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

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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.

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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* Chaudhury & 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.

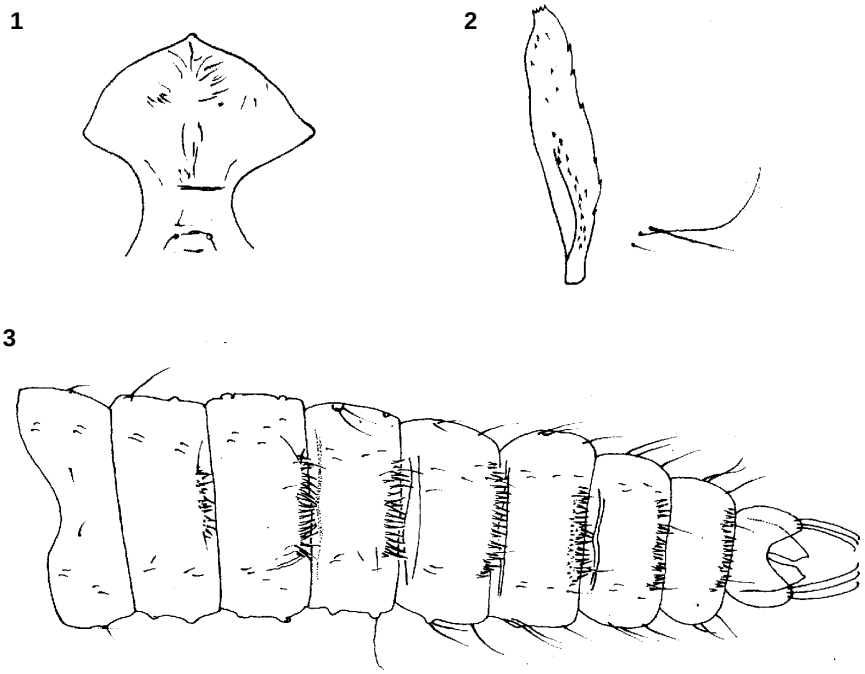
Results

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

Pupa (*n* = 2)
Pale brown. Total length 3.95 mm.

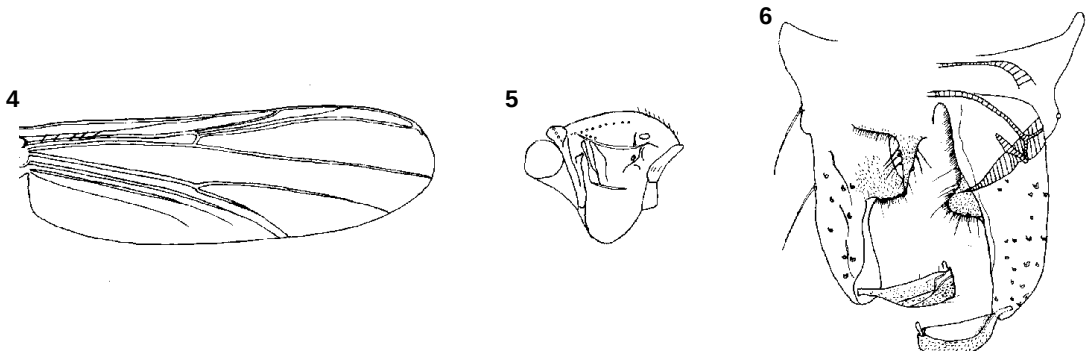
Cephalothorax: frontal seta weak, short 41 µm long on prefrons (fig. 1). Antennal sheath 960 µm long. Ocular field without any Postorbital (Po) seta. Median antepronotals 185 µm and 100 µm long, lateral antepronotal 100 µm long, other one small peg–like. Thoracic horn (fig. 2) 315 µm long, club-shaped, anterior end serrate, covered by sparse spinules. Thoracic horn ratio (Thr) 5.25; precorneal setae 3 (fig. 2); anterior seta fine, 90 µm long, median one stouter, prominent 189 µm long; posterior one fine, minute 41 µm long, all arranged in triangular fashion. Of 4 dorsocentrals (Dc) only Dc_3 and Dc_4 grouped together; length of Dc_1 78, Dc_2 41, Dc_3 26 and Dc_4 59; distance between Dc_1 and Dc_2 89, between Dc_2 and Dc_3 52, and between Dc_3 and Dc_4, 15. Prealar seta 1,37 µm 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, 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 µm 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 µm long. Tentorium 195 µm long and 30 µm wide. Head–antennal ratio (CA) 0.55, Head–palpal ratio (CP) 0.75.

Thorax (fig. 4): antepronotum with 3 lateral antepronotals; humeral pit large, oval in shape; acrostrichals 9; dorsocentrals 10, uniserial; prealers 3; scutellum with 8 setae, unserial.

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 µm 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										
	fe	ti	ta_1	ta_2	ta_3	ta_4	ta_5	LR	BV	SV	BR
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: ♂ with pupa (reared) (type no. B.U. Ent. 249), West Bengal, Tiger Hill (Darjeeling), 06 III 1996, Coll. N. Hazra.

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

Discussion

The name "*rarispina"* 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 chaeotaxy, 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 gonostylys 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).

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