

New records of Gerromorpha, Leptopodomorpha and Nepomorpha (Heteroptera, Insecta) from Madhya Pradesh, India

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ABSTRACT Four species of aquatic Heteroptera *Gerris nepalensis* Distant, 1910, *Mesovelgia horvathi* Lundblad, 1934, *Valleriola cicindeloides* Distant, 1908, and *Anisops kuroiwaie* Matsumura, 1915 belonging to four families and three infraorders namely Gerromorpha, Leptopodomorpha and Nepomorpha are newly recorded for the state of Madhya Pradesh. The diagnosis and distribution data of all these four species are provided here.

KEY WORDS New records, Aquatic Heteroptera, Madhya Pradesh.

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INTRODUCTION

Aquatic bugs belonging to the order Hemiptera, suborder Heteroptera, include three infraorders viz., Gerromorpha, Leptopodomorpha and Nepomorpha. The first two infraorders are semiaquatic bugs and the latter one is true aquatic bugs. They play a major role as biological control agents, and ecologically as food for higher trophic levels such as fishes, birds etc. Thirumalai et al. (2007) have given detailed information about aquatic bugs belonging to infraorders Gerromorpha and Nepomorpha from Madhya Pradesh. Leptopodomorpha have not been given due attention in India, except for the record of the occurrence of 4 genera and 10 species (Thirumalai, 1999). In the present study four species of aquatic and semiaquatic Heteroptera, *Gerris nepalensis* Distant, 1910 and *Mesovelgia horvathi* Lundblad, 1934 (Gerromorpha), *Valleriola cicindeloides* Distant, 1908 (Leptopodomorpha) and *Anisops kuroiwaie* Matsumura, 1915 (Nepomorpha), belonging to four families, namely Gerridae, Mesoveliidae, Leptopodidae and Notonectidae are newly recorded from Madhya Pradesh. Previously four species of aquatic Heteroptera, namely *Microvelia albomaculata* Distant, 1909, *Rhagovelia (Neorhagovelia) sumatrensis* Lundblad, 1936, *Rhagadotarsus (Rhagadotarsus)*

kraepelini Breddin, 1905 and *Naboandelus signatus* Distant, 1910 were recorded by Chandra et al. (in press) from Madhya Pradesh, after the record of 57 species of aquatic Heteroptera from the state by Thirumalai et al. (2007).

ACRONYMS. The materials used for this study are deposited in Zoological Survey of India, Kolkata (ZSIK) and Zoological Survey of India, Jabalpur (ZSIJ) collections: collection H.S. Sharma (HSS), ZSIK, Reg. No. 2522/H15 (*Gerris nepalensis*); collection D.K. Ghosal (DKG), ZSIK, Reg. No. 2520/H15 (*G. nepalensis*); collection D.S. Mathur (DSM), ZSIK, Reg. No. 2523/H15 (*G. nepalensis*); collection R.K. Singh (RKS), ZSIK, Reg. No. 2521/H15 (*G. nepalensis*); collection D.K. Harshey (DKH), ZSIK, Reg. No. 2519/H15 (*G. nepalensis*); collection E.E. Jehamalar (EEJ), ZSIK, Reg. No. 2518/H15 (*Mesovelgia horvathi*); ZSIK, Reg. No. 2516/H15 (*Anisops kuroiwaie*); collection E.E. Jehamalar and Devanshu (EEJD), ZSIJ, Reg. No. A/15098 (*Valleriola cicindeloides*); collection N.K. Sinha (NKS), ZSIJ, Reg. No. A/15100 (*V. cicindeloides*); collection V.V. Rao (VVR), ZSIJ, Reg. No. A/15099 (*V. cicindeloides*); collection H. Khajuria (HK), ZSIK, Reg. No. 2517/H15 (*Anisops kuroiwaie*).

RESULTSInfraorder **GERROMORPHA**

Family GERRIDAE

Subfamily GERRINAE

Gerris nepalensis Distant, 1910

1910. *Gerris nepalensis* Distant, Ann. Mag. nat. Hist., 5: 142.

1903. *Gerris nepalensis* Distant: Fauna of British India, 5: 143-144.

1993. *Gerris (Gerris) nepalensis* Distant: Ent. Scand., 24: 157.

2002. *Gerris (Gerris) nepalensis* Distant: Thirumalai, Rec. zool. Surv. India, 100 (Part 1-2): 61.

EXAMINED MATERIAL. Betul, Mura, 24.III. 1990, 1 apt. male (HSS); Jabalpur, Amkhas, Nagpur Road, 2.VI.1971, 1 apt. female (DKG); Budhagar tank, 20.III.1974, 1 mpt. female, 1 apt. female, 1 imm. ex. (DSM); Panna, Pratappur, 15.II.1987, 1 apt. male ex. (RKS); Shivpuri, SSS Club, 24.III.1980, 3 apt. males, 3 mpt. females, 6 apt. females (DKH).

DIAGNOSIS. Body piceous and flat ventrally. Male body length 6.87 mm, width across mesoacetabula 2.27 mm, female, length 8.27 width 2.68 mm; generally apterous (Fig. 1), rarely macropterous; head predominantly black and shiny, base with crescent shaped yellow marking; pronotum piceous, anterior pronotal lobe with median yellow stripe; apex of 7th abdominal sternum excavated medially; eighth abdominal sternum of male with two silvery white patches; connexival spines well developed in females, very small in males; ventral sclerite of male endosoma rod shaped.

DISTRIBUTION. Vietnam, India, China, Japan, Far East of Russia. DISTRIBUTION IN INDIA: Arunachal Pradesh, Jammu & Kashmir, Madhya Pradesh, Sikkim and Uttar Pradesh.

REMARKS. Distant (1903) mentioned that body above and hemelytra are black, but in the specimens recorded here they are dark brown to piceous.

Family MESOVELIIDAE

Subfamily MESOVELIINAE

Mesovelia horvathi Lundblad, 1934

1934. *Mesovelia horvathi* Lundblad, Arch. Hydrobiol. Suppl., 12: 190.

1980. *Mesovelia horvathi* Lundblad: Thirumalai, Rec. zool. Surv. India, Misc. Occ. Pap., 165: 26.

2002. *Mesovelia horvathi* Lundblad: Thirumalai, Rec. zool. Surv. India, 100 (Part 1-2): 78.

2011. *Mesovelia horvathi* Lundblad: Man and Murphy, Raff. Bull. Zoology, 59: 54-55.

EXAMINED MATERIAL. Madhya Pradesh, Tilwara-ghat, 9.IX.2011, 1 macropterous male (EEJ).

DIAGNOSIS. Length: 2.6 mm; colour luteous (Figs. 3, 4); inner margin of mid leg 1-2 black spines on both sexes; apices of rostrum, tibiae and tarsi fuscous; tarsi 3-segmented; inner subapical margin of fore femur with 5 minute spines; 8th abdominal sternum of male with a pair of black tuft of hairs on the sublateral region.

DISTRIBUTION. Australia, China, Japan, Indonesia, Malaysia, India, Sri Lanka, Thailand and Vietnam. DISTRIBUTION IN INDIA: Madhya Pradesh and Tamil Nadu.

REMARKS. Commonly in the plains and mountains in stagnant and slow running water (Thirumalai, 2001) and also found in brackish water (Man & Murphy, 2011). In the present study it has been collected in an abandoned dirty pond.

Infraorder LEPTOPODOMORPHA

Superfamily LEPTOPODOIDEA

Family LEPTOPODIDAE

Subfamily LEPTOPODINAE

Tribe Leptopodini

Valleriola cicindeloides Distant, 1908

1908. *Leptopus cicindeloides* Distant: Ann. Mag. nat. Hist., 8: 140.

1910. *Leptopus cicindeloides* (Distant): Fauna of British India, 5: 224.

EXAMINED MATERIAL. Jabalpur, Vijay Nagar, ZSI Residential Colony, 25.IX.2010, 1 ex. (EEJ-D); Bheraghat, 24.XI.1972, 1 ex. (NKS); Khargone, Gangli Village, 10.II.1971, 1 ex. (VVR).

DIAGNOSIS. Length 5.5 mm; Colour greyish ochraceous; body (Fig. 2) with pale pilosity; head with ocelli and median tubercle; first antennal segment stout, small and the 3rd segment very longer; pronotum with four dark brownish grey fascia, which is not reached upto the apex of



Fig. 1



Fig. 2



Fig. 3



Fig. 4



Fig. 5



Fig. 6

Figure 1. *Gerris nepalensis* male, apt. form (length 6.87 mm). Figure 2. *Valleriola cicindeloides* (length 5.5 mm). Figure 3. *Mesovelgia horvathi* male dorsal view (length 2.6 mm). Figure 4. idem Fig. 3, ventral view. Figure 5. *Anisops kuroiwae* male dorsal view (length 5.6 mm). Figure 6. idem Fig. 5, head ventral view.

pronotum; base, postero-lateral margin and apex of pronotum ochraceous; scutellum and wings fuscous; clavus with two ochraceous spots, one at the apex and another at the base; middle and apex of the corium with two ochraceous spots; membrane grayish ochraceous.

DISTRIBUTION. Yemen, India. DISTRIBUTION IN INDIA: Bihar, Madhya Pradesh, and West Bengal.

REMARKS. Anterior central longitudinal line and the fascia on the posterior region of pronotum is not prominent in all specimens. Sometimes the fascia united and only leaving the central prominent apical and faint postero sub lateral ochraceous patch.

Infraorder NEPOMORPHA

Family NOTONECTIDAE

Subfamily ANISOPINAE

Anisops kuroiwae Matsumura, 1915

1915. *Anisops kuroiwae* Matsumura, Ent. Mag. Kyoto, 1: 109.

2004. *Anisops batillifrons* Lundblad: Bal & Basu, Zool. Surv. India, State Fauna Series, 10: 300.

2004. *Anisops kuroiwae* Matsumura: Nieser, Raff. Bull. Zoology, 52: 86-87.

2007. *Anisops kuroiwae* Matsumura: Thirumalai, Rec. zool. Surv. India, Occ. Paper No., 273: 39.

EXAMINED MATERIAL. Jabalpur, Vijay Nagar, ZSI Residential Colony, 27.IX.2010, 2 males, 2 females (EEJ); Shahdol, Bandhavgarh National Park, 7.IX.1972, 2 exx. (HK).

DIAGNOSIS. Length male 5.6-6.4, female 5.4-6.3; width, male 1.5-1.6, female 1.3-1.8. Interocular space anteriorly produced into a cephalic projection. Cephalic projection in dorsal view rounded at apex, in lateral view extending in front of eye less than half the total length of the frons. In frontal view, tylus and frons are excavate with two carinae on each. Males (Figs. 5, 6) are easily recognized by the structure of the cephalic projection and the frons.

DISTRIBUTION. Widespread in Australasia from southern China to Australia, Southeastern Palaearctic (Japan) and West Malaysia.

DISTRIBUTION IN INDIA: Arunachal Pradesh, Assam, Delhi, Madhya Pradesh, Manipur, Sikkim, Tripura, Uttar Pradesh and West Bengal.

CONCLUSION

In the present study 4 species of aquatic Heteroptera, *Gerris nepalensis*, *Mesovelgia horvathi*, *Valleriola cicindeloides* and *Anisops kuroiwae*, belonging to the infraorders Gerromorpha, Nepomorpha and Leptopodomorpha are newly recorded from Madhya Pradesh. It is interesting to note that *Mesovelgia horvathi* hitherto recorded only from South India (Tamil Nadu) has been reported from Central India.

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