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## First Oriental Record of the Orthoclad Genus *Paralimnophyes* Brundin with Emendations to the Diagnosis of the Genus (Diptera: Chironomidae)

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### Abstract

*Paralimnophyes jii* sp. n. from southern China (Oriental region) is described as male imago. A key to male imagines of the known species of *Paralimnophyes* Brundin is presented. An emended generic diagnosis is given.

**Keywords:** Chironomidae, *Paralimnophyes*, new species, Oriental region.

### Introduction

The orthoclad genus *Paralimnophyes* Brundin includes the Holarctic *P. arcticus* Brundin, 1956, and *P. hydrophilus* (Goetghebuer, 1941) (Ashe et al., 1987; Sæther et al., 2000); and the Australian *P. pullulus* (Skuse, 1889); and *P. albibasis* (Freeman, 1961) (Cranston & Martin, 1989; Cranston, 1996, 2000). The immature stages are known for *P. hydrophilus* and *P. albibasis* only. According to Sæther (1990) *Comptosmittia* Sæther and *Paralimnophyes* combined form the sister group of *Limnophyes* Eaton. Cranston & Kitching (1995) describe the immatures of *Comptosmittia* and mention the close relationship of the three genera. Also the keys to Holarctic chironomids (Cranston et al., 1983, 1989; Coffman et al., 1986) show the close relationship with *Limnophyes* Eaton. Wang (2000) recorded a larva tentatively belonging to *P. hydrophilus* from Palaearctic China. This paper describes a new species of the genus collected from the Oriental part of China.

### Methods, Terminology and Materials

The morphological nomenclature follows Sæther (1980) with the additions and corrections given by Sæther (1990). The material examined was mounted on slides following the procedure outlined by Sæther (1969). Measurements are given as ranges followed by a mean when there are four or more measurements, followed by the number measured (*n*) in parentheses.

The holotype and most paratypes of the new species are deposited in Department of Biology, Nankai University, China (BDN). Two paratypes are in the Museum of Zoology, Bergen, Norway (ZMUB).

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## Taxonomy

### *Paralimnophyes jii* sp. n (Figs. 1–3)

#### Type material

Holotype male, CHINA: Hubei Province, Wufeng County, Houhe, 10. VII. 1999, sweep net, Bingchun Ji (BDN No. 13968); paratype 9 males same as holotype. Paratypes (nos. 13962 and 13963) deposited in Museum of Zoology, Bergen, Norway.

*Etymology.* Named after Mr. Bingchun Ji who collected the material.

*Male imago* ( $n = 10$  except when otherwise stated).

Total length 1.86–2.0, 1.90 mm. Wing length 1.15–1.18, 116 mm. Total length / wing length 1.60–1.69, 1.63. Wing length / length of profemur 2.61–2.79, 2.68. Coloration dark brown.

Head. Ultimate flagellomere 260–280, 268  $\mu\text{m}$  long. AR 0.65–0.73, 0.69. Temporal setae 4, including 2 outer verticals and 2 postorbitals. Clypeus with 4–5, 5 setae. Tentorium 100–132, 116  $\mu\text{m}$  long, stipes 80–94, 86  $\mu\text{m}$  long. Palpomere lengths (in  $\mu\text{m}$ ): 18–22, 19; 30–36, 32; 66–84, 80; 76–98, 83; 86–98, 93.

Wing (Fig. 1). Anal lobe oblique. Moderately coarse punctation easily visible at 200x magnification. VR 1.38–1.55, 142.  $R_{2+3}$  clear and ends 1/2 of distance between  $R_1$  and  $R_{4+5}$ . Costal extension 120–144, 126  $\mu\text{m}$  long. Brachiolum with 1–2, 1 seta, R with 2–5, 4 setae,  $R_1$  with 0–2, 1 seta, remaining veins bare.  $Cu_1$  short and slightly curved. Squama with 0–1, 0 seta.

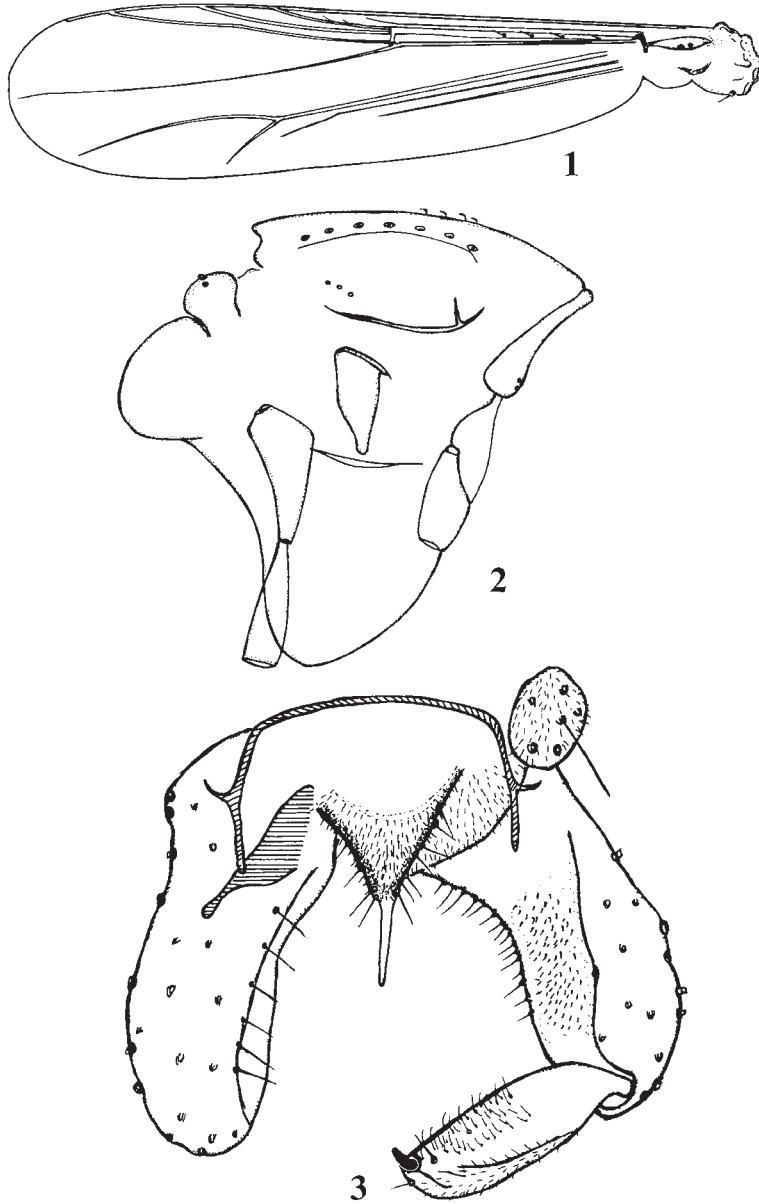
Thorax (Fig. 2). Anteprepronotum with 1–2, 2 setae. Dorsocentrals 7–9, 8; acros-tichals 4–7, 5, scalpellate, starting some distance from anteprepronotum; prealars 2–3, 2. Scutellum with 6 setae.

Legs. Spur of front tibia 26–32, 30  $\mu\text{m}$  long, spurs of middle tibia 20–26, 23  $\mu\text{m}$  and 14–18, 16  $\mu\text{m}$  long, of hind tibia 22–36, 31  $\mu\text{m}$  and 12–16, 14  $\mu\text{m}$ . Hind tibial comb with 8–11, 9 setae.

#### Lengths (in $\mu\text{m}$ ) and proportion of legs:

	fe	ti	ta <sub>1</sub>	ta <sub>2</sub>	ta <sub>3</sub>
P <sub>1</sub>	416–442, 435	520–536, 526	256–272, 266	152–160, 156	96–104, 98
p <sub>2</sub>	480–504, 523	496–512, 504	208–216, 213	104	72–80, 74
p <sub>3</sub>	496–528, 506	552–568, 560	272–304, 290	136–168, 152	120–128, 124
	ta <sub>4</sub>	ta <sub>5</sub>	LR		
P <sub>1</sub>	64–72, 66	64	0.49–0.52, 0.51		
p <sub>2</sub>	48	48	0.41–0.44, 0.43		
p <sub>3</sub>	56	56	0.50–0.54, 0.52		

Hypopygium (Fig. 3). Anal point elongate, hyaline, parallel-sided with blunt apex, 26–28, 27  $\mu\text{m}$  long: on triangular base densely covered with microtrichiae and 12–18, 14 lateral setae. Laterosternite IX with 4–6, 5 long setae. Phallapodeme 30–62, 45  $\mu\text{m}$  long, transverse sternapodeme 60–70, 64  $\mu\text{m}$  long, straight without oral



Figures 1–3. *Paralimnophyes jii* sp. n. Male imago. (1) Wing; (2) thorax; (3) hypopygium.

projections. Gonocoxite 124–144, 135  $\mu\text{m}$  long, inner gonocoxite lacks pronounced setose lobe (superior or inferior volsella). Gonostylus somewhat rectangular, 72–78, 75  $\mu\text{m}$  long; crista dorsalis reduced; megaseta 8  $\mu\text{m}$  long. HR 1.72–1.89, 180, HV 2.58–2.63, 261.

*Distribution.* The find of *Paralimnophyes jii* represents the first record from the Oriental region. The species is known from a subtropical mountain area 1000 m above sea level. The specimens were collected by sweep net.

*Systematic remarks.* The new species fits most of the characters of the genus *Paralimnophyes*, but can be distinguished from the two previously known species by lacking oral projections on the sternapodeme, volsellae and crista dorsalis. The generic diagnosis by Cranston et al. (1989: 221) should be emended to include these variations.

### Key to known male imagines of the genus *Paralimnophyes*

1. Gonocoxite at least with inferior volsella; squama with 1–6 setae . . . . . 2
  - Gonocoxite without distinct volsellae; squama with 1 seta . . . . . *Paralimnophyes jii* sp. n.
2. Gonostylus with a pronounced apical projection or outer heel making placement of the megaseta subapical . . . . . *Paralimnophyes pullulus* (Skuse)
  - Gonostylus without apical projection, placement of megaseta apical . . . . . 3
3. Wing smoky with base strikingly white, squama with 1–2 setae . . . . . *Paralimnophyes albibasis* (Freeman)
  - Wing less smoky without strikingly white base; squama with 3–6 setae . . . . . 4
4. Antennal plume normal. Apparent superior volsella pronounced . . . . . *Paralimnophyes hydrophilus* (Goetghebuer)
  - Antennal plume reduced. Apparent superior volsella not pronounced . . . . . *Paralimnophyes arcticus* Brundin

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