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A NEW SUBFAMILY, GENUS AND SPECIES OF SCORPION (ARACHNIDA : SCORPIONIDA) FROM KERALA

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INTRODUCTION

Scorpion fauna of India consists of 5 families, 18 genera and 102 species. There is no separate compilation on state wise fauna yet, but stray reports are available after the Fauna of India : Scorpions by Tikader and Bastawade (1983). The scorpion fauna of Kerala state has recently been studied and reported to constitute 3 families, 7 genera and 16 species (Bastawade *et al.*, 2004). While studying the above collection we came across an interesting specimen belonging to the family Scorpionidae which was not fitting into the only known subfamily Scorpioninae and genus *Heterometrus* from Kerala state and India as a whole. Our studies thus propose to describe a new subfamily, Rugodentinae with the type genus *Rugodentus* gen.nov. and the type species *Rugodentus keralaensis* sp.nov. to the science of Indian scorpology. The present communication deals with the full description, illustrations and photograph of the specimen on which the investigations are based.

Subfamily RUGODENTINAE nov.

Characters : Pedipalp fingers with rugously granular dentition spread over in a band along the interior surface (Fig. 2); prosoma weakly incised in the anterior median margin, prosomal and mesosomal tergites I–VI finely and evenly granular on lateral portion. Metasomal segments short and strongly carinated, carinae granular; telson with shorter vesicle, coarsely granular on ventral portion, aculeus stout, broad at base, not much acutely pointed. Lateral margins of metatarsi of legs I–IV each partially overlapping base of the claw.

Type genus : *Rugodentus* gen. nov.

Distribution : Kerala, India.

Etymology : The genus is named on the basis of rugous nature of dentition on fingers of pedipalps, gender masculine.

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Rugodentus gen. nov.

Characters : Pedipalp segments not flat dorsoventrally, but robust and globular, patella without basal process on inner margins, granular on inner portion; manus smooth, globular on dorsal portion, only one smooth external carina developed, fingers short, with inner basal, dorsal and external obsolete carinae, dentition arranged in a band of rugously granular zone without marked triangular outer or inner lateral teeth; trichobothridia of 'C' type.

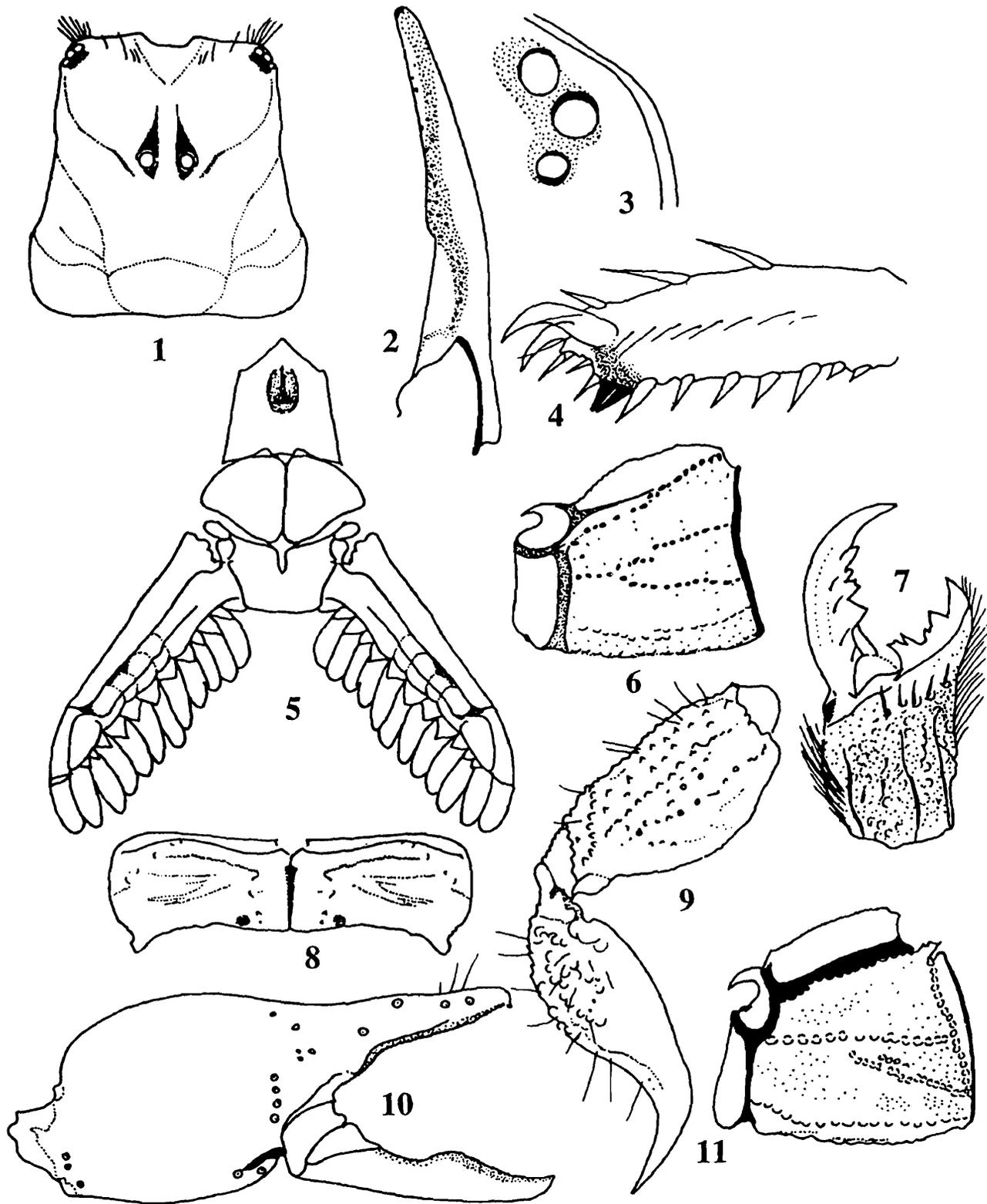
Rugodentus keralaensis sp. nov.

(Figs. 1-16, photo 1)

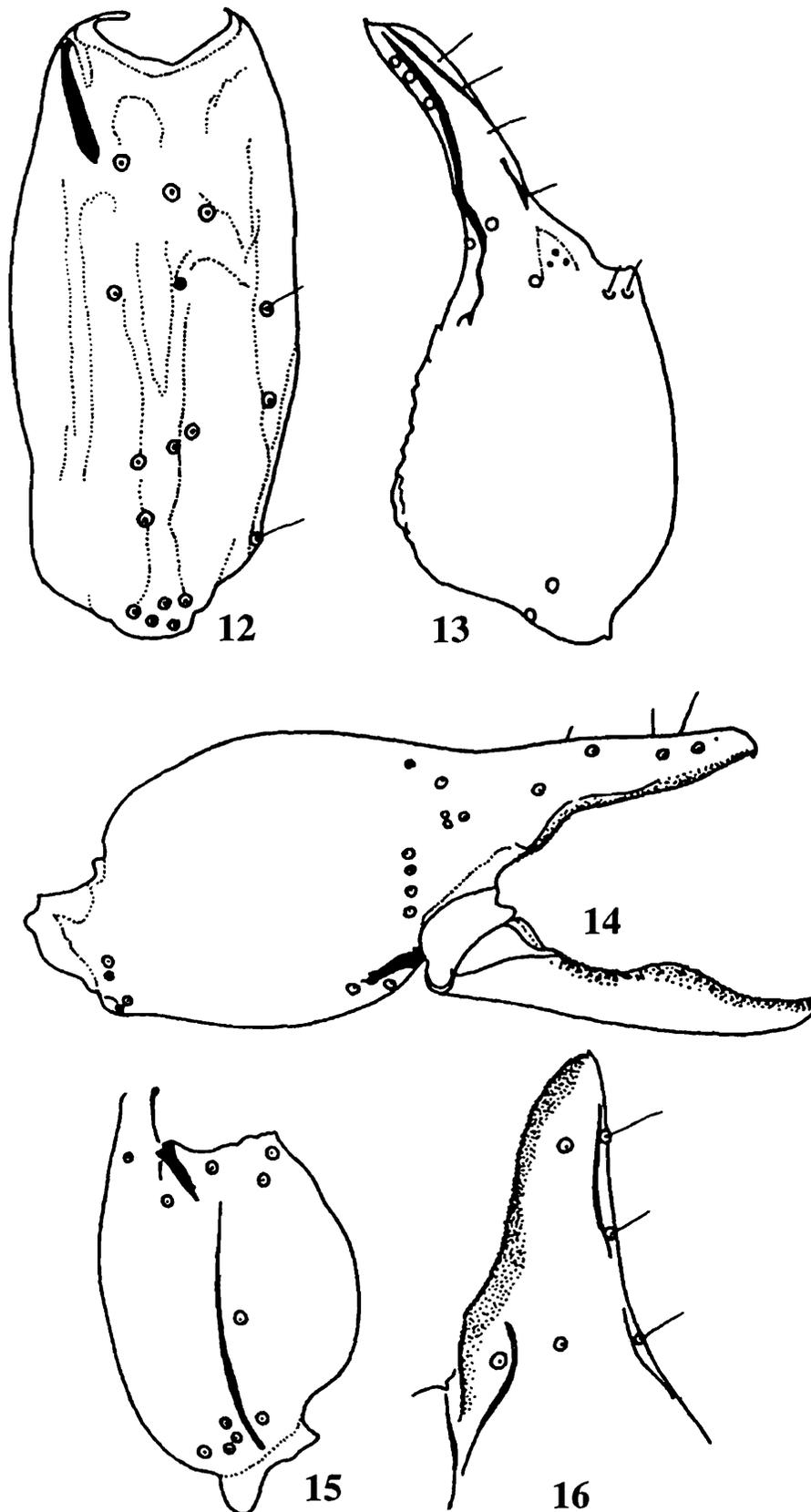
General : Male of medium size, body finely granular on lateral portions of prosoma and mesosomal tegites I–VII, blackish in color except reddish on pedipalp manus. Metasomal segments short, robust, strongly carinated; telson globular, granular on ventral portion with a minute sub-ocular granule, aculeus stout, as long as vesicular length. Legs granular on femur, light in color dorsally; metatarsi with lateral distal margin partially overlapping on claw base. Cephalothoracic sternum pentagonal, pectines well developed with 12/12 teeth.

Measurements (in mm) : Total length 40.75, prosoma 7.50 long, 5.50 anterior width, 7.00 posterior width; mesosoma 13.50 long; metasoma 19.75.

Prosoma (Cephalothorax) : Slightly longer than wide, smooth on middle portion but finely and closely granular on mid-lateral portions, margins smooth, anterior margin weakly raised on middle portion, lateral margin with a notch on anterior portion and finely granular, a pair of median eyes situated anteriorly in the ratio 1 : 1.5 (Fig. 1); three pairs of lateral eyes contiguously placed on smooth, obsolete tubercles (Fig. 3); posterior lateral furrow distinct and more shallow, median furrow deep posteriorly but indistinct around median eyes, continued anterior margin through deep median furrow into median incision. Median ocular tubercle smooth, continued anteriorly into smooth superciliary crest. Chelicerae smooth on basal segment, yellowish with black reticulation, darker on anterior portion, armed with 2 longer and 2 shorter setae dorsally; a tuft of setae covers the ventral portion. Fingers darker on outer portion, movable finger with a reduced dorso-distal fang forming a distal tooth (Fig. 7), anterior ventral margin smooth, ventral fang pointed and curved; immovable finger short with five flat teeth in row, proximal three in a group and distal placed separately distal being more robust (Fig. 7). Pedipalps comparatively stout but not much strong; reddish brown on manus and fingers; femur shorter than carapace, carinated, external carinae granular and distinct than interior, exterior surface tuberculately granular; patella longer than femur but shorter than carapace, smoother, carinae obsolete on external portion but interiors weakly and sparsely granular, exterior surface flat smooth except two groups of granules at the middle portion; carinated exterior-dorsal and inferior granular but inferior carinae smooth and obsolete; manus almost as long as wide, entirely smooth on dorsal surface, weakly and sparsely granular on inner portion, carinae (Fig. 10) smooth and obsolete, immovable finger shorter than under hand length, carinated but smooth, inner margin scalloped at the base and lined with irregularly spread granular



Figs. 1-11. *Rugodentus keralaensis* gen. et sp. nov. Male. 1. Dorsal aspects of cephalothorax (Carapace); 2. Dorsal aspects of movable finger of pedipalp; 3. Lateral aspects of cephalothorax showing lateral eyes; 4. Lateral (outer) aspects of tarsus showing ventral spination and lateral distal margin partly overlapping the base; 5. Ventral aspects of cephalothoracic sternum, genital operculum and pectines; 6. Lateral aspects of metasomal segment I showing different carinal positions; 7. Ventral aspects of chelicera showing dentition on both fingers and spination on basal segment; 8. Dorsal aspects of mesosomal tergite showing carinae; 9. Lateral aspects of metasomal segment V and telson showing carination and granulation; 10. Lateral aspects of pedipalp manus and fingers showing details; 11. Lateral aspects of metasomal segment II showing carination.



Figs. 12-16. *Rugodentus keralaensis* gen. et sp. nov. Male. 12. Exterior aspects of patella of pedipalp showing arrangement of trichobothridia; 13. Dorsal aspects of manus and immovable finger of pedipalp showing trichobothridia; 14. Lateral aspects of manus and both fingers of pedipalp showing arrangement of trichobothridia; 15. ventral aspects of manus of pedipalp showing arrangement of trichobothridia; 16. Interior aspects of immovable finger of pedipalp showing trichobothridia.

teeth in a band (Fig. 16); movable finger longer than carapace, carinated but obsolete, inner surface with a band of granular dentition, scalloped deeply at the base (Fig. 2). Trichobothridial pattern of 'C' type, with a change in position of placements (Figs. 12-16).

Legs I–IV thickly but finely granular on each femora and patella, more granular external surface, femur with granular carinae but carinae smooth or weakly granular on patellae, tibiae, metatarsi and tarsi smooth, metatarsi each with a distal moderate pedal spur and a pair of sub-distal spines and few spines on inner surface (Fig. 4), tarsi each with a pair of spined rows, and spine formula on I–IV 9/5 9/5, 9/5 9/5, 9/6 9/6, 9/6 9/6. Cephalothoracic sternum pentagonal with deep notch in the middle and a central longitudinal furrow on posterior median surface; genital operculum wider than long, a pair of operculi divided on middle portion (Fig. 5), a pair of male genital papillae seen under operculi; pectines 3.5 times longer than wide, lamillae divided, middle lamillae weakly divided, 11 fulcra, sub triangular between the bases of 12 pectinal teeth. Basal piece sub rectangular, deeply notched on anterior median portion (Fig. 5).

Mesosoma : Tergites I–VI thickly but finely granular throughout, each tergite provided with a weak, median somewhat obsolete carina, each tergite also possesses with a pair of larger obsolete granules at lateral carinal position on posterior margins (Fig. 8); pretergal portion almost smooth, tergite VII granular with two pairs of lateral granular carinae, median carinae weak, traceable only on anterior portion. Sternites III–VI entirely smooth, each provided with a pair of slit like book-lungs. Sternite VII finely granular on lateral portion with weakly crenulate lateral posterior margin, provided with 2 pairs of sub lateral and sub-median smooth but distinct carinae.

Metasoma : Slightly more than 2.5 times as long as prosoma, all segments strongly carinated, segment I wider than long, with eight carinae, dorsal granular weakly tuberculate on posterior end, superior lateral and lateral granular and lateral carinae anteriorly shift upward and merge into dorso lateral, forming a triangle with posterior margin (Fig. 6); Inferior lateral and inferior carinae smooth, segment II & III same in length, wider than long, with dorsal carinae granular, slightly raised posterior and more spiniform on II, dorsolaterals also granular and tuberculate on posterior end, laterals short, represented as granular on posterior 1/2 to 1/3 portions respectively, inferior lateral and inferiors weakly granular (Fig. 11). Segment IV as long as wide, carinated all carinae granular, dorsals tuberculate posteriorly, laterals represent on 1/3 posterior portion. Segment V shorter than prosoma, but almost as long as pedipalp femur; carinated, dorsal sparsely granular, dorsolateral present 1/2 anterior portion, sparsely granular, laterals absent, inferior lateral strongly granular and tuberculate on posterior portion; single inferior median granular, ending 1/3 portion before the granular posterior margin, a typical granular transverse sub-marginal ridge present only on inferior portion and also setose. Telson as long as carapace, vesicle longer than segment IV but shorter than V, less than as wide and deep as segment V, strongly granular on ventral surface, with a median and 2 pairs of submedian sparsely granular rows, median row tuberculate at the base of aculeus, setose ventrally (Fig. 9), aculeus almost as long as half the vesicular length, not much bent but sharply pointed (Fig. 9).

Type specimen : Holotype, male (in spirit).

Type locality : INDIA : Kerala : Ernakulam district, Kodanad, Mallana Reserve forest, 12.ii.1999, coll. P. M. Sureshan. (Reg. No. 11002).

Etymology : The species is named after the state name of type locality.

Discussion : *Rugodentus keralaensis* is described as a new species under a new genus and a new subfamily on the basis of the peculiar granular dentition on pedipalp fingers, which is apparently unknown in the known subfamily Scorpioninae. None of the Indian species show such character. Based on the pedipalp character, a new subfamily Rugodentinae is described with the new type genus *Rugodentus*. The genus has been designated based on a new type species *Rugodentus keralaensis*.

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