



The Larvae of *Propsilocerus sinicus* Sæther et Wang and *P. paradoxus* (Lundström) (Diptera: Chironomidae)

Xinhua Wang¹ and Ole A. Sæther²

¹Department of Biology, Nankai University, China; ²Museum of Zoology,
Department of Zoology, University of Bergen, Norway

Abstract

The larvae of *Propsilocerus sinicus* Sæther et Wang and *P. paradoxus* (Lundström) are described for the first time. They confirm the phylogeny of the genus outlined in Sæther and Wang (1996).

Keywords: *Propsilocerus*, Chironomidae, larvae, new description.

Introduction

The genus *Propsilocerus* was revised by Sæther and Wang in 1996. Sæther (1997) confirmed the status of the species *P. jacuticus* (Zvereva) and described the imagines and pupa based on material from Finland. The paper showed that *P. jacuticus* forms the sister-species of *P. taihuensis* Wen, Zhou et Rong. The genus thus consists of six species all distributed in the Euro-Mediterranean, East Siberian and East Asian sub-regions. Among them, four species are recorded from China and East Asia (Korea and Japan). The remaining two species (*P. jacuticus* and *P. lacustris* Kieffer) occur in Eastern and Central Europe. The genus was analysed by Sæther (2000) showing that East Asia is the area most likely to have been a part of the ancestral area. Equally clear is the allopatric speciation during the Pleistocene into two species pairs, *P. paradoxus* (Lundström) in north-eastern Asia and *P. lacustris* in central and south-eastern Europe, and *P. taihuensis* in southern China and *P. jacuticus* in extreme north-eastern Europe. The linkage between Chinese and Japanese species can be regarded as result of dispersal from the ancestral area along the route of 'China-Japan Land-bridge' during the Quaternary inter-ice period.

The larvae of *P. sinicus* and *P. paradoxus* recently were associated and are described here. That leaves the immatures of *P. taihuensis* as the only remaining unknown stages.

Methods and Terminology

The terminology follows Sæther (1980). The specimens studied were mounted on slides in Canada balsam following the procedure outlined in Sæther (1969). The material is kept at the Department of Biology, Nankai University, Tianjin, China.

Propsilocerus sinicus Sæther et Wang (Fig. 1)

Propsilocerus sinicus Sæther & Wang, 1996: 457, male, female and pupa.

Material examined. CHINA: Liaoning Province, Shenyang City, Hutai, 1♂ reared from larva, 1 larva. 8. IV.1996, J. Wang.

Diagnostic characters of larva: The larva can be separated from other larvae of the genus by having a 5-segmented antenna, reduced anterior parapods and only about 8 claws on each posterior parapod. The mentum has 7 pairs of lateral teeth of which the fourth and sixth are larger than the fifth, and the seventh appears as a small basal notch.

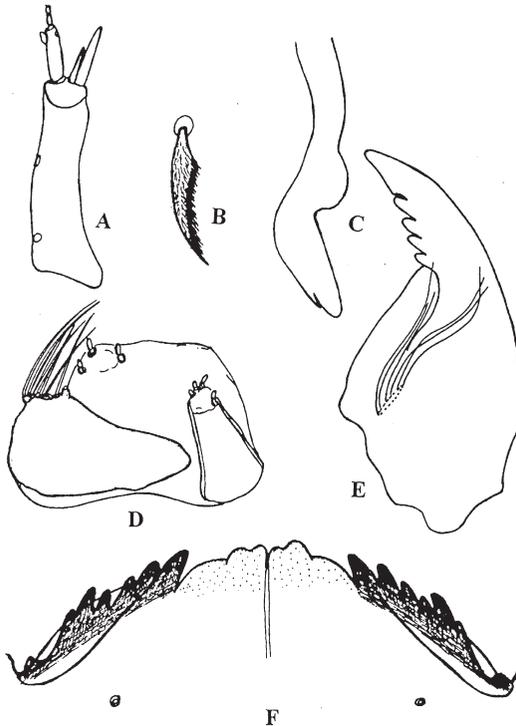


Figure 1. *Propsilocerus sinicus* Sæther et Wang, larva: (A) Antenna; (B) S I Setae; (C) Pre-mandible; (D) Maxilla; (E) Mandible; (F) Mentum.

Fourth instar larva (n = 1–2)

Total length 6.8–8.0 mm. Head capsule length 0.60–0.64 mm. Postmentum 180–200 μm long.

Head. Antenna (Fig. 1A) with 5 segments, segments 4 and 5 both minute. Lengths of antennal segments (in μm): 80, 28, 6, 2, 2. AR 1.83. Basal antennal segment 22 μm wide, blade 28 μm long, accessory blade 16 μm long, ring organ 13–16 μm from base. S I (Fig. 1C) apparently plumose on one side only. Labral lamellae smooth. Chaetulae laterales simple. Premandible (Fig. 1B) 130–144 μm long, narrow, indistinctly bifid with very small outer tooth. Maxilla as in Figure 1D, apex of premento-hypopharyngeal complex as in Figure 1D. Mandible (Fig. 1E) 188–202 μm long. Mentum as in Figure 1F, 4 median teeth with median pair notched or subdivided, 7 pairs of lateral teeth of which fourth and sixth smaller than fifth, and seventh placed at base as small notch, ventromental plate about 14 μm wide.

Abdomen. Anterior parapod very short. Posterior parapod 200–208 μm long, with 8 apical claws. Procercus 40 μm high, 24–34 μm wide, with 6 anal setae, anal setae 424–512 μm long. Supraanal seta 110–120 μm long, 0.23–0.26 times as long as anal setae. Anal tubules not measurable.

***Propiloscerus paradoxus* (Lundström) (Fig. 2)**

Propiloscerus paradoxus (Lundström), Sæther & Wang, 1996: 469, male, female and pupa.

Material examined. CHINA: Liaoning Province, Shengyang City, Hutai. 1♂ reared from larva, 1 larva. 8.IV.1996, J. Wang.

Diagnostic characters of larva: The larva can be separated from other larvae of the genus except *P. lacustris* by having a 4-segmented antenna combined with a mentum with 7 pairs of gradually smaller lateral teeth. It differs from *P. lacustris* by having S I plumose on both sides and not just apically.

Fourth instar larva (n = 1–2)

Total length 10.2 mm. Head capsule length 0.84–1.00 mm. Postmentum 240 μm long.

Head. Antenna (Fig. 2A) with 4 segments. Lengths of antennal segments (in μm): 90, 22, 6, 6. AR 3.75. Basal antennal segment 30 μm wide, blade 30 μm long, accessory blade 8 μm long, ring organ 20–26 μm from base. S I (Fig. 2B) plumose on both sides. Labral lamellae apparently smooth. Chaetulae laterales simple. Premandible (Fig. 2C) 120–132 μm long, relatively broad, distinctly bifid with subequal teeth. Maxilla as in Figure 2D, apex of premento-hypopharyngeal complex as in Figure 2D. Mandible (Fig. 2E) 184–224 μm long. Mentum as in Figure 2F, 4 median teeth with median pair notched or subdivided into 2–3 teeth, 7 pairs of gradually smaller lateral teeth, ventromental plate 10 μm wide.

Abdomen. Anterior parapod not measurable. Posterior parapod 300 μm long, with 14 apical claws. Procercus 50–60 μm high, 44–50 μm wide, with 7 anal setae, anal setae 440–520 long. Supraanal seta 248–416 μm long, 0.56–0.80 times as long as anal setae. Anal tubules 208 μm long, 120 μm wide at base.

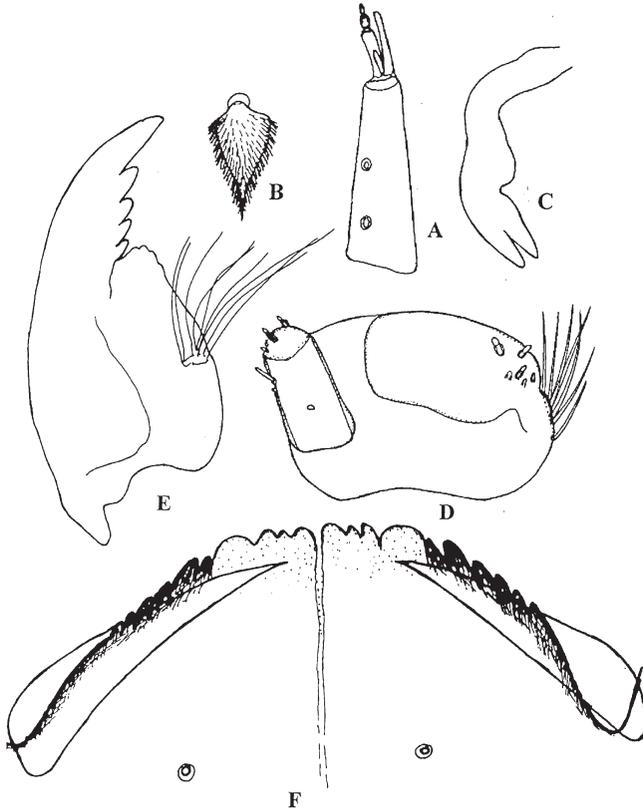


Figure 2. *Propsilocerus paradoxus* (Lundström), larva: (A) Antenna; (B) S I Setae; (C) Pre-mandible; (D) Maxilla; (E) Mandible; (F) Mentum.

Systematics

The phylogeny outlined in Sæther and Wang (1996) is strengthened by the finding of these larvae. However, the 4-segmented antenna (under Trends 9) is a synapomorphy for the genus excluding *P. sinicus* (i.e., under Trends 7) rather than the full genus. Additional autapomorphies for *P. sinicus* (Trends 8) appear to be the basolateral tooth of the mentum, the shape of the S I, the reduced anterior parapods and the reduced number of claws on the posterior parapods. The larval trends under Trends 3 and 4 are confirmed.

Acknowledgements

We are indebted to Mr. Juncai Wang, Shenyang, China, for the material.

References

- Sæther OA (1969): Some Nearctic Podonominae, Diamesinae and Orthocladiinae (Diptera: Chironomidae). *Bull Fish Res Bd Canada* 170: 154 pp.
- Sæther OA (1980): Glossary of chironomid morphology terminology (Chironomidae: Diptera). *Ent scand Suppl* 15, 51 pp.
- Sæther OA (1997): First description of the imagines and pupa of *Prosilocerus jacuticus* (Zvereva) (Diptera: Chironomidae). *Acta zool hung* 43(3): 241–249.
- Sæther OA (2000): Zoogeographical patterns in Chironomidae (Diptera). *Verh int Ver Limnol* 27: 1–13.
- Sæther OA and Wang X (1996): Revision of the genus *Prosilocerus* Kieffer, 1923 (= *Tokunagayusurika* Sasa) (Diptera: Chironomidae). *Ent scand* 27: 441–479.

