

**A NEW GENUS OF MICROVELIINAE (HEMIPTERA: HETEROPTERA: VELIIDAE)
FROM NORTH EASTERN INDIA WITH A CHECKLIST OF THE INDIAN SPECIES
OF THE SUBFAMILY**

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INTRODUCTION

Veliidae is the second largest family of the infraorder Gerromorpha so far known by about 630 species (Andersen 1995). This rather little known family of small insects is often found in cryptic habitats. Of the seven subfamilies hitherto known, five are represented by 22 species in India (Thirumalai, in Press) of which more than forty percent are distributed in northeastern India.

During a recent survey of Arunachal Pradesh, some specimens collected from a slow flowing jungle stream, possess a combination of characters not found in any other genera of Veliidae. A new generic name *Aquulavelia* is proposed to include this species.

The type specimens are deposited in the collections of Southern Regional Station, Zoological Survey of India, Chennai.

Aquulavelia gen. nov.

(Type Species : *Aquulavelia occulta* sp. nov.)

Apterous forms with elongate body, covered with hairs of varying length. Head produced posteriorly, extending slightly behind hind margin of eyes (Fig. 1A, H, I, J); vertex raised head deflected in front of eyes (Fig. 1C), with a distinct median furrow dorsally extending about 3/4 its length and not reaching its posterior margin; a pair of well developed pseudocellar pits behind eyes, clypeus protruding; eyes large, globular, situated very close to anterior margin of pronotum, one half width of head between eyes, antennal tubercles small, clearly visible from above; ventral lobe of head touching prothorax. Antenna four segmented 1st segment long curved, incrassate, 3/4ths of its length extending beyond apex of head, 2nd segment shortest, slender, 3rd and 4th filiform, the former 1.5 x the 1st, the latter 1.3 x the 3rd and 2 x the 1st. Rostrum slender, reaching middle of mesosternum.

Pronotum large, punctured, covering mesonotum medially (Fig. 1 J & I), hind margin broadly rounded. Prosternum broader than mesosternum, the latter slightly elevated; lateral evaporative grooves of scent orifice extending obliquely forwards; lateral evaporatoria small, ovate each with a tuft of spine-like hairs. Foreleg simple, unmodified in both sexes, hind leg longer than middle leg, all femora with long distinct hair-like bristles; foretibia of male with short grasping comb; tarsi slender; middle tarsal segments subequal in length; claws long, falcate inserted distinctly before apex of last tarsus, arolia bristle-like (Fig. 1. D); tarsal formula, 1+2+2.

Abdomen long, sides distinctly curved, more so in female (Fig. 1 H); connexiva broad and obliquely raised, especially in female. Venter with short slender apodemes, distinct in female on 5th to 7th sterna (Fig. 2 S) and in male on 4th to 7th sterna (Fig. 2 R). Male genital segment small, protruding; segment 8 cylindrical, unmodified without distinct hairs or spines (Fig. 2L & P); pygophore simple; proctiger large, elongate and simple with a short lateral out growth (Fig. 2 K); clasper simple, long, flaciform and symmetrical. Endosoma with sclerites as in Fig. 2 M; female genital segment visible.

Discussion : *Aquulavelia* gen. nov. is closely related to the genera *Neolardus* Distant in general profile and *Baptisa* Distant in possessing long and slender third and fourth antennal segments. However, the new genus differs from *Neolardus* in smaller size, non-truncate nature of pronotum behind eyes, presence of a short grasping tibial comb in male, unmodified anterior femora and differences in male and female terminalia. The non-truncated anterior angles of pronotum behind eyes and simple unmodified anterior femora in male separate this genus from *Baptista*. Besides, *Aquulavelia* may also be separated from *Lathriovelina* Andersen by the lack of a broad ventral collar and eyes are not distinctly removed from the anterior margin of pronotum.

Etymology : The name of the new genus is derived from *Aquila*, (Latin) that is "a little water"

***Aquulavelia occulta* sp. nov.**

(Fig. 1 & 2 A to S)

Description

Size : Apterous male, length 2.79 to 2.9 mm; maximum width 0.75 to 0.8 mm; apterous female, length 2.85 to 3.06 mm; maximum width 1.05 to 1.32 mm.

Colour : Ground colour, dark brown, venter light brown; acetabula brown; legs pale yellow; dorsal, lateral parts of head, pro, meso, meta nota, 2nd abdominal tergum adpressed with silvery pilosity, denser on pronotum; body with long brown erect hairs dorsally. Antennae, half of all femora, tibia, tarsi, brown; anterior pronotum with a transverse yellow band; antennal tubercles, punctures on pronotum dark brown, connexiva, abdominal tergites 5, 6 & 7 shining brown, venter with thick white hairs.

Structural characters (all measurement in mm otherwise as stated)

Apterous male : Body elongate with subparallel side, with scattered long erect hairs, dorsally and laterally; dorsal, ventral and lateral parts of body with white pubescence. Total length 4 x greatest width across prothorax. Antenna 4 segmented clothed with short setae, 0.7 x as long as body, first segment surpassing more than 3/4 of its entire length beyond head, 4th longest, 2nd shortest; relative length of segments (1-4) : 0.4, 0.3, 0.6, 0.7. Head moderately long, 2/3rd longer than wide including eyes; width of eye/interocular space 0.15/0.27.

Pronotum broad, length/width 0.5/0.7, hind margin broadly rounded. Mesonotum hidden beneath pronotal lobe, except laterally. Metanotum well exposed, 1.5 x broader than long. All legs

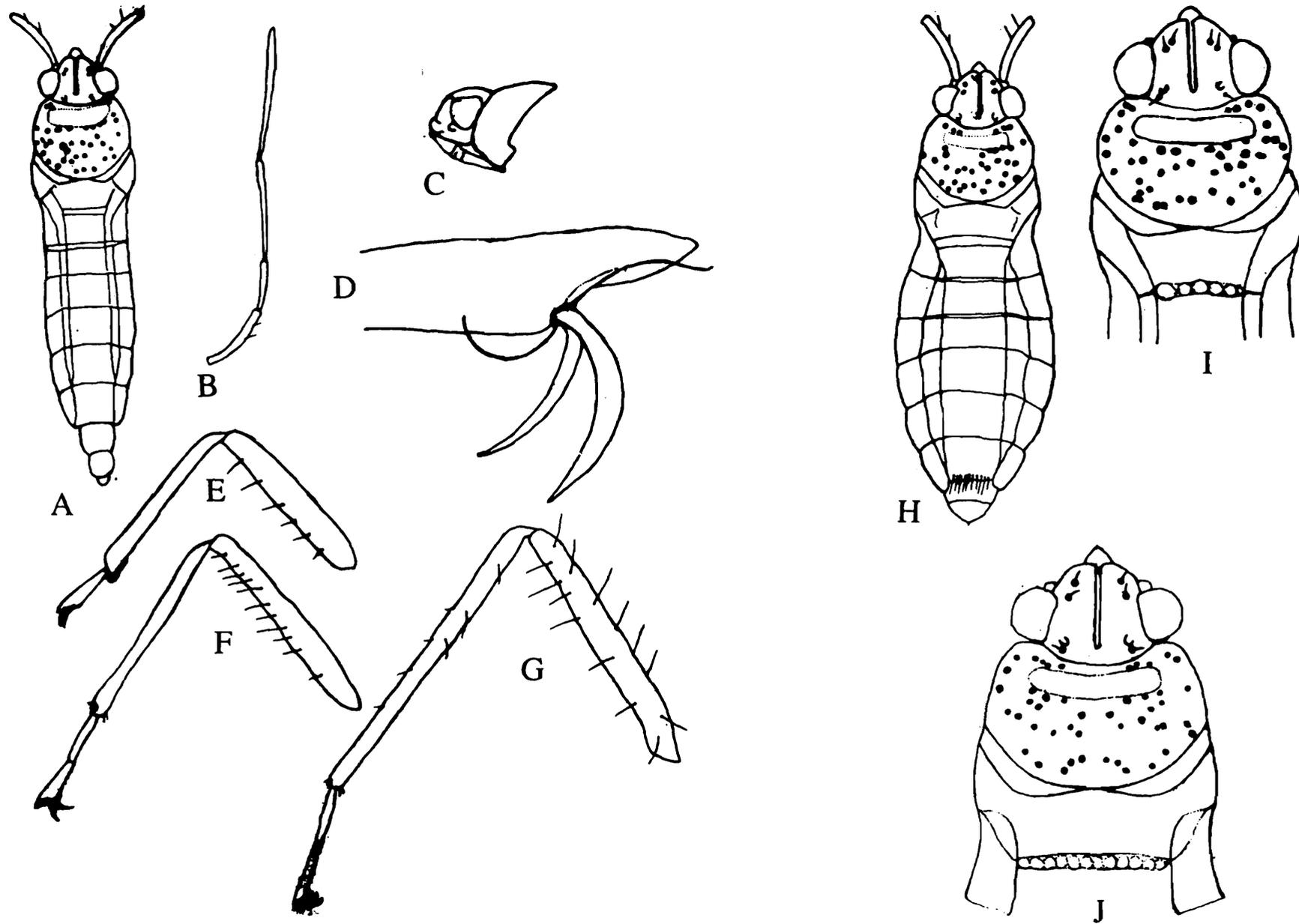


Fig. 1. *Aquulavelia occulta* gen. nov. sp. nov. (apterous form)

A : Apterous male (Antenna partially and legs removed); B : Antenna of male; C : Head and anterior part of pronotum, lateral view (antenna removed); D : Distal part of hind tarsus; E to G: Fore, middle, hind legs Apterous male; H : Apterous female (Antenna partially and legs removed); I : Head & pronotum of male, dorsal view; J : Head & pronotum of female, dorsal view.

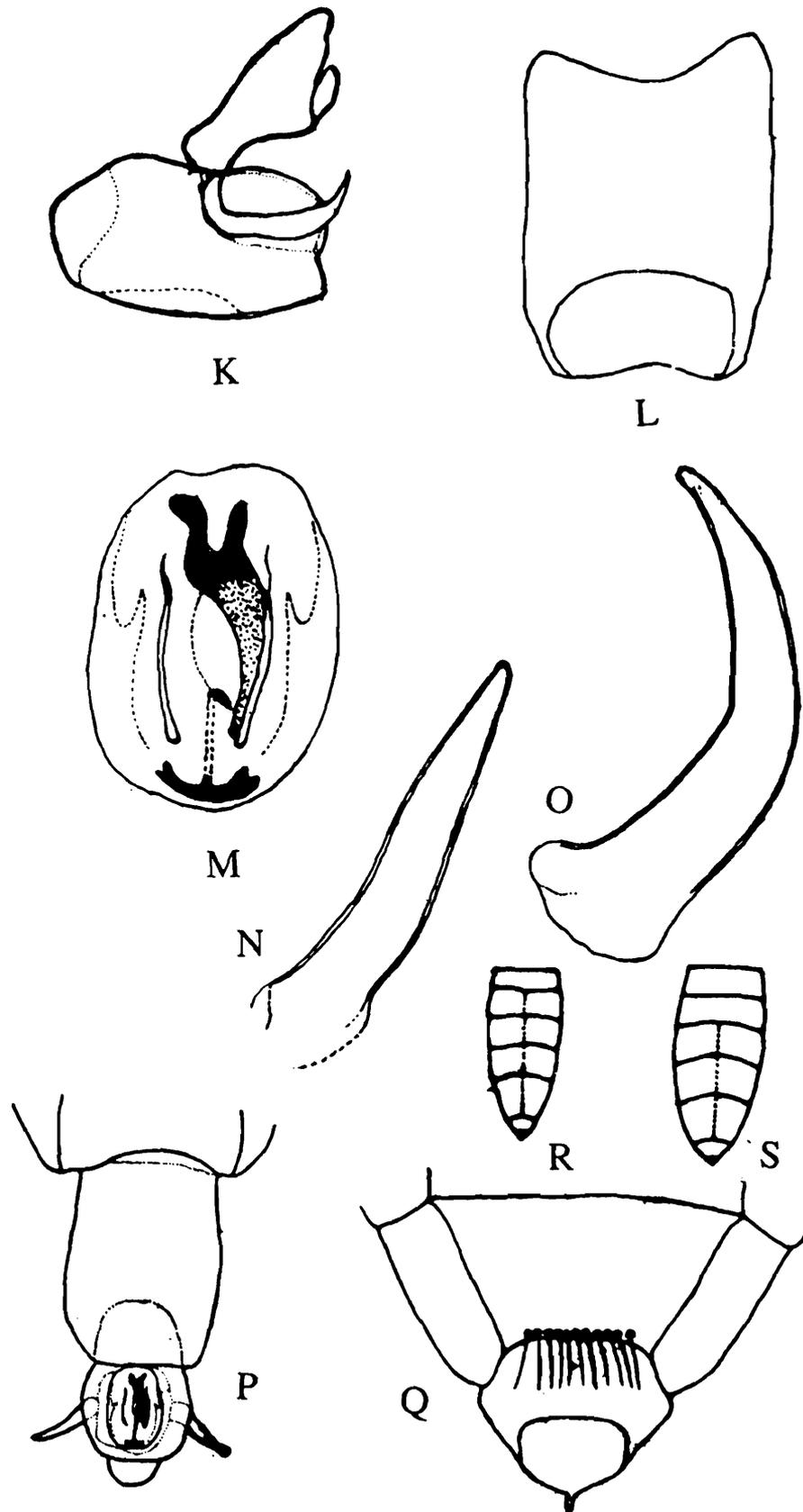


Fig. 2. *Aquilavelia occulta* gen. nov. sp. nov. (apterous form)

K : Genital segments of male, lateral view; L : First genital segment of male, ventral view;
 M : Endosoma, dorsal view; N & O Claspers, male; P. Genital segments of male, dorsal view;
 Q : Seventh dorsal abdominal segment of female; R : Ventral view of male abdominal
 segments (AP-apodeme); S : Ventral view of female abdominal segments (AP-apodeme).

long with short setae. Fore femur incrassate basally, dark erect bristles scattered posteriorly; fore tibia slightly thickened apically, with a short grasping comb, 1/7th as long as of tibial length (Fig. 1E). Middle and hind legs long, simple without any modification, middle tibia, hind femur and tibia with erect bristles scattered posteriorly. Relative length of legs :

	Femur	Tibia	Tarsus
Foreleg	0.8	0.8	0.3
Middleleg	1.0	1.0	0.2,0.3
Hindleg	1.2	1.5	0.3, 0.3

Abdomen long, cylindrical with long erect bristles; connexivum broad, moderately obliquely turned upward, tergites 2-7 subequal in length, 4th to 7th venter with distinct, slender apodeme; unmodified (Fig. 2, R); 1st abdominal segment as long as broad (Fig. 2 L); parameres paired, long, symmetrical, curved distally (Fig. 2K, N, O); endosoma with sclerites as in fig. 2 M.

Apterous female : Size a little longer than apterous male, otherwise similar to apterous male in many respects; foretibia without grasping comb; abdominal connexiva very broad, more obliquely turned upward, 7th dorsal abdominal segment with a row thick setae posteriorly (Fig. 2 Q); relative length of legs:

	Femur	Tibia	Tarsus
Foreleg	0.8	0.8	0.3
Middleleg	1.0	1.0	0.3,0.3
Hindleg	1.2	1.5	0.3, 0.3

Macropterous from unknown:

Comparative notes : Refer to comparative notes in generic description.

Collection data : All specimens were collected from dark pits of a slow flowing mountain stream, on the side of the road leading to Getha, 10 Kms West of Yingking town.

Type material : HOLOTYPE, apterous male, Road to Getha, Yingking, Upper Sing District, Arunachal Pradesh, alt : 700 M; Coll : G. Thirumalai, 31. VIII. 1994; PARATYPES : 12 apterous males, 19 apterous females (4 males, 4 females dissected and permanently mounted on slides) and 22 immature stages, collection data same as of Holotype.

Etymology : The name of the species is derived from '*occultus*' (Latin) i.e. hidden or concealed.

Distribution : North Eastern India.

Remarks : The diversity of Gerromorphan families of semi-aquatic bugs comprise many unusual life forms that are most successful group of insect living upon the surface of water (Andersen, 1982). No other group of insects of comparable size in terms of number of species

shows such a remarkable diversity in habitat preferences. Out of this, Microveliinae species contains a number of small to very small water striders inhabiting a wide variety of water types, of which a few are cryptic (Polhemus, 1974). *Aquulavelia occulta* sp. nov. is one such from that lives in a cryptic habitat.

CHECKLIST OF MICROVELIINAE KNOWN FROM INDIA

Family : VELIIDAE

Subfamily : MICROVELIINAE

<i>Aquulavelia occulta</i> gen-nov. sp. nov.	Distribution : Arunachal Pradesh
<i>Aquulavelia</i> sp. Polhemus*	Distribution : Madhya Pradesh
<i>Baptisa angulata</i> Andersen 1989.	Distribution : Karnataka
<i>Microvelia (Microvelia) annandalei</i> Distant, 1909	Distribution : Tamilnadu West Bengal
<i>Microvelia atromaculata</i> Paiva, 1919	Distribution : Meghalaya
<i>Microvelia (Microvelia) diluta</i> Distant, 1909	Distribution : Bihar Delhi Maharashtra Meghalaya Orissa Tamilnadu West Bengal
<i>Microvelia (Microvelia) douglasi douglasi</i> Scott, 1874 (<i>Microvelia repentina</i> Distant, 1903) (<i>M. kumaonensis</i> Distant, 1909)	Distribution : Arunachal Pradesh Kerala Orissa Tamilnadu Uttar Pradesh
<i>Microvelia (Microvelia) javadiensis</i> , Thirumalai, 1989	Distribution : Tamilnadu
<i>Microvelia (Microvelia) santala</i> Hafiz & Ribeiro, 1939	Distribution : Bihar Tamilnadu
<i>Microvelia lineatipes</i> Paiva, 1919	Distribution : Meghalaya
<i>Nealardus typicus</i> (Distant), 1912	Distribution : Andaman Islands
<i>Pseudovelina (Pseudovelina) sexualis</i> (Paiva), 1917	Distribution : Assam Karnataka

* Polhemus, Personal Communication

SUMMARY

Aquulavelia occulta gen. nov. sp. nov. is described from a cryptic habitat in North Eastern India. A checklist of the species of the subfamily Microveliinae so far known from India is also provided.

ACKNOWLEDGEMENTS

Thanks are due to the Director, Zoological Survey of India, Calcutta and to the Officer-in-charge, Southern Regional Station, Zoological Survey of India, Chennai for the facilities provided. The help of Dr. J.T. Polhemus, Englewood, USA for sending *Nealadrus typicus* specimens, confirming the new genus and reviewing the manuscript is gratefully acknowledged. Thanks are also due to Dr. P.T. Cherian, Scientist SF, Zoological Survey of India, Southern Regional Station, Chennai for going through the manuscript.

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