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## ***Monopelopia mongpuense* sp. n., a phytotelmata midge from sub-Himalayan region of India (Diptera: Chironomidae: Tanypodinae)**

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### **Abstract**

Immature and adult stages of *Monopelopia mongpuense* sp. n. from phytotelmata of *Cedrus deodara* (Lamb.) in Darjeeling are described along with biological notes. Key to the adult males of all species of the genus *Monopelopia* Fittkau is also presented. This genus is recorded for the first from Indian subcontinent.

**Key words:** Chironomidae, Tanypodinae, *Monopelopia*, new species, phytotelmata, Darjeeling, India

### **Introduction**

The upper Terai–Duars hill region of eastern lesser Himalaya is biogeographically important area of India. The area is included into the Himalayan Biodiversity Hotspot, covered by subtropical broadleaf forests and scattered conifers, with an average altitude of 1200m and 600–900mm mean annual rainfall. Due to its vastness and unique geomorphology, new taxa are expected to be found in this area. During the study, 6–7 phytotelmata i.e. water accumulated inside the remains of each tree trunk of *Cedrus deodara* (Lamb.) were explored. Larvae of Tanypodinae were collected along with other Nematoceros Diptera. The reared tanypod appears as new species of the genus *Monopelopia* Fittkau under tribe Pentaneurini. The genus is first record from the Indian subcontinent. On the basis of habitat the genus has been classified into two categories. The phytotelm species have been reported from Neotropical region: *Monopelopia caraguata* Mendes, Marcondes & Pinho (2003) and *Monopelopia mikeschwartzi* Epler & Janetzky (1998); Nearctic region: *Monopelopia boliekae* Beck & Beck (1966) and *Monopelopia tillandsia* Beck & Beck (1966). The non-phytotelm species have been reported from Neotropical region: *Monopelopia paranaense* Oliveira, Mendes & Silva (2010) and *Monopelopia minuta* Serpa-Filho & Oliveira (1997); Holarctic region: *Monopelopia tenuicalcar* Kieffer (1918). These non-phytotelm species prefer to inhabit boggy bottom of small pond (Fittkau & Roback 1983). The only Afrotropical species *Monopelopia pavidata* Harrison (1978) was described from the South Sahara and one Oriental species *Monopelopia divergens* (Johannsen) was described from sphagnum pool in Sumatra (Sublette & Sublette 1973). Recently, few larvae were recovered by Cranston (2007) from Tsunami affected area of Thailand whereas Blakely *et al.* (2010) described larvae of *Monopelopia* inhabiting in artificial water-filled tree hole containers attached to red beech trees in Orikaka, New Zealand and Orestes *et al.* (2011) recorded *M. tillandsia* from bromeliads in Cuba. *Monopelopia okigenga* Sasa was transferred to the genus *Paramerina* Fittkau and became a junior synonym of *Paramerina divisa* (Walker) (Kobayashi & Endo 2008). Before this study, 9 species belonging to the genus *Monopelopia* have been described worldwide (Ashe & O'Connor 2009, 2012). Roback (1986) revised the genus from Nearctic and updated identification keys were made by Oliveira *et al.* (2010). We proposed a new key in order to include all the species of the world.

recorded to be one day. The eclosion was mostly occurred between 19.00 hrs and 01.00 hrs and the adults survived 2–4 days in laboratory condition.

## Discussion

The proposed new species appears similar to *Monopelopia tenuicalcar* (Kieffer, 1918) described from the Holarctic Region in adult male characters, like setal arrangement on vertex, AR, gonostylus length, HR, pupal characters like, shape of plastron plate, LS setae on segment VII, hooked D setae, and larval characters like AR, dark brown small claw in posterior parapod. However, the new species differs significantly from *M. tenuicalcar* in presence of  $R_2$  in wing, shape of gonocoxite, number of setae on hind tibial comb; disposition of D setae and shagreen pattern in pupal exuviae; inner teeth in dark claw and dorsal cephalic setal pattern of larvae. The species shows affinity with *M. paranaense* Oliveira *et al.* (2010) in respect to vertex and palpal setae, LS setae and thoracic horn structure of pupa but differs in number of setae in brachiolum, dorsolateral setae on tergite IX, setae of hind tibial comb and shape of gonocoxite in male adult, ThR in pupa and colour pattern of larvae. The new species shows affinity with *M. mikeschwartzii* Epler & Janetzky (1998) in pupal shagreen pattern but differs in number of setae in dorsolateral region of tergite IX in male adult and pupal respiratory horn. The species, *M. divergens* (Johannsen) possesses bifurcated longitudinal vein  $R_2$  while it is not such in the new species. Another species, *Monopelopia pavidata* Harrison (1978) shows marked difference in hypopygium shape from the proposed species. The species *M. caraguata* Mendes, Marcondes & Pinho (2003), *M. tillandsia* Beck & Beck (1966) and *M. boliekae* Beck & Beck (1966) differ distinctly from the present species in tergal colouration, hypopygium, palpal setation, LR, AR, thoracic horn shape, ALR and larval AR. Thus combination of characters of *M. mongpuense* **sp. n.** justifies its consideration as a new species of *Monopelopia* Fittkau from the Indian subcontinent.

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## References

- Ashe, P. & O'Connor, J.P. (2009) *A world catalogue of Chironomidae (Diptera). Part 1. Buchonomyiinae, Chilenomyiinae, Podonominae, Aphroteniinae, Tanypodinae, Usambaromyiinae, Diamesinae, Prodiamesinae and Telmatogetoninae*. Irish Biogeographical Society & National Museum of Ireland, Dublin, 445 pp.
- Ashe, P. & O'Connor, J.P. (2012) Additions and corrections to Part 1 of 'A World Catalogue of Chironomidae (Diptera)'. *Fauna norvegica*, 31, 125–136.  
<http://dx.doi.org/10.5324/fn.v31i0.1366>
- Beck, W.M. & Beck, E.C. (1966) Chironomidae (Diptera) of Florida: 1. Pentaneurini (Tanypodinae). *Bulletin of the Florida State Museum Biological Sciences*, 10 (8), 305–379.
- Blakely, T.J., Cranston, P.S. & Winterbourn, M.J. (2010) Container-inhabiting *Monopelopia* larvae (Diptera: Chironomidae: Tanypodinae) newly recorded in New Zealand. *New Zealand Entomologist*, 33, 38–42.  
<http://dx.doi.org/10.1080/00779962.2010.9722190>
- Clesceri, L.S., Greenberg, A.E. & Eaton, A.D. (1998) Inorganic Nonmetallic Constituents. In: Greenberg, A.E., Clesceri, L.S. & Eaton, A.D. (Eds.), *Standard Methods for the Examination of Water and Wastewater, 20th Edition*. American Public Health Association, Washington DC, Chapter 4, pp. 129–130.
- Cranston, P.S. (2007) The Chironomidae larvae associated with the Tsunami-impacted water bodies of the coastal plain of southwestern Thailand. *The Raffles Bulletin of Zoology*, 55 (2), 231–244.
- Das Gupta, S.K. & Wirth, W.W. (1968) Revision of Oriental species of *Stilobezzia* Kieffer (Diptera: Ceratopogonidae). *Bulletin of United States Natural Museum*, 283, 1–264.  
<http://dx.doi.org/10.5479/si.03629236.283.1>
- Epler, J.H. & Janetzky, W.J. (1998) A new species of *Monopelopia* (Diptera: Chironomidae) from phytotelmata in Jamaica, with preliminary ecological notes. *Journal of the Kansas Entomological Society*, 71, 216–225.

- Fittkau, E.J. & Roback, S.S. (1983) The larvae of Tanypodinae (Diptera: Chironomidae) of the Holarctic region – Keys and diagnoses. *In*: Wiederholm, T. (ed.), Chironomidae of the Holarctic region – Keys and diagnoses. Part 1. Larvae. *Entomologica Scandinavica*, Supplement, 19, 58–59.
- Frommer, S. (1967) Review of the anatomy of adult Chironomidae. *California Mosquito Control Assessment, Technical Ser. Bulletin*, 1, 1–39.
- Harrison, A.D. (1978) New genera and species of Tanypodinae (Diptera: Chironomidae) from Africa south of the Sahara. *Journal of the Entomological society of Southern Africa*, 41 (1), 63–80.
- Hazra, N., Saha, G.K., Mazumdar, A. & Chaudhuri, P.K. (2011) Records of Chironomids of the tribe Pentaneurini (Diptera: Chironomidae) in the Eastern Himalayas of India. *Annales de la Societe de Entomologique de France*, 47 (3–4), 330–339. <http://dx.doi.org/10.1080/00379271.2011.10697724>
- Kieffer, J.J. (1918) Beschreibung neuer, auf Lazarettsschiffen des östlichen Kriegsschauplatzes und bei Ignalino in Litauen von Dr. W. Horn gesammelten Chironomiden, mit uebersichtstabellen einiger Gruppen von paläarktischen arten (Diptera) II. Subfam. Tanypodinae (Pelopiinae). *Entomologische mitteilungen*, 7, 100–187.
- Kobayashi, T. & Endo, K. (2008) Synonymic notes on some species of Chironomidae (Diptera) described by M. Sasa. *Zootaxa*, 1712, 49–54.
- Kowalyk, H.E. (1985) The larval cephalic setae in the Tanypodinae (Diptera: Chironomidae) and their importance in generic determinations. *Canadian Entomologist*, 117, 67–106. <http://dx.doi.org/10.4039/ent11767-1>
- Langton, P.H. (1991) *A key to pupal exuviae of West Palaearctic Chironomidae*. Private publication, Huntington, Cambridge, ix + 386 pp.
- Mendes, H.M., Marcondes, C.B. & Pinho, L.C. (2003) A new phytotelmatic species of *Monopelopia* Fittkau, 1962 (Insecta: Diptera: Chironomidae: Tanypodinae) from South Brazil. *Zootaxa*, 262, 1–10.
- Oliveira, C.S.N., Mendes, H.F. & Silva, M.A.N. (2010) A new species of the genus *Monopelopia* from South Brazil, with keys to the Neotropical–Nearctic species (Diptera: Chironomidae: Tanypodinae). *Zootaxa*, 2419, 53–62.
- Orestes, C., Bello, G. & Yusdiel, T.C. (2011) *Monopelopia tillandsia* (Diptera: Chironomidae: Tanypodinae), first record from Cuba and the Neotropical region. *Revista Colombiana de Entomologica*, 37 (1), 162–163.
- Paul, N., Hazra, N. & Mazumdar, A. (2013) Records of the Genus *Paramerina* (Diptera: Chironomidae: Tanypodinae) from Eastern Himalaya and Satpura Hill Regions of India. *Neotropical Entomology*. [Published online: 15 August 2013] <http://dx.doi.org/10.1007/s13744-013-0149-x>
- Roback, S.S. (1985) The immature Chironomids of the Eastern United States VI. Pentaneurini – genus *Ablabesmyia*. *Proceedings of the Academy of Natural Science Philadelphia*, 137 (2), 153–212.
- Roback, S.S. (1986) The immature Chironomids of the Eastern United States VII. Pentaneurini – genus *Monopelopia*, with redescription of the male adults and description of some Neotropical material. *Proceedings of the Academy of Natural Science Philadelphia*, 138 (2), 350–365.
- Sæther, O.A. (1974) Morphology and terminology of female genitalia in Chironomidae (Diptera). *Entomologisk Tidsskrift Supplement*, 95, 216–224.
- Sæther, O.A. (1980) Glossary of chironomid morphology terminology (Diptera: Chironomidae). *Entomologica Scandinavica*, Supplement, 14, 1–51.
- Serpa-Filho, A. & Oliveira, S.J. (1997) Sobre uma nova espécie neotrópica do gênero *Monopelopia* Fittkau, 1962 (Diptera, Chironomidae, Tanypodinae). *Entomologia y Vectores*, 4 (2), 47–49. <http://dx.doi.org/10.1590/s0328-03812005000200013>
- Sublette, J.E. & Sublette, M. (1973) Family Chironomidae. *In*: Delffinando, M.D. & Hardy, D.E. (Eds.), *A Catalogue of the Diptera of the Diptera of the Oriental Region. Vol. 1. Suborder Nematocera*. The University Press of Hawaii, Honolulu, pp. 389–422.