

# A NEW RECORD AND A REDESCRIPTION OF *POLYPEDILUM PRUINA* FREEMAN (DIPTERA: CHIRONOMIDAE) WITH A KEY TO INDIAN SPECIES ASSOCIATED WITH RICE FIELDS

Sailesh Chattopadhyay

*Faculty of Forestry, Birsa Agricultural University, Kanke, Ranchi, Bihar 834006, India*

## Abstract

*Polypedilum pruina* Freeman is recorded for the first time from the rice paddy area of India and redescribed in light of modern taxonomic usages. A new dichotomous key to rice field species of genus *Polypedilum* Kieffer is also presented.

## Key Words

*Polypedilum*, Chironomidae, Diptera

## Abbreviations

An - Anal vein  
BR - Bristle ratio  
C - Costa  
CP - Head palpal ratio  
Fe - Femur  
HV - Hypopygium value  
LR - Leg ratio  
OV - Outer vertical setae of vertex  
R - Radius  
R<sub>2+3</sub> - Wing vein  
R<sub>5</sub> - Cell of wing  
SV - Schenkel - Schiene - Verhältnisse  
Ti - Tibia

AR - Antennal ratio  
BV - Beinverhältnisse  
CA - Head antennal ratio  
FCu - Cross vein of wing  
HR - Hypopygium ratio  
IV - Inner vertical setae of vertex  
L/W - Palpal ratio  
PO - Post ocular setae of vertex  
R<sub>1</sub> - Wing vein  
R<sub>4+5</sub> - Wing vein  
RM - Cross vein of wing  
ta<sub>1</sub> - ta<sub>5</sub> - Tarsomeres

## Introduction

Rice fields have long been recognised as a pre-eminent habitat for chironomids (Diptera: Chironomidae) and genus *Polypedilum* Kieffer is one of the most common and widespread genera having a fairly wide latitude of ecological tolerance (Hashimoto *et al.* 1981; Sasa & Kikuchi, 1986; Chattopadhyay *et al.* 1988; Chaudhuri & Chattopadhyay 1990).

The genus *Polypedilum* Kieffer has so far been described in ten species viz. *P. aegyptium* Kieffer, *P. annulatipes* (Kieffer), *P. ascium* Chaudhuri, Guha & Das Gupta, *P. chaudhurii* Chaudhuri, Guha & Das Gupta, *P. circum* Chaudhuri & Chattopadhyay, *P. lineatum* Chaudhuri, Guha & Das Gupta, *P. nubifer* (Skuse), *P. medivittatum* Tokunaga, *P. suturalis* (Johannsen), *P. yapensis*

Tokunaga (Chaudhuri & Chattopadhyay, 1990). Of these Indian rice field species, three species (*P. nubifer*, *P. suturalis* and *P. yapensis*) have been reported from the rice fields of Thailand (Hashimoto *et al.*, 1981) and one species, *P. nubifer* from Japan (Sasa & Kikuchi, 1986). Besides, 31 species of genus *Polypedilum* are known from India other than the rice field (Chaudhuri & Guha, 1987)

The present paper deals with one new record, *Polypedilum pruina* Freeman with detail description and illustration. A key of rice field chironomids of the genus *Polypedilum* Kieffer is also given in this paper.

Adults were collected by sweeping in the rice field of Birsa Agricultural University campus, Ranchi (23°18'N, 85°19'E; Alt. 625 m.), Bihar, India. Phenol-balsam technique as used by Das

Received 3 May 1999;

Accepted 30 December 1999

Gupta and Wirth (1968) was followed for microslide preparation of adults. The general morphology and terminology follow Saether (1980) and, Chaudhuri and Chattopadhyay (1987). Measurements are given in millimeter (mm), the mean value is followed by the range and sample size (n) in parentheses.

The material studied is at present in the Faculty of Forestry, Birsa Agricultural University, Ranchi and will be deposited in the National Zoological Collections at Zoological Survey of India, Calcutta in due course.

***Polypedilum pruina* Freeman**

(Figs 1-3)

1954: 179; 1955: 376; 1958: 280-281.

**Material examined**

8 males, Bihar, Ranchi (Birsa Agricultural University campus), 24 .viii.1998, Coll. S. Chattopadhyay.

**Diagnostic features**

Adult: Male. Body 1.93 (1.90 - 1.94, n=8) long, wing 1.05 (1.05 - 1.06, n=8) long and 0.35 (0.33 - 0.35, n=8) wide.

Head: Brown. Vertex with 13-14 setae (IV 4-5, OV 7 and PO 2-3),

corona bare. Clypeus with 19-21 setae, clypeal ratio 0.84. Maxillary palp light brown, ratio of palpomeres length I-V: 9:8:23:23:28. L/W 4.80. Eyes reniform without dorsal extension. Frontal tubercles absent. Antennae brown, ratio of flagellomere length I-XIII: 8:6:7:7:6:7:7:7:7:7:7:7:108:, AR 1.30. Pedicel ratio 1.62. CA 0.62, CP 1.18.

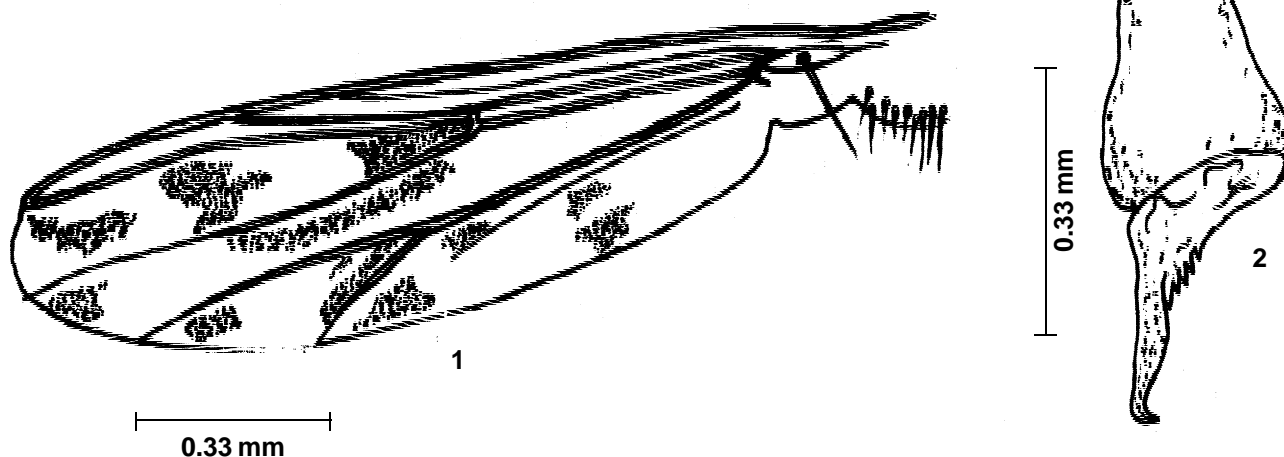
Thorax: Brown. Antepronotum thin and with slight emargination in the middle, antepronotals 0. Mesonotum brown. Acrostichals 18-19, uniserial, dorsocentrals 15-17, irregularly biserial, humerals two, prealars 4-6. Scutellum with 20 setae in two transverse rows; postscutellum dark brown and bare.

Wing: (Fig. 1) Hyaline. Brachiolum with one seta and 18-20 sensilla campaniformia, R 15-16, R<sub>1</sub> 16-17 and R<sub>4+5</sub> with 21 setae; R<sub>2+3</sub> meets C at a distance of 0.07 from R<sub>1</sub>, RM pale brown and proximal to FCu. An ends slightly proximal to FCu. Squama with nine setae. Haltere light brown with 6-8 setae.

Legs: Yellow. Fore tibia with a blunt, slightly attenuated scale bearing two long setae at its base. Mid tibia (Fig. 2) with single spur, hooked apically, 0.01 long, ratio of length of spur to the apical diameter of mid tibia 11:10; hind tibia with single spur, 0.01 long, ratio of length of spur to the apical diameter of hind tibia 12:10. Tarsomeres III and IV pale brown. Pulvilli small.

Proportion and ratios of leg segments

	Fe	Ti	ta <sub>1</sub>	ta <sub>2</sub>	ta <sub>3</sub>	ta <sub>4</sub>	ta <sub>5</sub>	LR	BV	SV	BR
Fore	36	23	41	25	20	15	9	1.78	1.44	1.34	3.40
Mid	41	38	25	14	11	11	5	1.78	2.53	3.22	2.71
Hind	38	32	18	10	7	7	3	1.80	3.25	4.11	2.57



Figures 1 - 2. *Polypedilum pruina* Freeman. 1. Wing; 2. Mid tibial spur

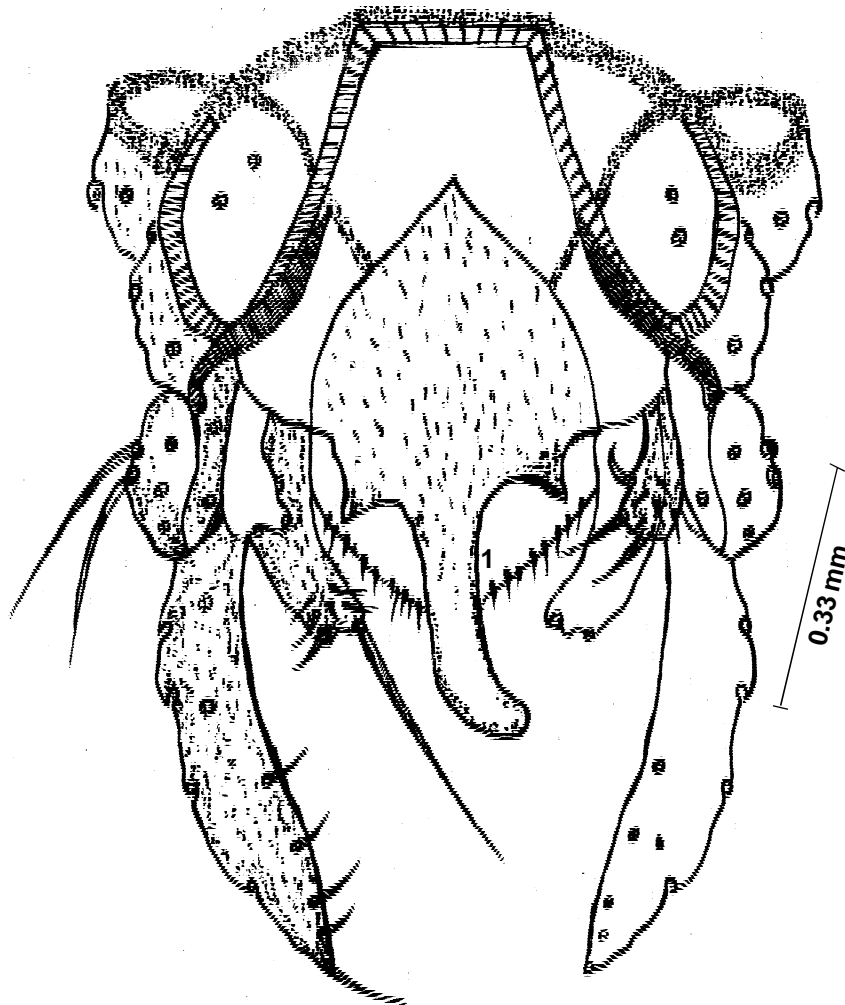


Figure 3. Male hypopygium of *Polypedilum pruina* Freeman

**Abdomen:** Brown. Anal point of male hypopygium (Fig. 3) broad, downturned and with lateral teeth basally of variable length giving a trilobed appearance and with 7-8 basolateral setae. Gonocoxite with 12-13 long setae; gonostylus long slightly attenuated and with one long seta at apex and four setae in its inner apical margin and 10-12 setae over it. Superior volsella with two long inwardly directed pointed setae, a curved seta and 4-6 setae over it. Inferior volsella long elongated, little bowed in apex and with one long seta at apex and 8-10 incurved setae near apex. Transverse sternapodeme 0.06, lateral sternapodeme 0.03, coxapodeme 0.04, and phallapodeme 0.04 long. HR 0.60; HV 2.41.

**Female:** Unknown.

**Remark:** *Polypedilum pruina* was first described by Freeman in 1954 from Cape Province. This species is separated from all other species of genus *Polypedilum* by the following combination of characters: (i) frontal tubercles absent, (ii) scutellum with 20 setae in two transverse rows, (iii) wing with three spots in cell  $R_5$  (iv) haltere setose, (v) mid tibial spur hooked apically, and (vi) anal point with lateral teeth basally, giving a trilobed appearance.

### Acknowledgements

The author is grateful to Dr. P.K. Chaudhuri, Department of Zoology, University of Burdwan, West Bengal, for kindly going through the manuscript and for his valuable suggestions. Sincere thanks are due to Mrs. Soma Chattopadhyay for technical assistance.

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### Key to the rice field species of Genus *Polypedilum* Kieffer in India

1.	Wing with spots or markings .....	2
1A.	Wing without spots or markings .....	7
2.	AR less than 1 .....	<i>P. lineatum</i> Chaudhuri, Guha & Das Gupta
2A.	AR more than 1 .....	3
3.	Frontal tubercles present .....	<i>P. nubifer</i> (Skuse)
3A.	Frontal tubercles absent .....	4
4.	Anal point narrow with pointed apex .....	<i>P. annulatipes</i> (Kieffer)
4A.	Anal point broad without pointed apex .....	5
5.	Scutellum with 1 row of setae .....	<i>P. aegyptium</i> Kieffer
5A.	Scutellum with 2 rows of setae .....	6
6.	Gonostylus straight .....	<i>P. chaudhurii</i> Chaudhuri, Guha & Das Gupta
6A.	Gonostylus curved .....	<i>P. pruina</i> Freeman
7.	Haltere setose .....	8
7A.	Haltere bare .....	9
8.	Superior volsella curved with blunt tip and one long seta near the base .....	<i>P. circumum</i> Chaudhuri & Chattopadhyay
8A.	Superior volsella scimitar - like without lateral seta and .....	<i>P. medivittatum</i> Tokunaga
9.	Superior volsella with out lateral seta .....	<i>P. ascium</i> Chaudhuri, Guha & Das Gupta
9A.	Superior volsella with lateral setae.....	10
10.	Prescutellar present, Tergites with brown band .....	<i>P. suturalis</i> (Johannsen)
10A.	Prescutellar absent, Tergites uniformly brown .....	<i>P. yapensis</i> Tokunaga