Journal of Threatened Taxa

Building evidence for conservation globally

www.threatenedtaxa.org

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

SHORT COMMUNICATION

REDISCOVERY OF MARTIN'S DUSKHAWKER *ANACIAESCHNA MARTINI* (SELYS, 1897) (ODONATA: AESHNIDAE) FROM WESTERN GHATS, PENINSULAR INDIA, WITH NOTES ON ITS CURRENT DISTRIBUTION AND OVIPOSITION BEHAVIOR

Kalesh Sadasivan, Manoj Sethumadavan, S. Jeevith & Baiju Kochunarayanan

26 January 2021 | Vol. 13 | No. 1 | Pages: 17543–17547
DOI: 10.11609/jott.6301.13.1.17543-17547

Journal of Threatened Taxa | www.threatenedtaxa.org | 26 January 2021 | 13(1): 17543–17547
ISSN 0974-7907 (Online) | ISSN 0974-7893 (Print)
https://doi.org/10.11609/jott.6301.13.1.17543-17547
#6301 | Received 14 June 2020 | Final received 25 November 2020 | Finally accepted 04 January 2021
PLATINUM OPEN ACCESS
SHORT COMMUNICATION

Rediscovery of Martin's Duskhawker *Anaciaeschna martini* (Selys, 1897) (Odonata: Aeshnidae) from Western Ghats, peninsular India, with notes on its current distribution and oviposition behavior

Kalesh Sadasivan [1], Manoj Sethumadavan [2], S. Jeevith [3] & Baiju Kochunarayanan [4]

[1,4] TNHS Odonate Research Group (TORG), Travancore Nature History Society (TNHS), MBRRA, Mathrubhumi Road, Vanchiyoor, Trivandrum, Kerala 695024, India.
[2] Wynter-Blyth Association, No 7D Plains View Garden, Tiger Hill, Coonoor, Nilgiris, Tamil Nadu 643101, India.
[3] Research Biologist, SACON, Anaikatti, Coimbatore, Tamil Nadu 641108, India.
[1] kaleshs2002in@gmail.com (corresponding author), [2] sethu.jr@gmail.com, [3] jeevithbotany@gmail.com, [4] baijupaluvally@gmail.com

Abstract: Rediscovery and recent distribution records of *Anaciaeschna martini* (Selys, 1897) (Odonata: Aeshnidae) from Western Ghats of peninsular India is discussed with notes on oviposition behavior. Although mentioned in odonate checklists of the region, there are no recent records or photographic evidence of the species from Western Ghats since its last report and collection by F.C. Fraser from Annamalai Hills in 1933.

Keywords: Anamalais, Checklist, Check-dam, Coonoor, Kerala, Munnar, Nilgiris, Pampadum Shola National Park, rediscovery.

The family Aeshnidae Leach, 1815 consists of large dragonflies known for their fast majestic flight. They are found in diverse wetland habitats from the coast to high altitude montane lakes. Most are diurnal, though some are crepuscular species and distributed globally. They breed in large ponds, tanks or in small side-pools of fast-flowing streams; preferably with vegetation fringing it (Fraser 1936). Aeshnidae in Kerala State has representatives of three genera, namely, *Anaciaeschna* Selys, *Anax* Leach, and *Gynacantha* Rambur (Subramanian & Babu 2017). *Anaciaeschna* Selys has two species in the Western Ghats, *A. martini* (Selys, 1897) and *A. jaspidea* (Burmeister, 1839) (Fraser 1936). Fraser (1922) described *Anaciaeschna donaldi* from Kodaikanal (Palni hills) and recent studies demonstrate that *A. donaldi* is a junior synonymn of *A. martini* Selys, 1897 (Conniff et al. 2019). Though there are many records of *A. jaspidea* from peninsular India, there are no recent records of *A. martini*. The last record of the species was by F.C. Fraser in 1933 from Annamalai Hills (Conniff et al. 2019). The current distribution range for the species is Sri Lanka, Nepal, and peninsular India to Japan (Subramanian et al. 2018; Conniff et al. 2019). Here, we report recent sightings *A. martini* (Selys, 1897) from Western Ghats of peninsular India, with descriptive notes on its oviposition behavior.

Editor: K.A. Subramanian, Zoological Survey of India, Chennai, India.

Date of publication: 26 January 2021 (online & print)

Citation: Sadasivan, K., M. Sethumadavan, S. Jeevith & B. Kochunarayanan (2021). Rediscovery of Martin's Duskhawker *Anaciaeschna martini* (Selys, 1897) (Odonata: Aeshnidae) from Western Ghats, peninsular India, with notes on its current distribution and oviposition behavior. *Journal of Threatened Taxa* 13(1): 17543–17547. https://doi.org/10.11609/jott.6301.13.1.17543-17547

Funding: None.

Competing interests: The authors declare no competing interests.

Acknowledgements: The authors wishes to thank the members of Travancore Nature History Society, Trivandrum and the trustees and members of Wynter Blyth Association, The Nilgiris for their support in field.

Materials and Methods

This paper is based on three sightings of the females of *A. martini* (Selys, 1897). The first was from Nilgiris in September 2014 and later two sightings were from Munnar region in Anamalais landscape of Western Ghats in June 2019 (Figure 1). Photographs of the specimens were taken with Nikon D90 DSLR 90mm lens and Canon EOS 70D DSLR and 180mm macro lens. The current odonate checklist for Kerala follows Subramanian & Babu (2017). The present distribution of the odonates of the Western Ghats region is based on Subramanian et al. (2018). Weather conditions were documented in the 2019 sightings using Kestrel 5500 (Neilsen-Kelleran, USA). Initials of the names of the authors are used in text below in details of observation.

Results

***Anaciaeschna martini* (Selys, 1897)**

(Images 1 & 2)

Material Examined: (1) *Anaciaeschna martini* (Selys, 1897): Female, dead specimen found by Kalesh Sadasivan (KS); Munnar River (10.085N, 77.061E), Munnar Town, Idukky District, Kerala, India; 15 June 2019; 1387m; photographed by KS; 1,387m. (Image 1). (2) *Anaciaeschna martini* (Selys, 1897): Female ovipositing observed by KS and Baiju Kochunarayan (BK); in a montane lake at Bander in Pampadum Shola National Park, near Top-station in Munnar; observed, not photographed or collected; 16 June 2019; 2,250m. (3) *Anaciaeschna martini* (Selys, 1897): Female ovipositing observed by Manoj Sethumadavan (MS) and Jeevith.S (JS); photographs of ovipositing female was taken at a Ralliah Dam in Coonoor (11.401N, 76.799E), Nilgiris District by MS; 9 September 2014; 2,100m (Image 2).

Field Observations

All observations are of females of the species from the stagnant montane waterbodies of southern Western Ghats above 1,300m.

Anamalais sightings (Image 1, Figure 1): A fresh dead female was observed by KS by a roadside near Munnar River, Munnar Town, Idukky District, Kerala, India at 10.15h on 15 June 2019. This was probably a roadkill and the weather parameters at the site was 27.5^{0}C, 79.30% relative humidity, and non-windy. The nearby lake had a water depth of >2m and was undergoing renovation of its banks (Image 1).

A female of the species was sighted by KS & BK, ovipositing in a montane pond, amidst grassland and wattle plantation on 16 June 2019, at 2,250m at Pampadum Shola National Park, near Top-station in Munnar. It was a bright sunny day, and the activity was observed from 10.00 to 11.30 h and the weather parameters was as follows: wind speed was 0.7m/s,

Figure 1. Study sites in Western Ghats of southern India.

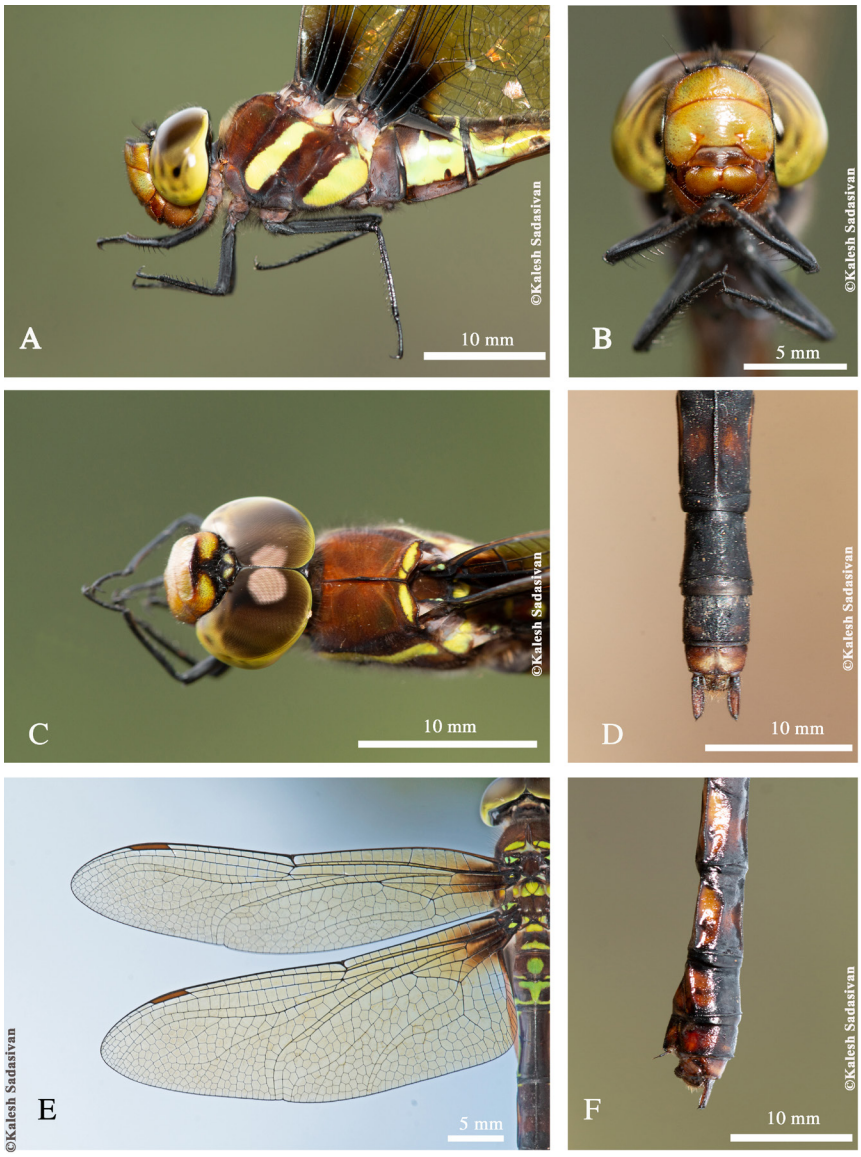

Image 1. *Anaciaeschna martini* (Selys, 1897) Female from Munnar, 15 June 2019: A—lateral view of thorax | B—view of Labium, labrum and frons | C—dorsal view of frons with the 'H' shaped mark and thorax | D—dorsal view of last four abdominal segments and anal appendages | E—venation | F—lateral view of the last four abdominal segments and anal appendages. © Kalesh Sadasivan.

temperature was 19.9^{0}C, and the relative humidity was 54%. The pond was formed by a small check dam on a small montane stream and had a perennial supply of water. The depth of the water was about 1.5m at the deepest part of its sloping floor, which was partially formed by a large rock, though predominantly formed of clay and mud. Water was relatively clear and the edges of pond had good vegetation. Dominant vegetation around the pond was of emergent reeds *Juncus inflexus* L. (Juncaceae) and *Viola pilosa* Blume (Violaceae), the latter forming the ground vegetation at edges. The female would visit the pond once every 30min or so after a patrol, disappear into the emergent fringing vegetation and circle to and forth for a few minutes just above the water level. It would then suddenly fly off downstream, only to reappear after a while. Flight was swift and straight. It later settled on the emergent reed leaf and was ovipositing with its abdomen on the submerged part of the reed. No males were seen on guard. Other species that were seen in the same habitat *were Orthetrum triangulare* (Selys, 1878), *O. pruinosum* (Burmeister, 1839), *Sympetrum fonscolombi* (Selys, 1840), *Pantala flavescens* (Fabricius, 1798), and *Aciagrion approximans krishna* Fraser, 1921.

Nilgiri sightings (Figure 1, Image 2): Ovipositing behaviour was photographed in bright sun, at about 11.00h on 09 September 2014, at a check-dam near Ralliah Dam in Nilgiris at an elevation of 2,100m by MS & JS. The check dam was situated 500m off the outlet of the dam and the source of water was from the

Image 2. *Anaciaeschna martini* (Selys, 1897) female from Coonoor Nilgiris, 9 September 2014: A—female landed on the *Nymphea* leaf on its margin | B—curving the abdomen and probing for oviposition.

overflow of the dam as well as the inherent seepages at the location. At its origin the stagnation is of a metre in width and hardly a foot in depth on swampy terrain the check dam extends in width to its farthest with 1.828m in depth and 4.572m in width. It has a radius of 25m to its banks from its deepest and has a width of 50m. It had a luxuriant growth of Waterlilly *Nymphaea nouchali* Burm.f. (Nymphaeaceae) and *Schoenoplectus mucronatus* (L.) Palla in Engl. (Cyperaceae) as emergent vegetation. On its left side it was edged with native bushes and on the right with grassland enclosed all along with *Schoenoplectus* reeds. The female landed on an exposed *Nymphaea* leaf on its edge (Image 2A) and then searched down for water by curving down its abdomen and probing (Image 2B). It sometimes walked on from one leaf to another. It was also seen landing amidst the *Schoenoplectus* reeds, then move down to water and oviposit underneath on the submerged part of it. No males were seen guarding or in the female's vicinity. In the same pond *Pseudagrion microcephalum* (Rambur, 1872) and *Aciagrion approximans krishna* Fraser, 1921 were breeding.

Habitat and Distribution

Anaciaeschna martini (Selys, 1897) is a high elevation species restricted to the montane lakes and waterbodies in southern montane wet temperate forests and southern montane wet grasslands in the Western Ghats above 1,300m (Image 3). The current known distribution is Nilgiri, Palni, and Anamalais hills in peninsular India. It is otherwise seen from montane regions of Sri Lanka, Himalaya (Nepal and Bhutan) and further eastwards till Japan (Conniff et al. 2019).

Discussion

The previous records of the species in Western Ghats and southern India are from Fraser only from Varatapari, Annaimalai (Anamalais) Hills in 1933; Ooty, Nilgiris in 1921, Yercaud in 1921, and Kodaikanal in Palani Hills in 1908 (Conniff et al. 2019). Thereafter, this species had escaped notice in the Western Ghats until now. As far as it is known, this species is restricted to the shola-grasslands of the region. The recent records confirm that the species is still found in the montane habitats (1,500–2,250 m), on both sides of the Palghat Gap and is breeding there. The species breeds in montane marshes, large stagnant ponds, and small lakes. The males are virtually never encountered in the field, while the females are seen ovipositing on emergent aquatic vegetation. The breeding season observed was from May to September, based on our observation, and may be reasonably presumed to be extended from May to November tallying with the monsoon rains in the region. The species is a strong flyer and hence may be expected to be found across similar mountainous locations with suitable habitats in peninsular India as commented by Conniff et al. (2019). The status of the species is possibly locally 'not uncommon' but may be rare altogether in the Western Ghats. Further studies may be done to elucidate the status and distribution of the species along with those odonates occupying the montane lakes of Western Ghats, as an indicator of the rapidly changing environmental conditions of this threatened mountain ecosystem.

References

Conniff, K., A. Sasamoto, R. Futahashi & L.M. Singh (2019). Revision of the status of *Anaciaeschna donaldi* and *A. martini*, with allied species, and distributional notes (Odonata: Aeshnidae). *Odonatologica* 48(3/4): 265–284. https://doi.org/10.5281/zenodo.3539740

Fraser, F.C. (1936). *The Fauna of British India including Ceylon and Burma. Odonata Vol. 3*. Taylor & Francis Ltd., London, XII+461pp.

Subramanian, K.A. & R. Babu (2017). Checklist of Odonata (Insecta)

Image 3. *Anaciaeschna martini* (Selys, 1897) habitat: Montane lake at Coonoor, Nilgiris District, Tamil Nadu.

of India. Version 3.0 <www.zsi.gov.in> 54pp. Accessed June 1 2020.

Subramanian, K.A., K.G. Emiliyamma, R. Babu, C. Radhakrishnan & S.S. Talmale (2018). *Atlas of Odonata (Insecta) of the Western Ghats.* Zoological Survey of India, Kolkata, 417pp.

Journal of Threatened Taxa

www.threatenedtaxa.org

PLATINUM OPEN ACCESS

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

January 2021 | Vol. 13 | No. 1 | Pages: 17455–17610
Date of Publication: 26 January 2021 (Online & Print)
DOI: 10.11609/jott.2021.13.1.17455-17610

Member

FJN

Publisher & Host

WILD ZOOREACH

Threatened Taxa