

A new orthoclad species of *Rheocricotopus* Thienemann & Harnisch (Diptera, Chironomidae) from the Darjeeling–Sikkim Himalayas in India

N. Hazra & P. K. Chaudhuri

Hazra, N. & Chaudhuri, P. K., 2004. A new orthoclad species of *Rheocricotopus* Thienemann & Harnisch (Diptera, Chironomidae) from the Darjeeling–Sikkim Himalayas in India. *Animal Biodiversity and Conservation*, 27.2: 1–4.

Abstract

A new orthoclad species of *Rheocricotopus* Thienemann & Harnisch (Diptera, Chironomidae) from the Darjeeling–Sikkim Himalayas in India.— The adults and pupa of a new species, *Rheocricotopus rarispina* are described from the Darjeeling–Sikkim Himalayas in India. The species is distinguished by the few spines on the thoracic horn, anal lobe without fringe and bristle-like L setae and presence of ovoid humeral pit, nine squamal setae, structure of anal point and triangular and subterminal crista dorsalis in the adult male. With this new species, the number of Indian species of the genus rises to six.

Key words: Chironomidae, New species, Tiger Hill, Darjeeling, India.

Resumen

Una nueva especie de ortocladino de *Rheocricotopus* Thienemann & Harnisch (Diptera, Chironomidae) de Darjeeling–Sikkim, en el Himalaya indio.— En este trabajo se describen los ejemplares adultos y las crisálidas de una nueva especie, *Rheocricotopus rarispina*, procedente de Darjeeling–Sikkim, en el Himalaya indio. Dicha especie se identifica por la existencia de algunas espinas en el cuerno torácico, el lóbulo anal sin franja y sin setas parecidas a cerdas en forma de L, la presencia de una cavidad humeral ovoide, nueve setas escamosas, la estructura de la cresta anal y cresta dorsal triangular y subterminal en el macho adulto. Con ésta, el número de especies de origen indio del género asciende ya a seis.

Palabras clave: Chironomidae, Nueva especie, Tiger Hill, Darjeeling, India.

(Received: 9 IV 03; Conditional acceptance: 5 VI 03; Final acceptance: 17 VII 03)

Niladri Hazra & P. K. Chaudhuri, Dept. of Zoology, Univ. of Burdwan, Burdwan 713 104, India.

Introduction

Rheocricotopus Thienemann & Harnisch is one of the best known orthoclad genera, established by Thienemann & Harnisch (1932) on the basis of pupa (Sæther, 1985).

Five species of the genus are recorded in India (Chaudhuri et al., 2001), but their biology remains unknown except *R. valgus* Chaudhuri & Sinharay (1983) of which some aspects of its ecology are studied by Hazra et al. (1998).

Following investigation of the chironomid fauna in the Darjeeling–Sikkim Himalayas in India, two pupae and one male adult were identified as a new member of *Rheocricotopus* Thienemann & Harnisch.

Descriptions and terminologies of the pupa and the adult are made after Langton (1991) and (Sæther, 1985).

Material and methods

Types are deposited in the National Zoological Collections (NZC), Calcutta, and will be forwarded to the Natural History Museum (BMNH), London.

Results

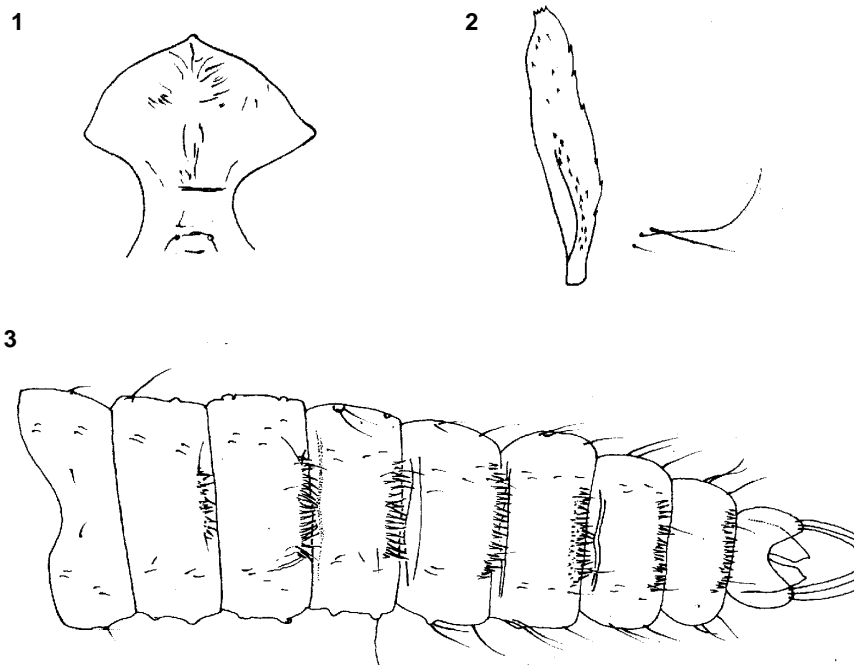
Rheocricotopus (Psilocricotopus) rarispina n. sp. (figs. 1–6)

Pupa ($n = 2$)

Pale brown. Total length 3.95 mm.

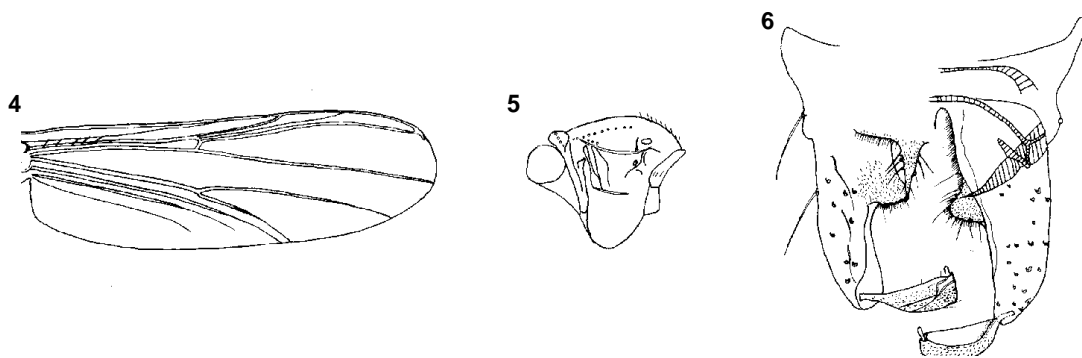
Cephalothorax: frontal seta weak, short 41 μ m long on prefrons (fig. 1). Antennal sheath 960 μ m long. Ocular field without any Postorbital (Po) seta. Median anteprepronotals 185 μ m and 100 μ m long, lateral anteprepronotal 100 μ m long, other one small peg-like. Thoracic horn (fig. 2) 315 μ m long, club-shaped, anterior end serrate, covered by sparse spinules. Thoracic horn ratio (Thr) 5.25; precorneal setae 3 (fig. 2); anterior seta fine, 90 μ m long, median one stouter, prominent 189 μ m long; posterior one fine, minute 41 μ m long, all arranged in triangular fashion. Of 4 dorsocentrals (Dc) only Dc₃ and Dc₄ grouped together; length of Dc₁ 78, Dc₂ 41, Dc₃ 26 and Dc₄ 59; distance between Dc₁ and Dc₂ 89, between Dc₂ and Dc₃ 52, and between Dc₃ and Dc₄, 15. Prealar seta 1,37 μ m long.

Abdomen (fig. 3): tergite I without shagreen; tergites II–V with few shagreen; tergites VI–VIII with extensive shagreen; tergite IX with antero-



Figs. 1–3. Pupa of *Rheocricotopus (Psilocricotopus) rarispina* n. sp.: 1. Cephalic area; 2. Thoracic horn and precorneals; 3. Tergites of pupa.

Figs. 1–3. Pupa de *Rheocricotopus (Psilocricotopus) rarispina* sp. n.: 1. Región cefálica; 2. Cuerno torácico y precorneal; 3. Terguito de la pupa.



Figs. 4–6. Adult male of *Rheocricotopus (Psilocricotopus) rarispina* n. sp.: 4. Wing; 5. Thorax; 6. Hypopygium.

Figs. 4–6. Macho adulto de *Rheocricotopus (Psilocricotopus) rarispina* sp. n.: 4. Ala; 5. Tórax; 6. Hypopigium.

median shagreen. Pedes spurii A on sternite VI; pedes spurii B absent. Tergite II with rows of 24 hooklets. Number of caudal spines on tergites III–VII as: 18, 22, 24, 26, 25, 25; maximal length of caudal spines on tergites III–VIII as: 67, 70, 52, 52, 45, 45. Number of caudal spines on sternites V–VII as: 20, 18, 17; maximal length of caudal spines on sternites V–VII as: 34, 32, 18. Lateral (L) setae hair like on segments I–VIII as: 2, 3, 3, 3, 3, 3, 3. Anal lobe elongated, fusiform 300 μ long and 300 μ wide without any fringe; anal macrosetae subequal, apically hooked, 270 μ long. Genital sac 330 μ long and 225 μ wide; Anal lobe ratio (ALR) 2.00, G/F 1.10.

Male imago ($n = 2$)

Total length 3.75 mm; wing length 1.96 mm; total length/wing length 1.91; wing length/length of profemur 2.20.

Head: antennal ratio (AR) 0.93, ultimate

flagellomere 389 μ long. Temporal setae 2 including Inner vertical (IV) 0, Outer vertical (OV) 2 and Postorbital 0. Clypeus roughly with 14 setae. Maxillary palp brown, length of palpomeres (I–V): 35, 60, 156, 180, 345; third palpal segment with 3 short sensilla clavata. Cibarial pump 495 μ long. Tentorium 195 μ long and 30 μ wide. Head–antennal ratio (CA) 0.55, Head–palpal ratio (CP) 0.75.

Thorax (fig. 4): anteprenotum with 3 lateral anteprenotals; humeral pit large, oval in shape; acrostichals 9; dorsocentrals 10, uniserial; prealars 3; scutellum with 8 setae, uniserial.

Wing (fig. 5): venarum ratio (VR) 1.03, costal ratio (CR) 0.96; brachiolum with 1 seta; anal lobe absent; squama with 9 setae; R_{2+3} ending midway between the ends of R and R_{4+5} , Cu_1 straight and ending distal to Fcu; R with 5 setae; costal extension 44 μ long; sensilla campaniformia 20.

Table 1. Length and proportion of leg segments: LR. Leg ratio; BV. Beiverhältnisse; SV. Schenkel-Schiene-Verhältnis; BR. Bristle ratio.

Tabla 1. Longitud y proporción de los segmentos de la pata: LR. Proporción de la pata; BV. Beiverhältnisse; SV. Schenkel-Schiene-Verhältnis; BR. Proporción de la cerda.

	Length segment							LR	BV	SV	BR
	fe	ti	ta ₁	ta ₂	ta ₃	ta ₄	ta ₅				
p ₁	888	1017	777	444	333	240	92	0.76	2.41	2.86	2.95
p ₂	814	814	462	222	148	74	74	0.57	4.03	5.5	2.7
p ₃	851	1017	592	296	222	111	96	0.58	3.39	4.35	3.6

Legs (table 1): the spur of fore tibia 44 μm long, spurs of mid tibia 18 μm and 11 μm long, of hind tibia 48 μm and 26 μm long; width at apex of fore tibia 42 μm , of mid tibia 41 μm and of hind tibia 55 μm long; hind tibial comb with 12 setae, longest seta being 52 μm long and shortest seta 22 μm long; pseudospurs absent from all the legs.

Hypopygium (fig. 6): Anal point tapering to a sclerotized point, 48 μm in length with 4 lateral setae on each side; tergite IX with 1 seta, laterosternite with 1 seta on each side; gonocoxite 226 μm long, inferior volsella prominent, triangular, slightly curved at the tip, setose; distance between two legs of lateral sternapodeme base is 133; phallapodeme 44 μm long, coxapodeme 48 μm ; virga absent; gonostylus 85 μm long, crista dorsalis triangular and subterminal, megaseta 11 μm long. Hypopygium ratio (HR) 2.65, Hypopygium value (HV) 4.41.

Holotype: σ with pupa (reared) (type no. B.U. Ent. 249), West Bengal, Tiger Hill (Darjeeling), 06 III 1996, Coll. N. Hazra.

Paratype: σ with pupa (reared) data same as holotype; Sikkim: Selep, 08 III 1996, Coll. S. K. Pradhan.

Discussion

The name "*rarispinga*" has been proposed due to presence of a few spinules on the thoracic horn of pupa of this new species.

The adult and pupa appear to closely resemble *Rheocricotopus (Psilocricotopus) tirolus* Lehmann (1969) in absence of anal fringe and G/F, but it is distinguished from the above by L setae of segments V–VIII as: 3, 3, 3, 3 and bristle-like.

The male imago of *R. (P.) frequens* Bhattacharyay et al. (1991) shows similarities with the new species in thoracic chaetotaxy, AR, squamal setae and hind tibial comb, but the hypopygial features are quite different in the two species. In chaetotaxy of thorax, absence of distinct anal lobe of wing, well developed crista dorsalis and megaseta of gonostylus of the proposed species comes closer to *Rheocricotopus (Psilocricotopus) himalayensis* Chaudhuri & Sinharay (1983) and *R. (P.) chapmani* (Edwards).

The following combination of features shows its distinctness from all other species of the subgenus *Psilocricotopus*:

Pupa

1. Thoracic horn covered with few spinules; 2. Dc_3 and Dc_4 grouped together, distance between

them 15; 3. L setae of segments V–VIII as 3 : 3 : 3 : 3 and all bristle-like; 4. Anal lobe without fringe; 5. G/F 1.2).

Male imago

1. Ovoid humeral pit; 2. R with 5 setae; 3. Anal point 52 μm long with 4 setae on each side.

The proposed species belongs to the *Chalybeatus*–species group of Sæther (1985) on the basis of large ovoid humeral pit and may be considered to form a group with *R. (P.) chapmani* and *R. (P.) tirolus* Lehman (Lehman, 1969).

Acknowledgements

The authors are grateful to the Department of Science & Technology, Govt. of India, for financial assistance and to the Head of the Department of Zoology, University of Burdwan for laboratory facilities.

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