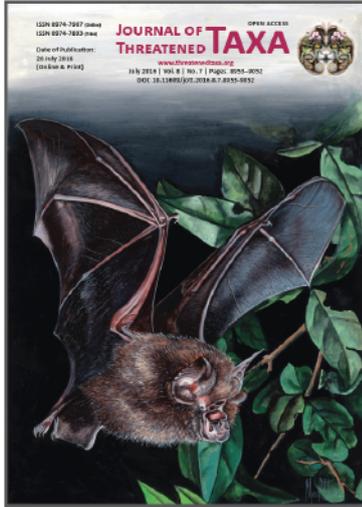


OPEN ACCESS



All articles published in the Journal of Threatened Taxa are registered under Creative Commons Attribution 4.0 International License unless otherwise mentioned. JoTT allows unrestricted use of articles in any medium, reproduction and distribution by providing adequate credit to the authors and the source of publication.



## Journal of Threatened Taxa

The international journal of conservation and taxonomy

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

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

### NOTE

**ON THE DISTRIBUTION OF *AESHNA PETALURA* MARTIN, 1908 (ODONATA: ANISOPTERA: AESHNIDAE) IN THE INDIAN SUBCONTINENT**

R. Babu & G. Srinivasan

26 July 2016 | Vol. 8 | No. 7 | Pp. 9034–9037  
10.11609/jott.2932.8.7.9034-9037



For Focus, Scope, Aims, Policies and Guidelines visit [http://threatenedtaxa.org/About\\_JoTT.asp](http://threatenedtaxa.org/About_JoTT.asp)

For Article Submission Guidelines visit [http://threatenedtaxa.org/Submission\\_Guidelines.asp](http://threatenedtaxa.org/Submission_Guidelines.asp)

For Policies against Scientific Misconduct visit [http://threatenedtaxa.org/JoTT\\_Policy\\_against\\_Scientific\\_Misconduct.asp](http://threatenedtaxa.org/JoTT_Policy_against_Scientific_Misconduct.asp)

For reprints contact <[info@threatenedtaxa.org](mailto:info@threatenedtaxa.org)>

Partner



Publisher/Host





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

#### OPEN ACCESS



A total of 31 species of the genus *Aeshna* is known from the world (Schorr & Paulson 2015), but only three species of the genus have been recorded from India, namely, *Aeshna juncea mongolica* Barteneff, 1929, *Aeshna mixta* Latreille, 1805, and *Aeshna petalura* Martin, 1908 (Subramanian 2014). A montane species *Aeshna petalura* was originally described by Martin (1908) based on two females taken from India, from the Darjeeling and Khasi hills. Further, Fraser (1933, 1936) stated that “there is a female in the British Museum from Phulloth, Sandakhpurna, Sikkim alt. 11,500 ft., taken by Mr. C.M. Inglis on October, Martin gives Inde, Darjeeling and the Khasia Hills as localities, but the altitude at which Mr. Inglis took his specimens rather suggests that Sikkim and Thibet are more probably its habitat”.

Later on Schmidt (1968) studied specimens taken from Aus der Provinz Kameng (presently in Arunachal Pradesh, India), seven females from Phutang (2,300m), on October, 1961 and three males and two females from Moshing (2,900m), collected on October 1961. Subsequently, Asahina (1983) examined materials from Nepal, Bhutan, India (Darjeeling and Schmidt's collections from Kameng) collected between the year 1963 to 1981 (August to November), but most of the specimens were collected during the month of October. In addition, he stated that the majority are females (28 examples) whereas only five were males and all the materials were collected between 2,200–3,000 m. He also studied the larval specimens from Nepal and

## ON THE DISTRIBUTION OF *AESHNA PETALURA* MARTIN, 1908 (ODONATA: ANISOPTERA: AESHNIDAE) IN THE INDIAN SUBCONTINENT

R. Babu<sup>1</sup> & G. Srinivasan<sup>2</sup>

<sup>1</sup>Southern Regional Centre, <sup>2</sup>Marine Biology Regional Centre  
Zoological Survey of India, 130, Santhome High Road, Chennai,  
Tamil Nadu 600028, India

<sup>1</sup>baburzsi@gmail.com (corresponding author),  
<sup>2</sup>gurusrinivasanzsi@gmail.com

India. Interestingly, he found out a dimorphism in the cercal structure, i.e., the great majority of the female specimens examined have very broadly foliated cerci, 6–7 mm in length, whereas a few have very short, ca. 2mm ones, which are somewhat twisted and apparently rather reduced in structure.

Asahina (1938) described *Aeshna taiyal* as a new species from the Northern High Peaks, Taiwan. All the specimens were collected between 1,970–3,200 m. Later Asahina (1983) revised it and stated as a subspecies of *Aeshna petalura* (i.e., *Aeshna petalura taiyal* Asahina). It was recorded from various places in Taiwan (Matsuki & Lien 1991). Later Schorr et al. (2004) stated this taxon as a synonym of *Aeshna petalura*. This is accepted by some researchers (e.g., Wilson 2005), but not by others (e.g., Dow 2009). Hence further studies should be focused to compare the specimens of both taxa; it may reveal the validity of subspecies *A. petalura taiyal*.

After Asahina (1983), any *A. petalura* specimens has not been recorded or collected from India. After a gap of more than 25 years a single ovipositing female

**DOI:** <http://dx.doi.org/10.11609/jott.2932.8.7.9034-9037> | **ZooBank:** urn:lsid:zoobank.org:pub:9E9B20B5-D9AE-42E5-9A78-070236B227FA

**Editor:** Anonymity requested.

**Date of publication:** 26 July 2016 (online & print)

**Manuscript details:** Ms # 2932 | Received 18 March 2015 | Final received 15 June 2016 | Finally accepted 27 June 2016

**Citation:** Babu, R. & G. Srinivasan (2016). On the distribution of *Aeshna petalura* Martin, 1908 (Odonata: Anisoptera: Aeshnidae) in the Indian subcontinent. *Journal of Threatened Taxa* 8(7): 9034–9037; <http://dx.doi.org/10.11609/jott.2932.8.7.9034-9037>

**Copyright:** © Babu & Srinivasan 2016. Creative Commons Attribution 4.0 International License. JoTT allows unrestricted use of this article in any medium, reproduction and distribution by providing adequate credit to the authors and the source of publication.

**Funding:** Zoological Survey of India.

**Conflict of Interest:** The authors declare no competing interests.

**Acknowledgements:** We are grateful to the Director, Zoological Survey of India, Kolkata, for providing various facilities and inspiration to carry out this study and Officer-in-Charge, Southern Regional Centre, Zoological Survey of India, Chennai for his kind help and encouragement. We also express our deep sense of gratitude to Dr. Akihiko Sasamoto, Japan and Dr. K.A. Subramanian, Zoological Survey of India, Chennai for critically going through the earlier version of the manuscript and providing literature. We thank Dr. P. Grishkumar, Zoological Survey of India, Kozhikode for making the line drawings.



of this species was collected by the second author from the Tawang Region of Arunachal Pradesh but it slightly varies from Fraser's (1936) description. Due to the unavailability of more specimens, it is tentatively confirmed that the specimen belongs to *Aeshna petalura* Martin until further collections. The studied specimen is deposited at the Zoological Survey of India, Kolkata.

***Aeshna petalura* Martin, 1908 (Image 1, Figs. 1a & 1b)**

*Aeshna petalura* Martin (1908), Cat. coll. Selys (Aeschnines), fasc. XVIII pp. 78–79, 84; Laidlaw (1922), Rec. Indian Mus., 22: 87, 89; Fraser (1922), J. Bombay nat. Hist. Soc., 28: 111; Laidlaw (1923), Proc. US nat. Mus., 62(21) : 18–19; Needham (1932), Rec. Indian Mus., 34: 215; Fraser (1933), J. Bombay nat. Hist. Soc., 36: 463–464; Fraser (1936), Fauna of British India - Odonata, 3: 128–130; Schmidt (1968), Tombo, 11(1–2): 5–6; Asahina (1983), Tombo, 26(1–4): 2–11; Vick (1989), Opusc. Zool. Flumin., 43: 9; Sasamoto & Ushijima (2000), Aeschna, 37: 5; Wilson (2005), Int. J. Odonatology, 8(1): 114; Mitra (2008), Frasiera, 7(1-2): 105–107.

Material examined: ZSI Reg. No. 4870/H13, 1 female (ovipositing), 27.x.2007, Arunachal Pradesh: Tawang: 5km before Ghusela Village on the way to Bumla, 27.691274°N & 91.848840°E, elevation 4,255m, coll. G. Srinivasan.

Description: Abdomen 58mm including anal appendages; Anal appendages: 9mm; Hindwing 48mm. Head: Labium bright ochreous; labrum dark olivaceous with darker anterior border; face and frons dull olivaceous; upper surface of the frons bright ochreous changing to brownish-black at the base. Eyes bluish green when alive. Prothorax dark brown. Synthorax pale brown or reddish brown marked with yellowish-green stripes: curved antehumeral stripes broadening

below, converging above; a broad stripe on the middle of mesepimeron and the whole of metepimeron. Legs black. Wings hyaline, very palely enfumed throughout with yellowish-brown except a space anterior to the node to posterior corner of the wing passing through the distal side of discoidal cell. Pterostigma dark blackish-brown covering 2½ cells, and braced. Discoidal cell in hindwing is much shorter and broader than the forewing; the base of discoidal cell in the hindwing is more than 2/3 the length of costal side but half the length of costal side of forewing. Discoidal cell five celled in forewing and four celled in hindwing, basal cells divided into two cells; hypertrigone traversed three times in forewing and twice in hindwing; 12 cells in anal loop; 6–7 cubital nervure in forewings and five in hindwings.

$$\text{Nodal index: } \frac{12-19/19-12}{13-12/13-13}$$

Abdomen cylindrical, blackish-brown to black marked with yellowish-green; segment 1 with an oval shaped spot on the dorsum at basal end and a greenish-blue mark with black spots at apical end; segment 2 with mid-dorsal stripe extending from the base nearly to the apex tapering towards the latter, a pair of linear spots on apical side of jugal suture and a pair of greenish-blue apical lunulae; segments 3–7 with a mid-dorsal basal triangular spot and a pair of apical lunulae; segment 8 with a pair of apical lunulae only; segment 3–7 with a latero-basal spot on each side; segment 9 with a lateral oval spot on each side and 10 unmarked. Anal appendages dark brown shaped like the broad paddle of canoe, flat and laminate; ovipositor very robust.

Distribution: India: Arunachal Pradesh—Kameng: Phutang and Moshing (Schmidt 1968; Asahina 1983); West Bengal—Darjeeling: Phalut, Sandakphu (Fraser



Image 1. *Aeshna petalura* Martin, 1908 - Female

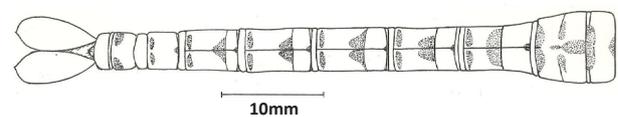


Figure 1a. Dorsal view of abdominal markings and anal appendages of female *Aeshna petalura*

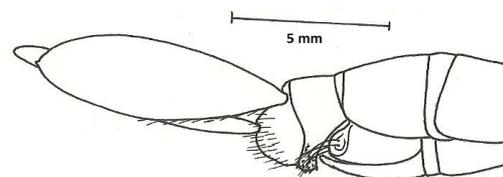


Figure 1b. Right lateral view of anal appendages and ovipositor

© G. Srinivasan



Image 2. Collection locality and habitat of *Aeshna petalura*

© G. Srinivasan



Image 3. *Aeshna petalura* Martin, 1908 - Egg laying on the short vegetation in the water body

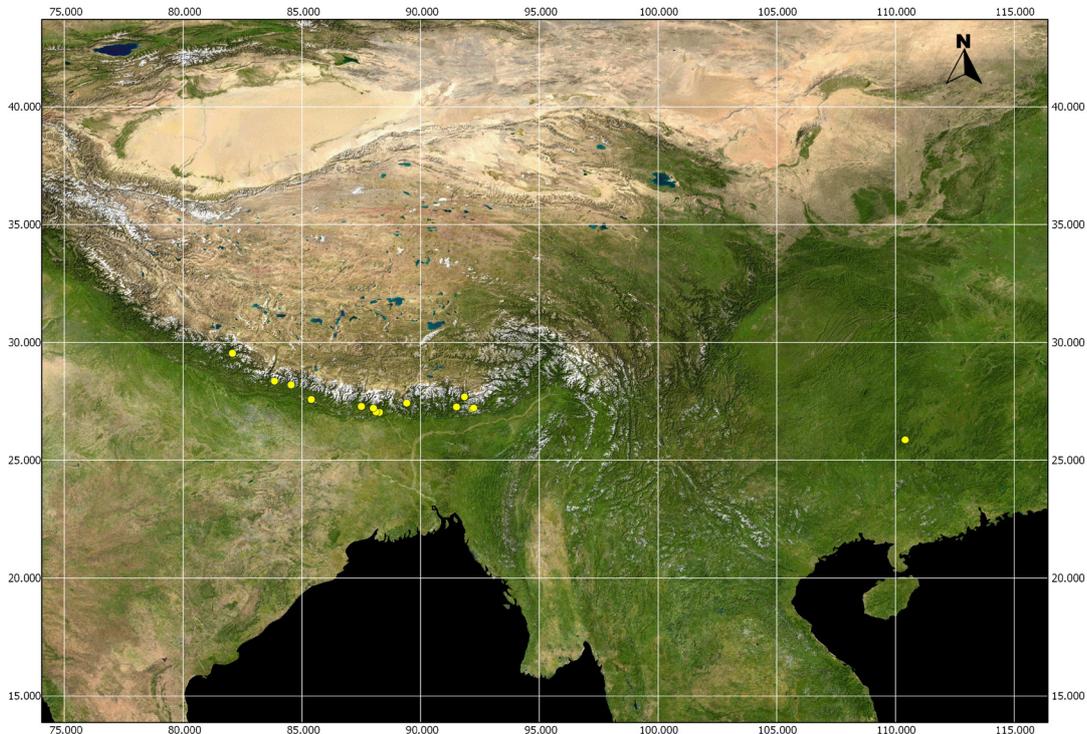


Image 4. Distributional range (yellow dots) of *Aeshna petalura* Martin in South and Southeast Asia

1933), Darjeeling (Martin 1908; Asahina 1983). Bhutan: Paro (Asahina 1983), Yongphula (Mitra 2008). China: Guangxi Zhuang Region (Wilson 2005). Nepal: western, mid-western, central, eastern (Asahina 1983), Kathmandu Valley (Sasamoto & Ushijima 2000). A subspecies of *Aeshna petalura* (*Aeshna petalura taiyai* Asahina) is distributed in Taiwan (Asahina 1938 & 1983).

Habitat and flight period: The habitat of this species appears to be the stagnant water of small ponds, marshes or lakes in mountains (2,100–4,255 m) (Image 2). The male patrols above the water. The female oviposits

singly on the ground close to the water covered with short vegetation (Image 3). The flight season is fairly long from July to November.

**Discussion:** From the earlier records (Martin 1908; Schmidt 1968; Asahina 1983; Sasamoto & Ushijima 2000; Wilson 2005; Mitra 2008) it shows that all the specimens of *A. petalura* were collected between 2,100–3,500 m but, not recorded from above 3,500m. This species is reported for the first time from the higher elevation of the eastern Himalaya above 4,000m and it is also a new record to the Tawang Region of Arunachal Pradesh.

As per Fraser (1933 & 1936), the female specimen deposited in the British Museum was collected from Phulloth, Sandakhpurna, Sikkim, but from this study based on the species distribution map using a GIS revealed that the specimens of *A. petalura* collected by Mr. Inglis were probably from Phalut, Sandakphu (3,493m), which is situated at the edge of the Singalila National Park in Darjeeling District on the West Bengal-Sikkim border.

From the literature it is revealed that, this species has not been collected from Meghalaya till date. Lahiri (1987) only listed this species based on the earlier literature (Martin 1908). The analysis of distribution reveals that all the specimens of this species are collected from 2,100 m and above. There are no specimens collected below 2,100m. As stated by Fraser (1936), the distribution of this species in the Khasi Hills, Meghalaya is doubtful. The type locality of this species is only from Darjeeling District, West Bengal. It is a widely distributed species known from northeastern India (West Bengal and Arunachal Pradesh), Bhutan, Nepal and China, but this species is distributed only between the 25–30 latitude (Image 4). Within Indian limits this species is more probably distributed in Sikkim also. The subspecies *A. petalura taiyal* is distributed in Taiwan.

Mahato & Edds (1993) recorded the larvae of *A. petalura* from downstream of Gandaki River near Phulbari (540m), Gulmi, Nepal. They collected them from a very low elevation but there have been no other records below 2,100m altitude so far. Hence the record of *A. petalura* from Phulbari, Gulmi is doubtful and further studies are required to find out the identity of the species.

Due to variation in thorax color, basal length of discoidal cell, number of cells in anal loop, abdominal markings and length of anal cerci, further inventorization should be focused to collect more male and female specimens from the higher altitudes of eastern Himalaya particularly from Bumla, Tawang Region of Arunachal Pradesh, India which would reveal the exact status of the presently studied specimen.

## References

- Asahina, S. (1938).** Eine neue *Aeschna* aus Formosa (Odonata: Aeschnidae). *Annotationes zoologicae Japonenses* 17(3–4): 541–547.
- Asahina, S. (1983).** What is “*Aeschna petalura* Martin”? *Tombo* 26 (1–4): 2–11.
- Dow, R.A. (2009).** *Aeschna petalura*. In: IUCN Red List of Threatened Species. Version 2013.2. [www.iucnredlist.org](http://www.iucnredlist.org). Downloaded on 26<sup>th</sup> March, 2014.
- Fraser, F.C. (1922).** Indian dragonflies, Part XII. *Journal of the Bombay natural History Society* 28(2): 481–492.
- Fraser, F.C. (1933).** Additions to the dragonfly (Odonata) fauna of India with descriptions of new species. *Journal of the Bombay natural History Society* 36: 460–468.
- Fraser, F.C. (1936).** *The Fauna of British India, including Ceylon and Burma. Odonata - Vol. III.* Taylor and Francis, London, xi+461pp.
- Lahiri, A.R. (1987).** Studies on the Odonata fauna of Meghalaya. *Records of the zoological Survey of India Occasional Paper No. 99*: 1–402.
- Laidlaw, F.F. (1922).** A list of the dragonflies recorded from the Indian Empire, with special reference to the collection of the Indian Museum, Part - IV. *Records of the Indian Museum* 22(2): 75–91.
- Laidlaw, F.F. (1923).** The dragonflies (Odonata) of Burma and Lower Siam, III. Subfamily Aeschninae. *Proceedings of the United States National Museum* 62(21): 1–29.
- Mahato, M. & D. Edds (1993).** Altitudinal distribution of odonate larvae in Nepal's Gandaki River. *Odonatologica* 22(2): 213–221.
- Martin, R. (1908).** Collections zoologiques du Baron Edm. de Selys-Longschamps. Aeshnines. *Catalogue des Collections de Selys Longschamps Facile* 18: 1–84.
- Matsuki, K. & J.C. Lien (1991).** On a collection of the aeshnid dragonflies of Taiwan. *Aeschna* 25: 2–18.
- Mitra, A. (2008).** Dragonfly (Odonata: Insecta) fauna of Bhutan—An annotated and updated check-list with ten new records. *Fraseria* (N.S.) 7: 105–109.
- Needham, J.G. (1932).** A key to the dragonflies of India. *Records of the Indian Museum* 34: 195–228.
- Sasamoto, A. & K. Ushijima (2000).** Records of the Odonata collected at Kathmandu Valley in Nepal. *Aeschna* 37: 1–12.
- Schmidt, E. (1968).** Ueber die Libelle, *Aeshna petalura* Martin, 1908 (Odonata). *Tombo* 11(1–2): 5–6.
- Schorr, M. & D. Paulson (2015).** World Odonata list. <http://www.pugetsound.edu/academics/academic-resources/slater-museum/biodiversity-resources/dragonflies/world-odonata-list/> downloaded on 9<sup>th</sup> March, 2015.
- Schorr, M., M. Lindeboom & D. Paulson (2004).** List of Odonata of the World (Part - 2, Anisoptera). University of Puget Sound, Tacoma, USA. <http://www.pugetsound.edu>, downloaded on 22 February 2013.
- Subramanian, K.A. (2014).** A Checklist of Odonata (Insecta) of India, Ver. 2.0. Zoological Survey of India, Kolkata, India, 31pp.
- Vick, G.S. (1989).** List of dragonflies recorded from Nepal, with summary of their altitudinal distribution (Odonata). *Opuscula Zoologica Fluminensia* 43: 1–21.
- Wilson, K.D.P. (2005).** Odonata of Guangxi Zhuang Autonomous Region, China, part II: Anisoptera. *International Journal of Odonatology* 8(1): 107–168.



OPEN ACCESS



All articles published in the Journal of Threatened Taxa are registered under Creative Commons Attribution 4.0 International License unless otherwise mentioned. JoTT allows unrestricted use of articles in any medium, reproduction and distribution by providing adequate credit to the authors and the source of publication.

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

July 2016 | Vol. 8 | No. 7 | Pages: 8953–9052  
Date of Publication: 26 July 2016 (Online & Print)

DOI: 10.11609/jott.2016.8.7.8953-9052

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

#### Article

##### **Bats (Mammalia: Chiroptera) of the southeastern Truong Son Mountains, Quang Ngai Province, Vietnam**

-- Nguyen Truong Son, Thomas J. O'Shea, Jeffery A. Gore, Csorba Gabor, Vuong Tan Tu, Tatsuo Oshida, Hideki Endo & Masaharu Motokawa, pp. 8953–8969

#### Communication

##### **An assessment of human-elephant conflict and associated ecological and demographic factors in Nilambur, Western Ghats of Kerala, southern India**

-- C.K. Rohini, T. Aravindan, P.A. Vinayan, M. Ashokkumar & K.S. Anoop Das, Pp. 8970–8976

#### Review

##### **An updated checklist of shrimps on the Indian coast**

-- Vijay Kumar Deepak Samuel, Chemmencheri Ramakrishnan Sreeraj, Pandian Krishnan, Chermampandi Parthiban, Veeramuthu Sekar, Kanagaraj Chamundeeswari, Titus Immanuel, Patro Shesdev, Ramachandran Purvaja & Ramachandran Ramesh, Pp. 8977–8988

#### View Point

##### **Can philately sensitise people to wildlife / conservation? An introduction to thematic philately and a visual treatise concerning the variety of philatelic material available on owls (Aves: Strigiformes)**

-- M. Eric Ramanujam, Pp. 8989–9003

#### Short Communications

##### **Noteworthy additions to the flora of Uttarakhand, western Himalaya, India**

-- Ishwari D. Rai, Gajendra Singh & Gopal S. Rawat, Pp. 9004–9008

##### **Seed germination studies on *Gymnacranthera canarica* (King) Warb. - a Vulnerable tree species of a highly threatened *Myristica* swamp ecosystem**

-- K. Keshavachandra & G. Krishnakumar, Pp. 9009–9013

##### **A first note on foliicolous lichens of Assam, India**

-- Pooja Gupta & G.P. Sinha, Pp. 9014–9023

#### Notes

##### **A recent record of the Indo-Pacific Humpback Dolphin *Sousa chinensis* (Osbeck, 1765), (Mammalia: Cetartiodactyla: Delphinidae) from the western shores of Kachchh, Gujarat, India**

-- Devanshi Kukadia, Mayurdan K. Gadhavi, N. Gokulakannan, G.V. Gopi, Gautam Talukdar & K. Sivakumar, Pp. 9024–9026

##### **A confirmation of the occurrence of *Euploea sylvester hopei* Felder & Felder, 1865 (Double-branded Blue Crow) from Kaptai National Park, Rangamati District, Bangladesh**

-- Tahsinur Rahman Shihan, Pp. 9027–9029

##### **A century later: Tricolored Pied Flat *Coladenia indrani uposathra* Fruhstorfer, 1911 (Hesperiidae: Pyrginae) and Crenulate Oakblue *Apporasa atkinsoni* Hewitson, 1869 (Lycaenidae: Theclinae) reported from Manipur, India**

-- Baleshwar Singh Soibam, Harmenn Huidrom & Jatishwar Singh Irungbam, Pp. 9030–9033

##### **On the distribution of *Aeshna petalura* Martin, 1908 (Odonata: Anisoptera: Aeshnidae) in the Indian subcontinent**

-- R. Babu & G. Srinivasan, Pp. 9034–9037

##### **Notes on the occurrence of *Mortonagrion aborense* Laidlaw, 1914 (Odonata: Coenagrionidae) from lower West Bengal, India**

-- Arajush Payra & Ashish D. Tiple, Pp. 9038–9041

##### **First record of *Speculitermes chadaensis* Chatterjee & Thapa, 1964 (Isoptera: Termitidae) from the Western Ghats, India**

-- Poovoli Amina, K. Rajmohana & K.V. Bhavana, Pp. 9042–9044

##### **A first report of egg parasitism in the Tropical Tasar Silkworm *Antheraea mylitta* (Drury) occurring on cashew**

-- K. Vanitha & S. Santhosh, Pp. 9045–9047

##### ***Gentiana saginoides* Burkill (Magnoliopsida: Gentianales: Gentianaceae) rediscovered from Sunderdhunga Valley in Uttarakhand 155 years after description: notes on its population status**

-- Dharmendra S. Rawat, Charan S. Rana, Harish Singh & Manish Karnatak, Pp. 9048–9052