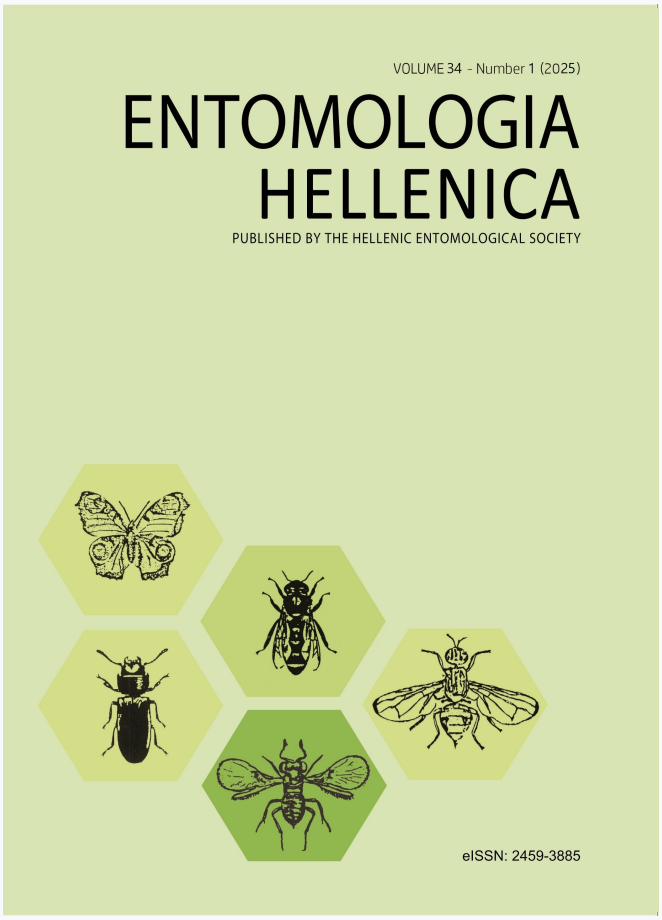
ENTOMOLOGIA HELLENICA

Vol 34, No 1 (2025)

Entomologia hellenica 34(1)



First report on Odonates from Ghandhamardan Hills, Western Odisha, India

Suraj Kumar Dash

doi: 10.12681/eh.38474

To cite this article:

Dash, S. K. (2025). First report on Odonates from Ghandhamardan Hills, Western Odisha, India. *ENTOMOLOGIA HELLENICA*, *34*(1), 1–8. https://doi.org/10.12681/eh.38474

ENTOMOLOGIA HELLENICA **34** (2025): 1-8

Received 21 July 2024 Accepted 9 February 2025 Available online 15 March 2025

First report of Odonates from Ghandhamardan Hills, Western Odisha, India

ARAJUSH PAYRA[1,2] AND SURAJ KUMAR DASH[1*]

[1]Department of Wildlife and Biodiversity Conservation, Maharaja Sriram Chandra Bhanja Deo University, Odisha, India

[2]Department of Environmental Studies, Dr Vishwanath Karad MIT World Peace University, Kothrud, Pune, India

ABSTRACT

In this paper, we provide the first Odonata checklist of Ghandhamardan Hills, Western Odisha, India. Surveys were carried out at Nrusinghanath and Harishankar Waterfalls on April 1st and 2nd, 2016. We recorded a total of 23 odonate species under 19 genera and 8 families based on photographic evidence. Our survey recorded *Camacinia gigantea* for the first time from Western Odisha, extending its range in the central Indian landscape. Moreover, this study highlights the necessity of further systematic surveys in this little-explored area of Odisha to determine the actual diversity of odonates, in this potential odonate habitat in Gandhamardan hill range.

KEY WORDS: Dragonflies, damselflies, *Camacinia gigantea*, Nrusinghanath, Harishankar.

Introduction

The Ghandhamardan hill (GH) range, with an area of about 251 km^2, is located in Western Odisha in Bargarh and Bolangir Administrative Districts. The hill ranges fall under the Eastern Ghats biogeographic zone and lie between 20°42'N to 21°00'N latitude and 82°41'E to 83°05'E longitude. The altitude varies between 320 and 1220 m (Sahu et al., 2010). The climate is tropical, with annual rainfall ranging from 700 to 1600 mm. Vegetation is mainly tropical moist deciduous, but in some areas dry scrubland is also present (Champion and Seth, 1968). Ghandhamardan hill range is renowned for its rich floristic diversity, particularly medicinal plants and reptiles (Pattanaik and Reddy, 2007; Pradhan et al., 2014). Considering the significance of the site, the Government of Odisha has recently declared the Gandhamardan Hills as a Biodiversity Heritage Site (Ministry of Environment, Forest and Climate Change, 2023). However, no data is available concerning the entomofaunal diversity of this area, specifically with respect to the odonate species. To address this research gap, we present a preliminary report on odonate species met at the Ghandhamardan hill range of Western Odisha, India, based on a pilot rapid assessment. The study will further contribute to the overall understanding of the odonate diversity in Odisha, which to date is known to include about 114 species (Nair, 2011; Sajan and Mahapatra, 2014; Payra et al., 2020), representing about 22% of the odonate species present in India (Kalkman et al., 2020).

Materials and Methods

On April 1st and 2nd, 2016, we conducted entomological surveys at two waterfalls of GH, namely Nrusinghanath Waterfall (20°53'43.44"N, 82°49'41.03"E) in Bargarh district, and Harishankar Waterfall (Lat

**Corresponding author: surajkumardash5584@gmail.com*

20°51'16.33"N, Long 82°51'38.28"E) in Balangir district (Fig. 1). Surveys involved walking along the stream peripheries of the waterfalls. Observed species were photographed in the field from various angles using a Nikon P900 Camera and a Canon SX 400 Camera. No specimens were captured during the survey. Photographs of odonates were identified according to Fraser (1933, 1934, 1936), Nair (2009) and Subramanian et al. (2018).

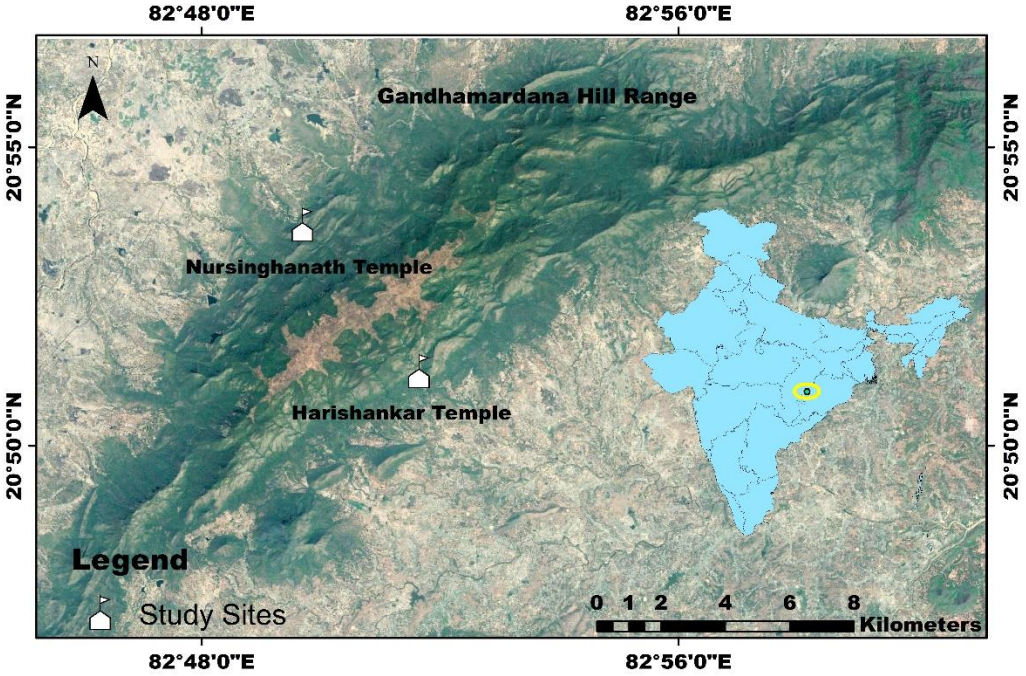


FIG. 1. Map of the study sites at Gandhamardan hill range, Odisha, India.

Results and Discussion

Altogether, 23 species of odonates belonging to 19 genera and 8 families were identified, of which 4 species were Zygoptera (damselflies) and 19 species Anisoptera (dragonflies) (Fig. 2 & 3). Libellulidae was the most abundant family with 13 species, followed by Aeshnidae (3), Gomphidae (2), Calopterygidae (1), Chlorocyphidae (1), Coenagrionidae (1), Platycnemididae (1), and Macromiidae (1). According to IUCN Red List, all the recorded species were categorized under the "Least Concern" category.

Species List (HT-Harishankar Temple, HW-Harishankar Waterfall, NT-Nrusinghanath Temple, NW-Nrusinghanath Waterfall)

Calopterygidae Selys, 1850

Vestalis gracilis (Rambur, 1842)

A single male was photographed near HW, at the altitude of about 400 m a.s.l.

Chlorocyphidae Cowley, 1937

Heliocypha bisignata (Hagen in Selys, 1853)

One male was recorded perched on rock near the stream of NT, and then Single male was recorded near a stream of HT.

Coenagrionidae Kirby, 1890

Aciagrion pallidum Selys, 1891

A single male was observed perched on small shrub, near the stream of HT.

Platycnemididae Yakobson & Bainchi, 1905

Caconeura ramburi (Fraser, 1922)

One female was observed laying eggs on a small twig near the stream of HT. Several individuals were observed in tandem near HW.

Aeshnidae Leach, 1815

Anax guttatus (Burmeister, 1839)

A male individual was recorded near the stream of HW, hanging on a tree branch, about 2.5 m above ground.

Anax indicus Lieftinck, 1942

A single male was recorded near the stream of HW, perched on a small tree branch along with a *H. croceus*.

Gynacantha millardi Fraser, 1920

Three individuals (one male, two females) were recorded near the stream of HT, perched on small shrubs along with individuals of *C. ramburi*, *Zyxomma petiolatum*.

Gomphidae Rambur, 1842

Ictinogomphus rapax (Rambur, 1842)

A single female was recorded near the HW, perched on a tree branch, ~3m above the stream along with individuals of *Zygonyx iris*.

Paragomphus lineatus (Selys, 1850)

A single female was recorded near the stream of NW.

Libellulidae Leach, 1815

Cratilla lineata (Brauer, 1878)

A single male was photographed near the stream of HW.

Camacinia gigantea (Brauer, 1867)

2 young males (here young or immature individuals were identified based on the colour variation on their wings) were observed near the stream of HT, perched on shrubs about 1m above the ground; A mature male was observed near the Temple, perching on a tree branch about 10 m above ground near the stream. Among these recorded species findings of *Camacinia gigantea* (Libellulidae) in GH is very significant. As in Odisha, the species was treated as 'very rare' (Nair, 2011), previously recorded only from Similipal Tiger Reserve of Northern Odisha (Nair, 2011) and Koraput district of Southern Odisha (Palita et al., 2018). Records of two young and one adult male indicate their breeding population in GH.

Hydrobasileus croceus (Brauer, 1867)

A female was observed near the stream of NW. One female was observed near the stream of HT. Four females were observed along the different places of stream of HW, they were perching on streamside small shrubs and small tree branches, associated with other odonates.

Neurothemis fulvia (Drury, 1773)

A single male was recorded near the stream of NT.

Orthetrum glaucum (Brauer, 1865)

One young male was recorded near the stream of HT.

Orthetrum luzonicum (Brauer, 1868)

A single male individual was recorded near the stream of HT.

Orthetrum pruinosum (Burmeister, 1839)

One female was observed near a stream of NT. A single male was spotted near the stream of HT, perched on twig about 1.5 m above the ground along with *H. croceus*.

Potamarcha congener (Rambur, 1842)

A single female was observed near the stream of NT, while it was perched on the small tree branch.

Tholymis tillarga (Fabricius, 1798)

A single male was recorded near the stream of NT, perching on small branch about 1 foot above the ground.

FIG. 2.**:** Photographic records of odonates from Ghandhamardan Hill, Odisha, India. A: *Vestalis gracilis* (male); B: *Heliocypha bisignata* (male); C: *Aciagrion pallidum* (male); D: *Caconeura ramburi* (male); E: *Anax guttatus* (male); F: *A. indicus* (male); G: *Gynacantha millardi* (male); H: *Ictinogomphus rapax* (male); I: *Paragomphus lineatus* (male); J: *Cratilla lineata* (Male); K: *Camacinia gigantea* (male); L: *C. gigantea* (young male) (Photo: A Payra & S K Dash).

Trithemis aurora (Burmeister, 1839)

One male was recorded near the NT stream, perching on a small branch ~1.5 feet above ground.

Trithemis festiva (Rambur, 1842)

Two males and two females were recorded near the NW stream. One individual was perched on a small branch ~1 foot above ground and one perched on a dry twig ~2 m above the stream.

Zygonyx iris Selys, 1869

A single male was recorded near the NW stream, and several individuals (both males and females) were observed in HW, hanging on small tree branches, above the

stream, along with individuals of *E. vittata* and *H. croceus*.

Zyxomma petiolatum Rambur, 1842

One male was recorded near the stream of HT, perched on small branch along with *C. ramburi* and *G. millardi*.

Macromiidae Needham, 1903

Epophthalmia vittata Burmeister, 1839

About 7-8 individuals (males and females) were observed near the HW. They were perched on small branches about 2.5m above the stream along with individuals of *Z. iris* and *H. croceus.*

Fig. 3. Photographic records of odonates from Ghandhamardan Hill, Odisha, India. A: *Hydrobasileus croceus* (female); B: *Neurothemis fulvia* (male); C: *Orthetrum glaucum* (young male); D: *O. luzonicum* (male); E: *O. pruinosum* (male); F: *Potamarcha congener* (female); G: *Tholymis tillarga* (male); H: *Trithemis aurora* (male); I: *T. festiva* (male); J: *Zygonyx iris* (male); K: *Zyxomma petiolatum* (male); L: *Epophthalmia vittata* (male) (Photo: A Payra & S K Dash).

Conclusion

Hitherto published odonatological literature of Odisha revealed that the majority of the surveys on odonate species is constrained to the northern parts of the state (Mitra, 2002; Sethy and Siddiqui, 2007; Nair, 2011; Das et al., 2012; Debata et al., 2013; Boruah et al., 2015) followed by the eastern (Laidlaw, 1915; Fraser and Dover, 1922; Nair, 2011; Nair and Subramanian, 2014; Payra et al., 2020) and southern parts (Nair, 2011; Palita et al., 2016). There are no other reports on the diversity and distribution of odonate species in western Odisha, with the exception of a few scattered records by Sethy and Siddiqui (2007), Nair (2011), and of Payra et al. (2019) (38 species from Sunabeda Wildlife Sanctuary of Nuapada district). Our two day- rapid survey at the Nrusinghanath and Harishankar Waterfalls of GH yielded a total of 23 species of odonates along with the notable record of *Camacinia gigantea*. The results of this survey serve as valuable baseline for further research on the odonates of GH, as well as for the poorly explored western Odisha. It should be noted that GH has more than 60 hill streams and several stagnant water bodies. Therefore, to gain a comprehensive understanding of the odonate diversity of GH, a biodiversity heritage site of Odisha, additional long-term surveys are necessary.

References

Boruah, B., Payra, A., Das, G. N., Misra, R. K., Rout, S. D., Sahu, H. K. 2015. - Diversity of Odonata (Insecta) in Padmatola wetland, Balasore, Odisha, India. Asian Journal of Conservation Biology, 4(1), pp: 92-97.

Champion, S.H. and Seth, S.K. 1968 - A revised survey of the forest types of India. Government of India Press, New Delhi. 404 pp.

Das, S. K., Ahmed, R. A., Sajan, S. K., Dash, N., Sahoo, P., Mohanta, P., Sahu, H. K., Rout, S. D. and Dutta, S. K. 2012 - Diversity, distribution and species composition of Odonates in buffer areas of Similipal Tiger Reserve, Eastern Ghat, India. Academic Journal of Entomology, 5(1), pp: 54-61.

Debata, S., Sahu, H., Rout, K. S. and Kumar, R. 2013 - An observation on Odonata diversity in Hadgarh Wildlife Sanctuary, Odisha, Eastern India. Tigerpaper, 40(2), pp:10-13.

Fraser, F. C. 1933 - Fauna of British India, Odonata 1. Taylor & Francis Ltd. London, 423 pp.

Fraser, F. C. 1934 - Fauna of British India, Odonata II. Taylor & Francis Ltd. London, 398 pp.

Fraser, F. C. 1936 - Fauna of British India, Odonata III. Taylor & Francis Ltd. London, 461 pp.

Fraser, F. C. and Dover, C. 1922 - The fauna of island in Chilika Lake – Dragonflies. Records of the Indian Museum, 24(3), pp:303-311.

Kalkman, V.J., Babu, R., Bedjanič, M., Conniff, K., Gyeltshen, T., Khan, M. K., Subramanian, K.A., Zia, A. and Orr, A. G. 2020 - Checklist of the dragonflies and damselflies (Insecta: Odonata) of Bangladesh, Bhutan, India, Nepal, Pakistan and Sri Lanka. Zootaxa, 4849(1), pp: 1-84.

Laidlaw, E. F. 1915 - Fauna of the Chilika Lake. No. 2 Odonata. Memoirs of Indian Museum, 5, pp:177-188.

Ministry of Environment, Forest and Climate Change 2023- Sustainable Tourism in Biodiversity Heritage Sites. Posted On: 31 JUL 2023 5:45PM by PIB Delhi. https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1944380 (accessed on 30 December 2024)

Nair, M. V. and Subramanian, K. A. 2014 - A new species of *Agriocnemis selys*, 1869 (Zygoptera: Coenagrionidae) from eastern India with redescription of *Agriocnemis keralensis* Peters, 1981. Records of Zoological Survey of India, 114: 669-679.

Nair, M. V., 2011 - Dragonflies & Damselflies of Orissa and Eastern India. Wildlife Organization, Forest & Environment Department, Government of Orissa, 252 pp.

Palita, S. K., Jena, S. K. and Debata, S. 2016 - Odonate diversity along different habitats of Koraput district, Odisha, India. Journal of Entomology and Zoology Studies, 4(3), pp: 40-47.

Pattanaik, C. and Reddy, C.S., 2007 - Medicinal plant resources of Gandhamardan hill range, Orissa: An urgent need for conservation. National Academy Science letters, 30(1–2), pp: 35-38.

Payra, A., Dash, S. K., Palei, H. S. Tiple, A. D., Mishra, A. K., Mishra, R. K. and Rout, S. D. 2020 - An updated list of odonata species from Athgarh Forest Division, Odisha, eastern India (Insecta: Odonata). Mongolian Journal of Biological Sciences, 18(1), pp: 55-64.

Payra, A., Dash, S. K., Udgata, G., Pati, N. N., Mishra, R. K., Sahu, H. K. and Patra, B. K. 2019 - A preliminary investigation on Odonata fauna in. NeBIO, 10(1), pp: 17-22

Pradhan, S., Mishra, D., and Sahu, K. R. 2014 - An inventory and assessment of snake diversity of Gandhamardan hills range of western Orissa, India. International Journal of Pure and applied zoology, 2(3), 241-245.

Sahu, S. C., Dhal, N. K. and Bhadra, A. K., 2010 - Arboreal taxa diversity of tropical forests of Gandhamardan hill range, Eastern Ghats, India: An approach to sustainable biodiversity conservation. Taiwania, 55(3), pp: 208-215.

Sajan, S. K. and Mohapatra, P. P. 2014 - New record of Lesser blue wing *Rhyothemis triangularis* Kirby, 1889 (Odonata: Libelulidae) from Odisha, India. Journal of Bombay Natural History Society, 111(1), pp: 60-60.

Sethy, P. G. S. and Siddiqui, S. Z. 2007 - Observations on Odonates in Similipal Biosphere Reserve, Orissa. Zoosprint, 22, pp: 2893-2894.

Subramanian, K. A., Emiliyamma, K. G., Babu, R., Radhakrishnan, C. and Talmale, S. S. 2018 - Atlas of Odonata (Insecta) of the Western Ghats: 1-417. (Published by the Director, Zoological Survey of India, Kolkata).

