AN APPEAL

In order to enrich the *"National Zoological Collection"* (NZC) and to up date information on the occurrence and distribution of animal species in India Scientists/Naturalists and researchers working on animal taxonomy/systematics are requested to deposit their identified specimens to the Zoological Survey of India at the following address :

Officer-in-Charge, Identification and Advisory Section,
Zoological Survey of India, M-Block, New Alipore,
Kolkata-700 053.

These specimens will be registered and their data will be computerised. *They are further requested to deposit their type collection positively to ZSI and use the Registration number in their publication of the new taxon.*

Dr. K. VENKATARAMAN
Director
Zoological Survey of India

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TWO NEW SPECIES *HYDROVATUS SRINGERIENSIS* AND *COPELATUS WAYANADENSIS* (COLEOPTERA : DYTISCIDAE) FROM WESTERN GHATS OF SOUTH INDIA

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INTRODUCTION

The genus *Hydrovatus* was introduced by Motschulsky (1853), with type species *Hyphydrus cuspidatus* Kunze. It comprises about 50% of the species known from the African contient. Another closely related genus *Queda* occurs in South America. Later, the genus *Hydrovatus* was divided into 2 subgenera *Hydrovatus S. str* and *Vathydrus* depending on the appearance of the frontal part of head margined, not margined or frontal margin reduced (Guignot, 1954 & 1956). Guignot (1959) separated 7 sub groups of the sub genus *Vathydrus* on the basis of body size, colour pattern and elytral microsculpture. Oomer Cooper (1963 & 1965) divided the genus into two main groups on the basis of body length. Bistrom (1996) described the genus *Hydrovatus* and he reported 202 species under 15 species groups, in which 37 new species and new synonymies to 104 species were noted. Nilsson (2001) has stated that the genus *Hydatonychus* Kolb, *Oxynoptilis* Schaum, *Vathydrus* Guignot are synonyms of *Hydrovatus*. Subfamily Copelatinae was mentioned as a tribe of Colymbetidae with type genus *Copelatus* (Branden, 1885). Vazirani (1970a) treated Copelatini as a tribe under subfamily Colymbetinae. Miller (2001) raised it to subfamily in which a single tribe Copelatini that has 4 genera *Agaporomorphus*, *Aglymbus*, *Copelatus* (subgenus : *Copelatus* and *Papuadytes*) and *Lacconectus*. Erichson (1832) reported the genus *Copelatus* with type species *Dytiscus posticatus* Fabricius. Gueorguiev (1968) gave a modern description of the genus *Copelatus*. Vazirani (1970b & 1973) has reported only *Copelatus*, as having longitudinal rows of striae on elytra, under which 5 species *C. bangalorensis*, *C. assamensis*, *C. ceylonicus*, *C. mysorensis* and *C. neelumae* were described and 10 species were redescribed, with a key to 3 groups *Haemorrhoides*, *Irinus* and *Duodecistriatus*. Balke (1998) has reported a new subgenus *Papuadytes* under the genus *Copelatus* and he described 31 new species with illustrations and species ecology was summarized. The genus *Copelatus* has 468 species examined from Australia, Africa, Nearctic, Neo-tropical, Oriental and Palearctic regions. The subfamily Copelatinae comprises about 540 species (Nilsson, 2001). The present study adds one more species in the genus *Hydrovatus* and *Copelatus* which is delineated from rest of the species of pustulatus and Irinus group by the structure of male genitalia respectively.

MATERIALS AND METHODS

Hydradephagan beetles were collected from ponds, puddles, rivers and streams from Western Ghats of South India. The D-net (300X 400X 330 mm) with a mesh size of 0.5 mm was used for collection. The preserved specimen is observed under compound microscope, Trinocular stereozoom microscope and camera lucida along with eye piece 10X and objective 10X used for morphological illustrations. The Holotype species were deposited in Southern Regional Station, Zoological Survey of India, Chennai.

Hydrovatus sringeriensis *sp. nov.*

Diagnostic characters : Length 2.8 mm; breadth 1.8 mm; Form : oval, convex and slightly acuminate posteriorly (Fig. 1 & 7). Head testaceous; clypeus feebly raised anteriorly and rebordered; puctures fine, sparse irregular and more close along the inner margin of eyes;

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reticulation fine, distinct, polygonal and simple; antenna 3-10 segments distinctly enlarged. Pronotum testaceous, anterior and posterior border black in the middle, side narrowly rebordered, almost straight, a transverse line along the anterior margin; punctures large, uniformly dense and impuncture area narrowly on the anterior margin in transverse but irregular on the disc; reticulation fine and indistinct. Elytra black with testaceous marking as under : lateral marginal lines extending inwards (i) subbasally (ii) post medially (iii) near the apex, all the three irregular in shape and not approaching the suture, sublateral carina from median to apices; punctures large rather sparse and irregular; reticulation fine, polygonal meshes not well impressed; apices acuminate. Ventral side testaceous without any stridulatory files on the sternum; punctures large, distinct and moderately dense on metacoxal plate aned abdominal sternites; reticulation indistinct; prosternal process broadened at the apex. Proleg testaceous, coxa with sparse punctures; femur dorsally with a row of sparse spines, ventrally with a row of spines on the posterior half and three setae anteriorly; tibia dorsally with a row of swimming hairs and sparse spinulae, ventrally a row of spines, distally with 5 long spurs; first three segments of tarsi with sucker palettes underneath in male, fourth segment reduced, fifth segment with sparse spines, claws equal (Fig. 4). Mesoleg testaceous, coxa with sparse punctures; femur with short setae on dorsal side and three long spines ventrally; tibia and tarsi similar to proleg (Fig. 5). Metaleg testaceous; femur smooth; both sides of tibia with sparse spines, distally one long and four small spurs; tarsi five segmented, each segment with a pair of distal spines on either side, ventrally a row of swimming haris, claws equal (Fig. 6). Male genitalia median lobe moderately curved quite narrow, very much narrowed in the apical 1/3rd and pointed forward (Fig. 2 & 8). Lateral lobe broadened at base and narrowed towards rounded apex without any hook (Fig. 3 & 9).

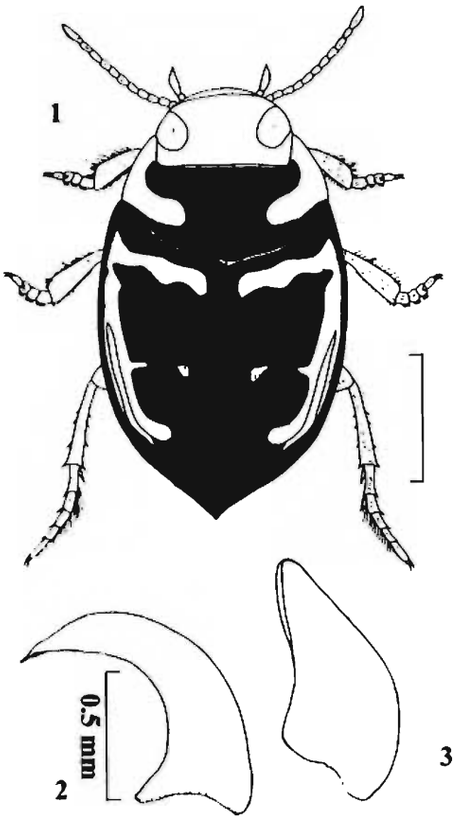
Holotype : Male, Allotype : Female, Paratype, 19 ex., India : Karnataka, Agumbe, 24.xii.2003, 9 ex, Collection. J. Issaque Madani & D. Manivannan, Register No. 1/CL/8, dated, 24.5.2006, ZSI, Chennai.

Etymology : The species name *sringeriensis* is derived from the name of collection place.

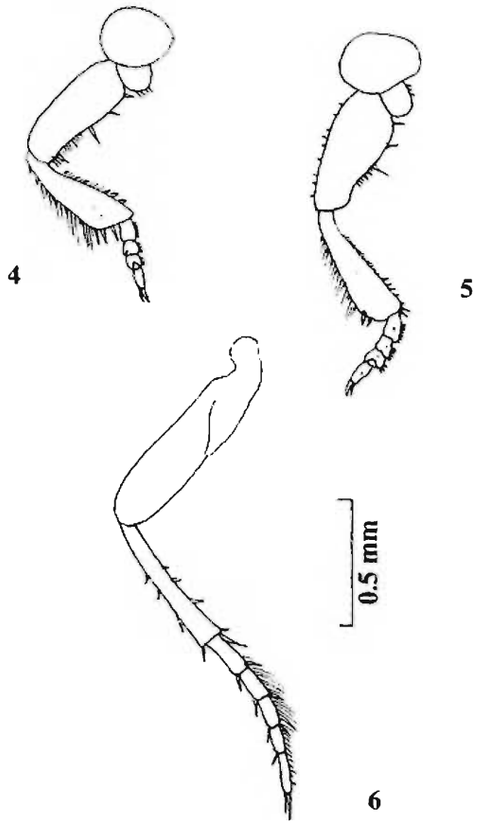
Copelatus wayanadensis *sp. nov.*

Diagnostic characters : Length 4.2 mm; breadth 2.0 mm; Form oblong, slightly convex dorsally (Fig. 10 & 16). Head brownish black; clypeus raised anteriorly and not emarginated; punctures fine, sparse and separated about 3-4 times of its own diameter; a transverse cervical stria at the posterior margin of the eyes, reticulation fine distinct with hexagonal meshes. Pronotum brownish black; a row of punctures only along the anterior margin; punctures fine, sparse and separated by about 3-4 times of its own diameter; sides moderately curved; reticulation fine, distinct and hexagonal meshes; lateral anterior margin with spinulae; anterior margin, posterior margin and both sides pale testaceous. Elytra black, lateral margin testaceous; 6 dorsal stria abridged at base (i) 1 and 2 not abridged at the apex (ii) 3-6 stria abridged at the apex, submarginal stria absent; punctures fine, sparse and irregularly distributed; reticulation fine, distinct, hexagonal meshes; sutural stria present; apices not acuminate; epipleura without oblique cavity. Ventral side brownish black, pale testaceous at the margin; punctures fine, sparse on metacoxal plate and abdominal sternites; reticulation fine, hexagonal meshes; striation on metacoxal plate and abdominal sternites; a row of stridulatory files on the margin of mesocoxal cavities; prosternal process lanceolate. Proleg testacous; coxa and trochanter almost smooth; femur with a row of spinulae at the anterior margin as posterior margin has a row of spinulae and sparse swimming haris; tibia with a row of spines at the anterior margin and a row of weak spines on posterior margin, with 4-5 distal spurs; tarsi 5-segmented, first 3 segments fringed with 4 rows of sucker palettes, 4th and 5th segments with sparse spinulae; claws equal (Fig. 13). Mesoleg testaceous;p coxa and trochanter smooth; femur with a row of spines on the posterior margin, innerface (facing abdomen) with more spines distributed irregularly; a row of spines and swimming hairs at the anterior margin only a row of spines on posterior margin of tibia with 4-5 distal spurs and small spines; tarsi similar to proleg (Fig. 14). Metaleg testaceous; femur smooth; tibia with a row of strong spines on both sides and sublaterally, with 2 long and 2 small distal spurs with a row of bifid spines; each segment of tarsus fringed with a row of spines on posterior margin and single distal spur on each side and also a row of sublateral spines; claws equal (Fig. 15). Male genitalia median lobe broadened at base, narrowed and 1/3rd of the apex curved and acuminate towards the rounded apex (Fig. 11 & 17). Lateral lobe broadened at base, somewhat triangular in shape, apex with a bulb-like structure, behind the apex with a row of ciliae (Fig. 12 & 18).

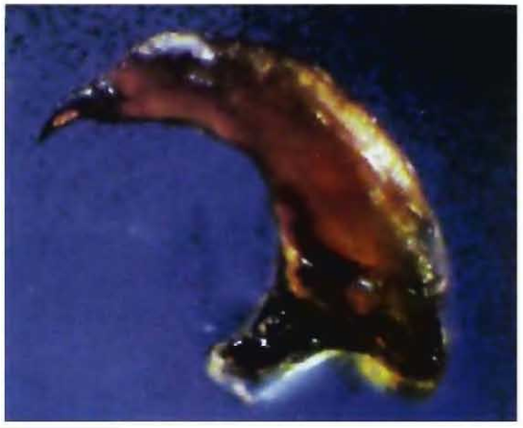
Holotype : Male, India : Kerala, 1 ex, Panamaram, 10.iii.2004, Collection. J. Issaque Madani & D.



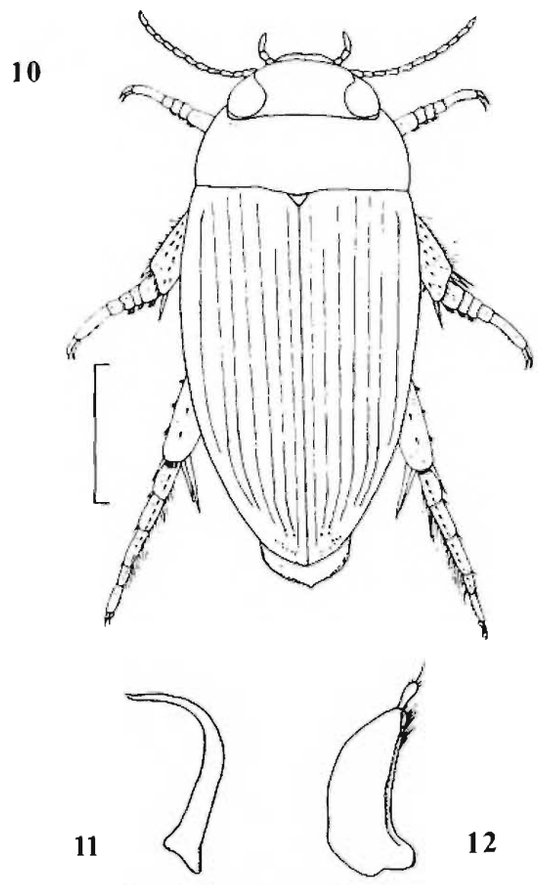
Figs. 1-3. *Hydrovatus sringeriensis* sp. nov. Male : 1. Entire; 2. Median lobe (Penis) lateral aspect; 3. Lateral lobe (Parameres).



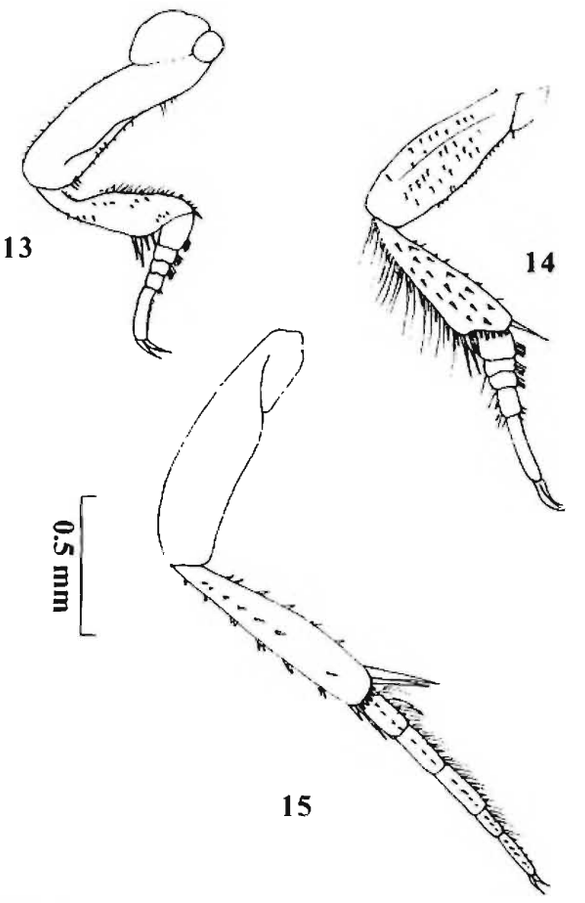
Figs. 4-6. *Hydrovatus sringeriensis* sp.nov. 4. Posterior face of proleg; 5. mesoleg; 6. metaleg.



Figs. 7-9. *Hydrovatus sringeriensis* sp. nov. Male : 7. Entire; 8. Median lobe (Penis) lateral aspect; 9. Lateral lobe (Parameres).



Figs. 10-12. *Copelatus wayanadensis* sp. nov. Male : 10. Entire; 11. Median lobe (Penis) lateral aspect; 12. Lateral lobe (Parameres).



Figs. 13-15. *Copelatus wayanadensis* sp. nov. 13. Posterior face of proleg; 14. mesoleg; 15. metaleg.

Figs. 16-18. *Copelatus wayanadensis* sp. nov. Male : 16. Entire; 17. Median lobe (Penis) lateral aspect; 18. Lateral lobe (Parameres).

Manivannan, Register No. I/CL/10, dated, 24.5.2006, ZSI, Chennai.

Etymology : The species name *wayanadensis* is derived from the name of collection place.

DISCUSSION

Hydrovatini Sharp 1882 is suggested as a group of Hydroporides with type genus *Hydrovatus* and it is allowed the new status by Zimmermann (1919). Later, Larson *et al.*, (2000) described the genus *Hydrovatus*. Vazirani (1970c) redescribed 14 species of *Hydrovatus*, Queda is not reported so far in oriental region. Bistrom (1996) divided the genus into 15 species groups based on character analysis of 202 species. *Hydrovatus sringeriensis* is close to *H. cardoni* in having distinct elytral marking with reticulation not well impressed but it is distinguished by the three elytral markings not approaching the suture and punctures large moderately dense on the metacoxal plates. But it is also close to *H. platycornis in* having 3-10 antennal segments distinctly enlarged. It differs in distinct colour pattern on elytra and punctures large rather moderately dense and irregular. Pronotal moderately dense uniformly, wihtout narrow impuncture area discally and also the median lobe of male genitalia moderately curved quite narrow, very much narrowed in the apical 1/3rd and pointed forward.

Copelatini is represented by a single genus *Copelatus* India. (Vazirani, 1970b). *Copelatus* in India it has 15 representative spp. spread over three groups namely *Haemorroidalis, Irinus* and *Duodecimstriatus*. *C. wayanadensis* belongs to *Irinus* group. The prescence of elytra with six striae and submarginal striae is the key character of *Irinus* group. *C.wayanadensis* differs drom *C. crytarchoides* by the character of posterior row of punctures lack on pronotum and the median lobe of male genitalia broadened at base, narrowed and 1/3rd of the apex curved and acuminate towards the rounded apex. Vazirani (1970b) deals with 52 species belonging to 9 genera of Colymbetinae from India, except the genus *Copelatus,* no other genus is so far reported from Southern India. Various field collections in a number of localities of Western Ghats were under taken and it is found that *Copelatus* occurs in Wayanad region of Kerala, India besides *Rhantus* which also occurs in Western Ghats collections. It seems that colymbetine and copelatine beetles prefer higher altitude rather than plains. Further field studies are expected to throw more light on this aspect.

SUMMARY

Two new species *Hydrovatus spingeriensis* and *Copelatus wayanadensis* is described from Western ghats of South India. *H. sringeriensis* differs from other species of pustulatus group in the structure of median lobe (Penis), 3 elytral markings, and 3-10 antennal segments enlarged. *C. wayanadensis* belongs to Irinus group which differs from *C. crytarchoides* in the structure of median lobe broadened at base, narrowed and 1/3rd of the apex curved and acuminate towards the apex. Suitable diagrams are provided for identification.

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