with 3—fid stigma | **G**—young and matured nutlet. © Balachandran & Uma Maheswari.

Philadelphia 438: 1, figs. 1, 3, 6. 1971.

Type: BOTSWANA, Maun district, 6.2.1964, *Yalala* 425 (K-K000416875!-Isotype-digital image seen)

Description

Annual herbs, culms densely tufted, 30–43 cm (including inflorescence bract), cylindrical, ridged when dry, 1.6–2 mm thick. Leaves 1–3, 2.5–13 cm long, rarely equalling the culm; sheaths brown, 5–9 cm long, ribbed, disintegrating to fibres. Inflorescence, pseudolateral, anthella-decompound in 2–5 pedunculate corymb, primary peduncle 0.5–6 cm long, secondary rachis 8–12 mm long; overtopped by lower bract, involucre bract stem like, erect, 4.5–13 cm long, secondary bract 0.5–4 cm long. Spikelets, in clusters, 1–5, 5–7 × 2–3 mm; green-cream, reddish brown when matured; ovoid-oblong, 3(5)–13(18) × 2–3.5 mm; glume straw-coloured, with brown mosaic, central region often greenish when fresh, ovate-obovate, 2.53.4(5) × 1.5 mm, smooth, mucronate, margins scarious. Perianth absent, stamens 3, style 3-fid. Achenes almost blackish brown when ripe, planoconvex when matured, obovoid, 1.2–1.6 × 1.1–1.5 mm, with sharp ridges along the margins, distinctly and transversely rugose.

Flowering and fruiting: from January–April.

Habitat: Along the shores of the fresh water lake at the elevational range between 30 and 40 m. It was found growing along with *S. lateriflorus* and *S. juncooides* of Cyperaceae, *Persicaria glabra* (Willd.) M.Gomez of Polygonaceae, *Ludwigia perennis* L. of Onagraceae, *Dinebra polystachyos* (R.Br.) E.A.Kellogg of Poaceae, *Aponogeton natans* (L.) Engl. & K.Krause of Aponogetonaceae.

Distribution: Africa, Asia, Australia, Mexico, and South America.

Specimen examined: India, Tamil Nadu, Villupuram district, Ossudu Bird Sanctuary, 11.9577° N, 79.7456° E, 18 m, 8 February 2020, Pradeep & Balachandran 27514 (HIFP!, two sheets).

Conservation status

Considered as 'Least Concern' on the IUCN Red List of Threatened Species (Mesterházy 2020), and in recent days the range of distribution has been extended from Africa, America to Asia, and Australia. Probably the migratory granivorous ducks (Mallards/the whistling ducks) might have played a major role in extending the distribution of this species. This study also proves the report of Kleyheeg et al. (2019) that the granivorous water birds disperse viable seeds of wetland plants over long distance during their migration. The censuses

of large flocks of such migratory granivorous wintering or breeding ducks were recorded during this study and previous ones (Perennou 1990; Davidar 2011; Mathevet et al. 2020).

Notes: As per the revision of Hayasaka (2012) and Xanthos & Browning (2015) the subspecies '*raynalii*' could be easily distinguished by having 3-fid stigmas, planoconvex nature of nutlet with distinct rugose surface, while its typical subspecies '*erecta*', has 2-fid stigma, biconvex nutlet with moderate wrinkled surface. The surface of *S. lateriflora* nutlet is otherwise same that of *S. erecta* ssp. *raynalii* but the former species has trigonous nutlet with 2-fid stigmas.

In *Schoenoplectiella*, interspecific natural hybridization exhibits range of variations in plant height, culm width below the inflorescence, shape and length of overtopping inflorescence, glume dimensions at apex, anther crest length, style branch and length, achene dimensions and surface sculpturing were very well studied (Browning 1992; Hayasaka 2012). Meanwhile the variation in the shape of inflorescence was overlooked by previous taxonomic accounts (Ohwi 1944; Koyama 1958). Though, in India we observed that the length of primary and secondary peduncles of the inflorescence is much longer than the (iso)type specimen from KEW image and specimen from the University of South Florida Herbarium (20709).

REFERENCES

- Ansari, R., G. Jeeja & R. Prakashkumar (2016). Aquatic and Wetland Flora of Kerala: Flowering Plants. *Malabar Botanical Garden and Institute for Plant Sciences*, Kozhikode, Kerala, India.
- Browning, J. (1992). Studies in Cyperaceae in southern Africa. 20: Changed status of *Schoenoplectus corymbosus* var. *brachyceras* and report of hybrids. *South African Journal of Botany* 58(6): 530–532.
- Cook, C. (1998). *Aquatic and Wetland Plants of India*. Oxford University Press, Delhi.
- Davidar, P. (2011). *Wetland Birds of Pondicherry Region: A pocket field guide*. ECOS, Pondicherry, India.
- Hayasaka, E. (2012). Delineation of *Schoenoplectiella* Lye (Cyperaceae), a genus newly segregated from *Schoenoplectus* (Rchb.) Palla. *Journal of Japanese Botany* 87(3): 169–186.
- Kar, S.K., P.K. Tripathy, S.K. Mohanty, P.K. Acharya & P.C. Panda (2016). Additions to the Flora of Chilika lake and its immediate Neighbourhood. *Journal of Economic and Taxonomic Botany* 40 (3–4): 134–150.
- Kleyheeg, E., W. Fledler, K. Safi, J. Waldenstrom, M. Wikelski & M.L. van Toor (2019). A Comprehensive Estimation of Seed Dispersal by Migratory Mallards. *Frontiers in Ecology and Evolution* 7: 1–14.
- Koyama, T. (1958). Taxonomic study of the genus *Scirpus* Linn. *Journal of the Faculty of Science, the University of Tokyo, Section 3*(7): 271–366.
- Lye, A.L. (2003). *Schoenoplectiella* Lye, gen. nov. (Cyperaceae). *Lidia* 6: 20–29.
- Mao, A.A. & S.S. Dash (2020). *Flowering plants of India: An annotated checklist (Monocotyledons)*. Botanical survey of India, Kolkata, 3, 249–300 pp.
- Mathevet, R., S. Targowla, G. Venkatasubramanian, M. Anbarashan,

- N. Ayyappan & N. Bautès (2020).** Wetlands for a sustainable urban future? Insights from Pondicherry. *Journal of Natural Resources* 3(4): 74–93.
- Mesterházy, A. (2020).** *Schoenoplectiella erecta*. The IUCN Red List of Threatened Species 2020: e.T168941A1255197. Accessed on 25 May 2022. <https://doi.org/10.2305/IUCN.UK.2020-2.RLTS.T168941A1255197.en>
- Muasya, A.M., D.A. Simpson, M.W. Chase, & A. Culham (1998).** An assessment of suprageneric phylogeny in Cyperaceae using rbcL DNA sequences. *Plant Systematics and Evolution* 211(3): 257–271.
- Narasimhan, D. & I.J. Sheeba (2021).** *Flowering Plants of Tamil Nadu: A Compendium*. Care Earth Trust, Chennai, India, 1,112 pp.
- Ohwi, J. (1944).** Cyperaceae Japonicae II. A synopsis of the Rhynchosporoideae and Scirpoideae of Japan, including the Kuriles, Saghalin, Korea and Formosa. *Memoirs of the College of Science; Kyoto Imperial University Series* B18: 1–182.
- Panda, P.C., A.K. Pattnaik, J. Rath & S.N. Patnaik (2002).** Flora of Chilika Lake and its Immediate Neighborhood: A checklist. *Journal of Economic and Taxonomic Botany* 26(1): 1–20.
- Perennou, C. (1990).** *Peuplements d'oiseaux aquatiques en milieu anthropisé : un exemple. Les plaines de la Cote de Coromandel (Inde du Sud-Est)*. PhD thesis, Lyon, Univ., Lyon I, France.
- Prasad, V.P. & N.P. Singh (2002).** *Sedges of Karnataka*. Additional Series, 21. Scientific Publishers, Jodhpur.
- POWO (2022).** <https://powo.science.kew.org/taxon/urn:lsid:ipni.org:names:77107810-1>. Accessed on 7 March 2022.
- Smith, S.G. (2003).** Cyperaceae. In: Ball, P.W., A.A. Reznick & D.F. Murray (ed.). *Flora of North America* Vol. 23; http://www.efloras.org/florataxon.aspx?flora_id=1&taxon_id=10246. Accessed on 9 March 2022.
- Verloove, F., A. Mesterhazy & J. Browning (2016).** Studies in *Schoenoplectiella* (Cyperaceae) in tropical West Africa. *Phytotaxa* 283(1): 096–100.
- Xanthos, M. & J. Browning (2015).** Taxonomic re-evaluation of *Schoenoplectiella lateriflora* subsp. *laevinux* (Cyperaceae) and a new record for *Schoenoplectiella erecta* subsp. *erecta*. *Kew Bulletin* 70: 36–41. <https://www.gbif.org/occurrence/1503282087>. Accessed on 24 February 2022. <https://www.catalogueoflife.org/data/taxon/5L3DV>. Accessed on 24 February 2022. <https://plants.usda.gov/home/plantProfile?symbol=SCERR2>. Accessed on 9 March 2022.



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. Moonsoon 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. 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. Chandrashekher 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

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. M. Zafar-ul Islam, Prince Saud Al Faisal Wildlife Research Center, Taif, Saudi Arabia

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 2019–2021

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.

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

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 2023 | Vol. 15 | No. 2 | Pages: 22559–22770

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

DOI: 10.11609/jott.2023.15.2.22559-22770

www.threatenedtaxa.org

Communications

Sunda Clouded Leopard *Neofelis diardi* (Cuvier, 1823) (Mammalia: Carnivora: Felidae) occupancy in Borneo: results of a pilot vehicle spotlight transect survey
– Jephthe Sompud, Sze Lue Kee, Kurtis Jai-Chyi Pei, Paul Liao, Collin Goh & Anthony J. Giordano, Pp. 22559–22566

On the occurrence of Eurasian Otter *Lutra lutra* (Carnivora: Mustelidae) in Neeru stream of Chenab catchment, Jammu & Kashmir, India
– Dinesh Singh, Anil Thakar & Neeraj Sharma, Pp. 22567–22573

Distribution of avifauna on twenty-one islands of the Gulf of Mannar Biosphere Reserve, India
– H. Byju, N. Raveendran & S. Ravichandran, Pp. 22574–22585

Habitats of House Sparrow *Passer domesticus* (Linnaeus, 1758) in Rameswaram Island, Tamil Nadu, India
– M. Pandian, Pp. 22586–22596

Seasonal diversity and dietary guild structure of birds in two Vindhyan gorge forests of Rajasthan, India
– Ashvini Kumar Joshi, Pp. 22597–22605

Differential kleptoparasitic interactions of Himalayan Vulture *Gyps himalayensis* with conspecifics and heterospecifics during various stages of breeding
– Hameem Mushtaq Wani, Pp. 22606–22610

Range extension of *Isthmoheros tuyenensis*, a threatened species of fish (Cichlidae) in Panama: including new ecological and morphological data
– Arturo Dominici-Arosemena, Arturo Angulo, Haydee Osorio-Ugarte, Quiriatjaryn Ortega-Samaniego, Andrés Fraiz, Arminda Guerrel, Edgar Araúz, Jennyfer Montiel, Beatriz Medina, Yehudi Rodríguez-Arriatti, Yessenia González, Javier Pardo, Karly Urriola & Adrián Ramos-Merchante, Pp. 22611–22622

Tadpole morphology of Jerdon's Narrow-mouthed Frog *Uperodon montanus* (Jerdon, 1853) with a range and elevation extension report from Western Ghats, India
– Amit Hegde, Girish Kadadevaru & K.P. Dinesh, Pp. 22623–22631

An annotated checklist of the economically important family of moths (Lepidoptera: Heterocera: Noctuidae) of the northern Western Ghats, India, with notes on their type species, diversity, distribution, host plants, and an unusual new faunistic record
– Aparna Sureshchandra Kalawate, Prachee Surwade & S.N. Pawara, Pp. 22632–22653

Report of a tussock moth genus *Maeoproctis* (Lepidoptera: Erebiidae: Lymantriinae: Nygmiini) from India
– Gagan Preet Kour Bali & Amritpal Singh Kaleka, Pp. 22654–22660

Butterflies of Silent Valley National Park and its environs, Western Ghats of Kerala, India
– Kalesh Sadasivan, P.C. Sujitha, Toms Augustine, Edayillam Kunhikrishnan, Vinayan P. Nair, M. Divin Murukesh & Baiju Kochunarayanan, Pp. 22661–22676

Notes on morphology and bionomics of *Urolabida histrionica* (Westwood) (Heteroptera: Urostylididae) from Assam, India
– Sachin Ranade & Hemant V. Ghate, Pp. 22677–22685

Andromonoecy functional through heterostyly and large carpenter bees as principal pollinators in *Solanum carolinense* L. (Solanaceae)
– Suvarna Raju Palathoti & Aluri Jacob Solomon Raju, Pp. 22686–22694

An inventory of endemic and near endemic angiosperm flora of Biligiri Rangaswamy Temple Tiger Reserve, peninsular India
– J. Jayanthi, Pp. 22695–22717

Multidimensional time-lapse of a relict species *Canarium strictum* Roxb. from a sacred landscape in Pune District, India
– Mukul Mahabaleshwarkar, Nivedita Ghayal, Supriya Mahabaleshwarkar & Vinaya Ghate, Pp. 22718–22725

Rediscovery of *Sewardiella tuberifera* Kash., a long-lost monotypic endemic Indian liverwort
– Sapana Pant, S.D. Tewari, Prachi Joshi, Manisha Bhandari & Richa Arya, Pp. 22726–22730

***Physcomitrium eury stomum* Sendtn. (Funariaceae: Bryophyta) and *Splachnobryum obtusum* (Brid.) Müll. Hal. (Splachnobryaceae: Bryophyta), two rare moss species from the Western Ghats of Kerala**
– C. Nair Manju, P.M. Vineesha, B. Mufeed & K.P. Rajesh, Pp. 22731–22736

Short Communications

First record of the Great Seahorse *Hippocampus kelloggi* Jordan & Snyder, 1901 (Actinopterygii: Syngnathiformes: Syngnathidae) from the northwestern coast of Bay of Bengal
– Anil Kumar Behera, Biswajit Mahari & Amrit Kumar Mishra, Pp. 22737–22740

***Schoenoplectiella erecta* (Poir.) Lye ssp. *raynalii* (Schuyler) Beentje (Cyperaceae) – a new record to India from Ossudu Bird Sanctuary, Villupuram District, Tamil Nadu**
– Chandrasegrane Pradeep, Paneerselvam Umamaheswari, Natesan Balachandran & Raphael Mathevet, Pp. 22741–22745

Notes

Status of the Sumatran Striped Rabbit *Nesolagus netscheri* in Isau-Isau Wildlife Reserve, South Sumatra Province, Indonesia
– Arum Setiawan, Muhammad Iqbal, Octavia Susilowati, Doni Setiawan, Martialis Puspito Khristy Maharsi & Indra Yustian, Pp. 22746–22748

Photographic record of the butterfly ray *Gymnura cf. poecilura* (Myliobatiformes: Gymnuridae) from the Bhagirathi-Hooghly River in West Bengal, eastern India
– Priyanka Chakraborty, Pp. 22749–22751

First report of the fairyfly *Schizophragma mitai* Triapitsyn (Hymenoptera: Mymaridae) from India with notes on *S. indica* Rehm & Anis
– Anandhan Rameshkumar, Nazarius Anand, Sayan Sardar & Sarfrazul Islam Kazmi, Pp. 22752–22756

Occurrence of *Ranunculus sceleratus* L. (Ranunculaceae) from the Nilgiri District, Tamil Nadu, India
– J. Shashikanth, S. Mugendhiran & Digvijay Verma, Pp. 22757–22760

First report of *Meliola panici* on *Ottochloa nodosa* (Kunth) Dandy (Poaceae)
– Gopinathan Nair Gokul & Jacob Thomas, Pp. 22761–22763

New record of an usneoid lichen *Usnea hirta* (L.) Weber ex F.H. Wigg. from India
– K.S. Vinayaka, Archana R. Mesta & N. Rajeshwari, Pp. 22764–22766

On the occurrence of two species of rare cyanobacterial genus *Petalonema* M.J. Berkeley ex Wolle, 1887 (Cyanophyceae: Nostocales: Scytonemataceae) from eastern Himalaya, India
– Jai Prakash Keshri, Narendra Nath Koley & Jay Mal, Pp. 22767–22770

Publisher & Host

