



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.

Journal of Threatened Taxa

Building evidence for conservation globally

www.threatenedtaxa.org

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

NOTE

***GYNOCHTHODES COCHINCHINENSIS* (DC.) RAZAFIM. & B. BREMER (MORINDEAE: RUBIOIDEAE: RUBIACEAE): AN ADDITION TO THE WOODY CLIMBERS OF INDIA**

Pradeep Kumar Kamila, Prabhat Kumar Das, Madhusmita Mallia,
Chinnamadasamy Kalidass, Jagayandatt Pati & Pratap Chandra Panda

26 February 2020 | Vol. 12 | No. 3 | Pages: 15395–15399
DOI: 10.11609/jott.4323.12.3.15395-15399



For Focus, Scope, Aims, Policies, and Guidelines visit <https://threatenedtaxa.org/index.php/JoTT/about/editorialPolicies#custom-0>
For Article Submission Guidelines, visit <https://threatenedtaxa.org/index.php/JoTT/about/submissions#onlineSubmissions>
For Policies against Scientific Misconduct, visit <https://threatenedtaxa.org/index.php/JoTT/about/editorialPolicies#custom-2>
For reprints, contact <ravi@threatenedtaxa.org>

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.

Member



Publisher & Host





Gynochthodes cochinchinensis (DC.) Razafim. & B. Bremer (Morindeae: Rubioideae: Rubiaceae): an addition to the woody climbers of India

Pradeep Kumar Kamila¹ , Prabhat Kumar Das² , Madhusmita Mallia³ ,
Chinnamadasamy Kalidass⁴ , Jagayandatt Pati⁵ & Pratap Chandra Panda⁶

^{1,2,3,4,6} Taxonomy & Conservation Division, Regional Plant Resource Centre, Ekamrakanan, Nayapalli, Bhubaneswar, Odisha 751015, India.

⁵ Deputy Director, Similipal Tiger Reserve, Bhanjpur, Baripada, Odisha 757002, India.

¹pradeepkamila.bapi@gmail.com, ²prabhatdasnou@gmail.com, ³madhusmita.mallia91@gmail.com,
⁴kalidassrprc@gmail.com, ⁵drjdifs@gmail.com, ⁶pcpanda2001@yahoo.co.in (corresponding author)

The family Rubiaceae, with 611 genera and approximately 13,143 species, is distributed in the tropical, subtropical, temperate, and arctic regions (Davis et al. 2009). The subfamily classification based on morphological characters divided Rubiaceae into four subfamilies, viz., Cinchonoideae, Ixoroideae, Antirheoideae, and Rubioideae (Robbrecht 1988), though recent molecular phylogenetic studies recognize three subfamilies such as: Cinchonoideae, Ixoroideae, and Rubioideae (Bremer 2009). One of the tribes of the subfamily Rubioideae is Morindeae (Bremer & Manen 2000; Bremer & Eriksson 2009), which is comprised of six genera namely, *Appunia* Hook.f., *Coelospermum* Blume, *Gynochthodes* Blume, *Morinda* L., *Pogonolobus* Muell., and *Siphonandrium* Schum. (Razafimandimbison et al. 2008).

Blume (1827) described the genus *Gynochthodes* by putting together the species having similar morphological features such as presence of 8–9 flowers per umbel on the inflorescence, flowers being villous inside the tube; 4–5 stamens, one style, bifid verrucous

stigma, globose stipule, umbilicate drupe, 4-locular ovary and erect albuminous embryo. *Gynochthodes* can be segregated from other genera of the tribe Morindeae by having inflorescences that are never paniculate, small flowers (corolla tubes 0.7–5.5 mm long and corolla lobes 1.5–11.0 mm long) and partly exerted anthers (Razafimandimbison et al. 2009; Suratman 2018). Razafimandimbison et al. (2009) also discussed the circumscription of *Gynochthodes* in a wider sense to accommodate all lianescent species of *Morinda* with small flowers in order to make *Morinda* monophyletic based on molecular phylogeny. The majority of lianescent species of *Morinda* having multiple fruits have been transferred to *Gynochthodes* and necessary nomenclatural changes made (Razafimandimbison & Bremer 2011). According to Johansson (1987), the genus can be distinguished from *Morinda* by its lianescent habit, stipules and bracts with marginal hairs, terminal umbellate inflorescences, flowers with recurved calyx tubes, corollas with long hairs within the tubes and on the adaxial side of the lobes. As per the present

Editor: Pankaj Kumar, Kadoorie Farm and Botanic Garden (KFBG) Corporation, Hong Kong S.A.R., China.

Date of publication: 26 February 2020 (online & print)

Citation: Kamila, P.K., P.K. Das, M. Mallia, C. Kalidass, J. Pati & P.C. Panda (2020). *Gynochthodes cochinchinensis* (DC.) Razafim. & B. Bremer (Morindeae: Rubioideae: Rubiaceae): an addition to the woody climbers of India. *Journal of Threatened Taxa* 12(3): 15395–15399. <https://doi.org/10.11609/jott.5423.12.3.15395-15399>

Copyright: © Kamila et al. 2020. 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: Department of Biotechnology, Government of India, New Delhi (Project No. BT/Env/BC/01/2010).

Competing interests: The authors declare no competing interests.

Acknowledgements: The authors are thankful to the Field Director, Similipal Biosphere Reserve, Baripada, Odisha, India for granting permission to carry out fieldwork and to the Chief Executive, Regional Plant Resource Centre, Bhubaneswar for providing necessary facilities. Financial assistance from Department of Biotechnology, Government of India is gratefully acknowledged.



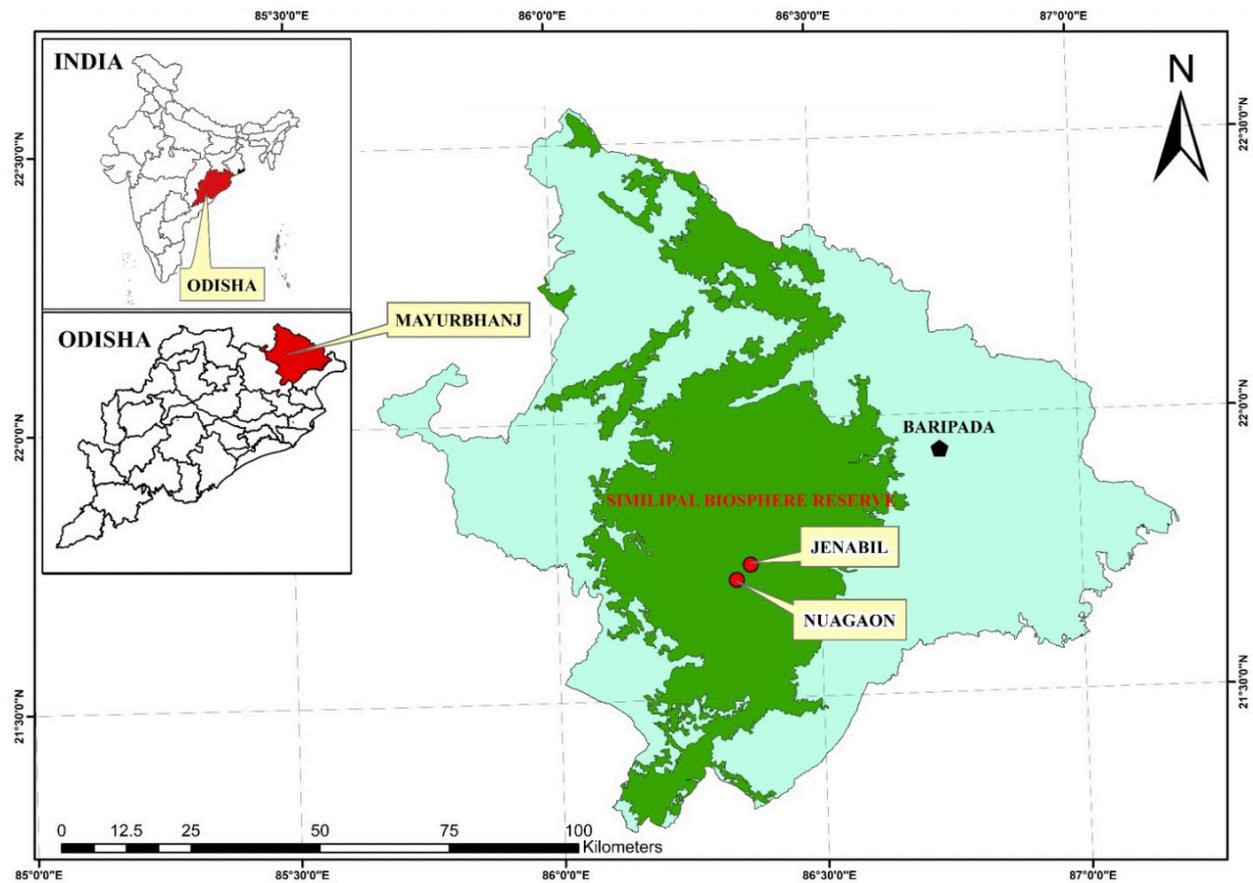


Figure 1. The distribution of *Gynochthodes cochinchinensis* in Similipal Biosphere Reserve, Odisha, India.

circumscription, the genus *Gynochthodes* is comprised of 93 species distributed mainly in tropical and subtropical Madagascar, Asia, and Australasia (Mabberley 2017).

During the population inventory of threatened plants of Odisha, we collected some interesting specimens of Rubiaceae from Nuagaon and Jenabil forest areas of Similipal Biosphere Reserve, Mayurbhanj District, Odisha, India at an altitude of 800–900 m. On critical examination of their morphological characters and consultation of relevant literature (Loureiro 1790; de Candolle 1830), we identified the species as *Gynochthodes cochinchinensis* (DC.) Razafim. & B. Bremer. Perusal of relevant literature revealed that this species has not yet been reported from within the geographical boundary of India and thus, turned out to be a new distribution record for India. A detailed botanical description along with notes on nomenclature, ecology, phenology, distribution, and color photographs of different plant parts are provided to facilitate easy identification of the species in the field. The herbarium specimens have been deposited in the Herbarium of Regional Plant Resource Centre (RPRC), Bhubaneswar, Odisha, India.

Gynochthodes cochinchinensis (DC.)

Razafim. & B. Bremer, (Image 1)

Adansonia 33(2): 288 (2011). *Morinda cochinchinensis* DC., Prodr. 4: 449. 1830. *Morinda trichophylla* Merr., Philipp. J. Sci. 23: 267. 1923.

Lianas; branches woody and at base with persistent leafless stipules, when young densely ferruginous or yellow villosulous, terete to weakly quadrangular. Leaves opposite, mature leaf 12.0 × 6.5 cm, apex acuminate, base obtuse, veins 14 pairs, petiolate, petiole up to 1.0cm in length, young leaf 8 × 3 cm, apex acuminate to terete, base obtuse, 15 pairs of secondary veins, petiole 0.5mm, elliptic to ovate and sometimes oblanceolate, margin entire, adaxially sparsely strigose to strigillose, abaxially densely ferruginous or yellow hirtellous to villosulous with pubescence denser along veins. Stipules fused into the tube or spathe, 1cm in length, densely hispidulous to hispid on each side with two bristles, usually quickly deciduous. Inflorescence terminal, peduncles 8–15, umbellate, 4–5 cm long, densely ferruginous or yellow hirtellous, as a group subtended by two to several bracts of 1–3 mm long, two to several lobed. Each peduncle



Image 1. *Gynochthodes cochinchinensis* (Rubiaceae).

A—habit | B—stem with corky bark | C—leaf showing distinct secondary veins | D—tubular stipule | E—umbelliform inflorescence | F—close view of inflorescence | G—(i) calyx with hypanthium, (ii) flower, (iii) corolla tube with villous in nature, (iv) style with bifid stigma | H—young fruits | I—matured fruits | J—fruiting plants in wild | K—T.S. of a mature fruit | L—seeds. © P. K. Das & P. K. Kamila.

Table 1. Comparison of morphological characters of *Gynochthodes umbellata* and *Gynochthodes cochinchinensis*.

Morphological characters	<i>Gynochthodes umbellata</i>	<i>Gynochthodes cochinchinensis</i>
Branches	Glabrous, shiny and smooth, when young weakly angled often channelled, bluish-black to reddish-brown.	Scarbulous, rough and hard, when young densely ferruginous or yellow villosulous, quadrangular, dark brown to greyish-brown.
Leaves	Petiole 0.4–0.6 cm in length, glabrous, adaxially shiny and greenish, mid vein pale brown or brownish-black, abaxially matte, greenish.	Petiole 0.9–1.0 cm in length, pubescence, adaxially sparsely strigose to strigillose, mid vein light green to greenish-white, abaxially densely ferruginous or yellow hirtellous to villosulous.
Secondary veins	4–5 pairs.	14–15 pairs.
Stipules	Fused into a tube, 2–6 mm, scarios to membranous, puberulous, broadly rounded to truncate	Fused into the tube or spathe, 1cm, densely hispidulous to hispid, broadly triangular to truncate.
Peduncles	Peduncles 3–11, fasciculate, umbellate, or shortly racemiform, 4–11 mm, puberulous to glabrescent.	Peduncles 8–15, umbellate, 4–5 cm, densely ferruginous or yellow hirtellous.
Limb	Limb 0.2–0.8 mm in length, truncate to denticulate.	Limb 3–4 mm in length, unequal or reflexed.
Flower	Calyx glabrous, truncate to denticulate. Corolla campanulate, outside glabrous to puberulent; tube 1.2 mm, inside densely villous from middle to throat; lobes 4 or 5, narrowly oblong to ligulate, 2.2–3.0 mm, apically thickened and hooked.	Calyx with hypanthium portion densely strigose to strigillose. Corolla rotate to salver-shaped, lower surface pilosulous, upper part of petal hispidulous, inside densely villous throughout the tube onto lobes; tube 1.5 mm; lobes 4 to 5, narrowly oblong to lanceolate, 4.0–4.5 mm, apically thickened.

with one umbelliform inflorescence, sub-globose, 5–6 mm in diameter, 5–15 flowered; bracteoles linear, 0.2–1.0 mm long. Limb sometimes unequal or reflexed, 3–4 mm in length, 2.2mm in diam., pilosulous. Flower with hypanthia partially fused, gamopetalous. Calyx with hypanthium, densely strigose to strigillose, sepals 4–5, narrowly triangular, 1–2 mm long, sometimes unequal on an individual flower. Corolla white, gamopetalous, rotate, 4–5 lobed, lower surface pilosulous, upper part of petal hispidulous, inside densely villous around the tube onto lobes; tube 1.5–2.0 mm; lobes 4 to 5, narrowly oblong to lanceolate, 4.0–4.5 mm, apically thickened and rostrate. Anthers four, oblong, 0.5mm in length, yellow in color, single margined in crimson red veined, basifixed, filament 1.0–1.5 mm in length, brown, stigma bilobed, attached directly to the ovary, linear, exerted, greenish in colour, papillose, 0.1mm in length, style 0.4mm, slightly pubescent. Ovary 2-celled with four locules, formed due to secondary false septa. Fruit drupaceous, subglobose or oblong or irregular, orange yellow to orange–red, 1–2 cm in diameter, peduncle elongating up to 4cm. Seeds 2 × 3 mm, slightly pubescent in nature, kidney shaped, orange to red in colour.

Flowering: May–June.

Fruiting: September–October.

Habitat: *Gynochthodes cochinchinensis* was found growing along forest roads close to perennial streams in the moist deciduous and semi-evergreen forest patches of Similipal Biosphere Reserve, Odisha, India at an altitude of about 900m (Figure 1).

Associated species: The species was observed to form association with *Lasiococca comberi* Haines, *Leea indica* (Burm.f.) Merr., *Uvaria hamiltonii* Hook.f. & Thoms., *Celastrus paniculatus* Wild., *Aphanamixis*

polystachya (Wall.) R. Parker, *Styrax serrulatus* Roxb., *Polyalthia simiarum* (Buch.-Ham. ex Hook.f. & Thoms.) Benth. ex Hook.f. & Thoms., *Cipadessa baccifera* (Roth) Miq, *Combretum album* Pers. and *Xantolis tomentosa* (Roxb.) Raf.

Distribution: The species is native to southeastern China to Indo-china and reported to occur in Vietnam, and Thailand. In India, the species was not so far known to occur and the present report on wild occurrence of the species in Odisha extends the range of distribution of the species to India.

Specimens examined: 11038 (RPRC), 06.ix.2016, India, Odisha, Mayurbhanj District, Similipal Biosphere Reserve, Nuagaon, Jenabil, 21.71°N & 86.34°E, 887m; 21.73°N & 86.36°E, 900m, coll. P.K. Kamila & P.K. Das. (Image 2).

Common name: Lata Achhu (Odia), Bagackich (Vietnamese).

Use: Fruits are occasionally consumed by the tribals of Similipal Biosphere Reserve for its medicinal properties and assumed to reduce body weight. The birds and other frugivorous animals also feed on ripe fruits.

Taxonomic affinity: *Gynochthodes cochinchinensis* has morphological similarities with its closely related species *Gynochthodes umbellata* but both can be distinguished from each other by some distinct vegetative and floral characters. A comparative morphological differences between the two species is presented in Table 1.



Image 2. Herbarium specimen of *Gynochthodes cochinchinensis* housed in the herbarium of RPRC, Bhubaneswar, Odisha.

References

- Blume, C.L. (1827). *Gynochthodes*. In: Bijdragen tot de flora van Nederlandsch Indie. 16: 993.
- Bremer, B. (2009). A review of molecular phylogenetic studies of Rubiaceae. *Annals of the Missouri Botanical Garden* 96(1): 4–26. <https://doi.org/10.3417/2006197>
- Bremer, B. & J.F. Manen (2000). Phylogeny and classification of the subfamily Rubioideae (Rubiaceae). *Plant Systematics and Evolution* 225(1–4): 43–72. <https://doi.org/10.1007/bf00985458>
- Bremer, B. & T. Eriksson (2009). Time tree of Rubiaceae; Phylogeny and dating the family, subfamilies and tribes. *International Journal of Plant Sciences* 170(6): 766–793. <https://doi.org/10.1086/599077>
- Davis, A.P., R. Govaerts, D.M. Bridson, M. RuhSAM, J. Moat & N.A. Brummitt (2009). A global assessment of distribution, diversity, endemism, and taxonomic effort in the Rubiaceae. *Annals of the Missouri Botanical Garden* 96: 68–78.
- De Candolle, A.P. (1830). *Prodromus systematis naturalis regni vegetabilis*. Pars IV: 449. Sumptibus Sociorum Treuttel & Wurtz, Paris. <https://doi.org/10.5962/bhl.title.286>
- Johansson, J.T. (1987). Pollen morphology of the tribe Morindeae (Rubiaceae). *Grana* 26: 134–150.
- Loureiro, J.de (1790). *Flora cochinchinensis: sistens plantas in regno Cochinchina nascentes*. Volume I: 140. Ulyssipone, Lisbon. <https://doi.org/10.5962/bhl.title.560>
- Mabberley, D.J. (2017). *Mabberley's Plant-Book: A portable dictionary of plants, their classification and uses*. 4th edition. Cambridge Univ. Press. Cambridge.
- Razafimandimbison, S.G., C. Rydin & B. Bremer (2008). Evolution and trends in the psychotrieae alliance (Rubiaceae)—A rarely reported evolutionary change of many-seeded carpels from one-seeded carpels. *Molecular Phylogenetics and Evolution* 48: 207–223. <https://doi.org/10.1016/j.ympev.2008.03.034>
- Razafimandimbison, S.G., T.D. McDowell, D.A. Halford & B. Bremer (2009). Molecular phylogenetics and generic assessment in the tribe Morindeae (Rubiaceae-Rubioideae): How to circumscribe *Morinda* L. to be monophyletic? *Molecular Phylogenetics and Evolution* 52(3): 879–886. <https://doi.org/10.1016/j.ympev.2009.04.007>
- Razafimandimbison, S.G. & B. Bremer (2011). Nomenclatural changes and taxonomic notes in the tribe Morindeae (Rubiaceae). *Adansonia* (sér. 3) 33(2): 283–309. <https://doi.org/10.5252/a2011n2a13>
- Robbrecht, E. (1988). Tropical Woody Rubiaceae. *Opera Botanica Belgica* 1: 1–271.
- Suratman (2018). The genus *Gynochthodes* (Rubiaceae) in Sumatra. *Blumea* 62: 230–239. <https://doi.org/10.3767/blumea.2018.62.03.05>



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 2020 | Vol. 12 | No. 3 | Pages: 15279–15406
Date of Publication: 26 February 2020 (Online & Print)
DOI: 10.11609/jott.2020.12.3.15279-15406

www.threatenedtaxa.org

Review

Ramifications of reproductive diseases on the recovery of the Sumatran Rhinoceros *Dicerorhinus sumatrensis* (Mammalia: Perissodactyla: Rhinocerotidae)

– Nan E. Schaffer, Muhammad Agil & Zainal Z. Zainuddin, Pp. 15279–15288

Communications

Diet ecology of tigers and leopards in Chhattisgarh, central India

– Krishnendu Basak, Moiz Ahmed, M. Suraj, B.V. Reddy, O.P. Yadav & Krishnendu Mondal, Pp. 15289–15300

Building walls around open wells prevent Asiatic Lion *Panthera leo persica* (Mammalia: Carnivora: Felidae) mortality in the Gir Lion Landscape, Gujarat, India

– Tithi Kagathara & Erach Bharucha, Pp. 15301–15310

Taxonomic and ecological notes on some poorly known bats (Mammalia: Chiroptera) from Meghalaya, India

– Uttam Saikia, AdoraThabab & Manuel Ruedi, Pp. 15311–15325

Angiosperm diversity in Bhadrak region of Odisha, India

– Taranisen Panda, Bikram Kumar Pradhan, Rabindra Kumar Mishra, Srusti Dhar Rout & Raj Ballav Mohanty, Pp. 15326–15354

Short Communications

Sighting of *Petaurista petaurista* (Pallas, 1766) (Mammalia: Rodentia: Sciuridae) on limestone hills in Merapoh, Malaysia

– Priscillia Miard, Mohd Nur Arifuddin, Izereen Mukri, Siti Syuhada Sapno, Hafiz Yazid, Nadine Ruppert & Jayaraj Vijaya Kumaran, Pp. 15355–15358

Molecular detection of *Murshidia linstowi* in a free-ranging dead elephant calf

– Sourabh Ranjan Hota, Sonali Sahoo, Manojita Dash, Avisek Pahari, Bijayendranath Mohanty & Niranjana Sahoo, Pp. 15359–15363

Parasite commonality at Swamp Deer (Mammalia: Artiodactyla: Cervidae: *Rucervus duvaucelii duvaucelii*) and livestock interface

– Animesh Talukdar, Bivash Pandav & Parag Nigam, Pp. 15364–15369

Prevalence and seasonal variation of gastrointestinal parasites among captive Northern Pig-tailed Macaque *Macaca leonina* (Mammalia: Primates: Cercopithecidae)

– Phoebe Lalremruati & G.S. Solanki, Pp. 15370–15374

New record of *Tulostoma squamosum* (Agaricales: Basidiomycota) from India based on morphological features and phylogenetic analysis

– Arun Kumar Dutta, Soumitra Paloi & Krishnendu Acharya, Pp. 15375–15381

Notes

An account of a first record of the Common Goldeneye

***Bucephala clangula* Linnaeus, 1758 (Aves: Anseriformes: Anatidae) in Bhutan**

– Sangay Nidup, Gyeltshen & Tshering Tobgay, Pp. 15382–15384

First record of the hawkmoth *Theretra lyctetus* (Cramer, 1775) (Sphingidae: Macroglossinae) from Bhutan

– Sangay Nidup & Jatishwor Singh Irungbam, Pp. 15385–15386

Occurrence and association of the Scarce Lilacfork

***Lethe dura gammiei* (Moore, [1892]) (Lepidoptera: Nymphalidae: Satyrinae) with Woolly-leaved Oak *Quercus lanata* Smith, 1819 (Fabaceae) forest in the Kumaon region of the Indian Himalaya**

– Arun P. Singh & Tribhuwan Singh, Pp. 15387–15390

Additions to the Odonata (Insecta) fauna of Asansol-Durgapur Industrial Area, West Bengal, India

– Amar Kumar Nayak, Pp. 15391–15394

***Gynochthodes cochinchinensis* (DC.) Razafim. & B. Bremer (Morindeae: Rubioideae: Rubiaceae): an addition to the woody climbers of India**

– Pradeep Kumar Kamila, Prabhat Kumar Das, Madhusmita Mallia, Chinnamadasamy Kalidass, Jagayandatt Pati & Pratap Chandra Panda, Pp. 15395–15399

Record of *Oldenlandia hygrophila Bremek.* (Spermacoceae: Rubiaceae), a lesser known herb from Palghat Gap of Western Ghats, Kerala, India

– Vadakkevedu Jagadesh Aswani, Vasudevan Ambat Rekha, Pathiyil Arabhi, Manjakulam Khadhersha Jabeena, Kunnamkumarath Jisha & Maya Chandrashekar Nair, Pp. 15400–15404

Book Review

The State of Wildlife and Protected Areas in Maharashtra: News and Information from the Protected Area Update 1996-2015

– Reviewed by L.A.K. Singh, Pp. 15405–15406

Member



Publisher & Host

