

# A CONTRIBUTION TOWARDS A REVISION OF WEST PALAEARCTIC *PROCLADIUS* SKUSE (DIPTERA: CHIRONOMIDAE)

Peter H. Langton<sup>a</sup>, Peter Bitusik<sup>b</sup> and Juliana Mitterova<sup>b</sup>

<sup>a</sup>University Museum of Zoology, Cambridge, Downing Street, Cambridge.

Correspondence: 16 Irish Society Court, Coleraine, Northern Ireland BT52 1GX.

Email: [langtonph@gmail.com](mailto:langtonph@gmail.com)

<sup>b</sup>Matthias Belius University, Dept. of Biology and Ecology, Tajovský street 40, SK-974 01,  
Banská Bystrica, Slovakia.

Email: [peter.bitusik@umb.sk](mailto:peter.bitusik@umb.sk)

## Introduction

The genus *Procladius* is in great need of revision. Such an exercise would be fraught with many uncertainties. Those species characterized by having marked wings may have the markings extremely faint and perhaps even absent. The spur of the gonostylus is variable in length and shape, in the pharate adult rotated more vertically and compressed, so that association with pupal structure is not simple. It appears that the spur is extended hydraulically on eclosion, perhaps to a variable degree. The one character that appears to remain constant is the phallapodeme toothed at apex or not, but that just separates the subgenus *Holotanypus* into two groups. Even the type species of s.g. *Holotanypus*, *P. (H.) culiciformis* (Linnaeus) is not keyed in Langton & Pinder (2007), though recorded for Britain, because the authors were unable to find a clear separation from *P. (H.) choreus* (Meigen). We here provide a key to the pupal exuviae of subgenus *Holotanypus* that are now known to us as a step towards a generic revision<sup>1</sup>. Terminology as in Langton (1991).

## Preliminary key to known pupal exuviae of *Procladius* (*Holotanypus*)

Named taxa are the taxa so named in Langton (1984), Langton (1991) and Langton and Visser (2003) except for *P. (H.) tatrensis* Gowin, the specimens of which used for this key are conspicuously distinct and originate from the Tatra mountains. The names previously used by Langton have been used in many publications and unless shown to be invalid through revision are best retained for use in comparative biodiversity studies.

<sup>1</sup> Neither of the authors has this in mind: the challenge is thrown out to any other Chironomidae researcher with the time and perseverance to complete the project.

1. Thoracic horn skittle or vase-like, with oval plastron plate ..... 2
- Thoracic horn not as above, plastron plate absent ..... 12
- 2(1). Plastron plate much narrower in diameter than the maximum breadth of the horn (PpB:ThB = 0.24 – 0.33); anal lobes tapering to a point, serrated externally ..... *Procladius* (*H.*) near *vesus* Roback (Fig. 1)
- Plastron plate wider in diameter (PpB : ThB > 0.33); anal lobes rounded and serrated externally, inner margin straight and unarmed ..... 3

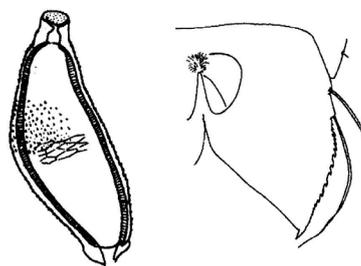


Figure 1. *Procladius* (*H.*) *vesus* thoracic horn and anal lobe.

- 3(2). Plastron plate nearly as wide or wider than the horn (> 200 µm; PpB : ThB 0.77 – 1.24), joined to the respiratory atrium by a very short neck (<0.2 length of Pp) often difficult to distinguish ..... 4
- Plastron plate narrower than the horn, joined to the respiratory atrium by a longer neck ..... 5
- 4(3). Horn atrium with a deep, narrow invagination of its distal margin; plastron plate neck even narrower than that of the next species ..... *Procladius* (*H.*) ‘sp. (from Norway)’ Fittkau & Murray 1986 (Fig. 2)<sup>2</sup>

<sup>2</sup> A number of associated specimens of this form were collected in the Stugudalen area of Norway by Vít Syrovátka: lake in gap between Storsola and Ekorhamaren, 7.8 km east of the cottage Nedalshytta.

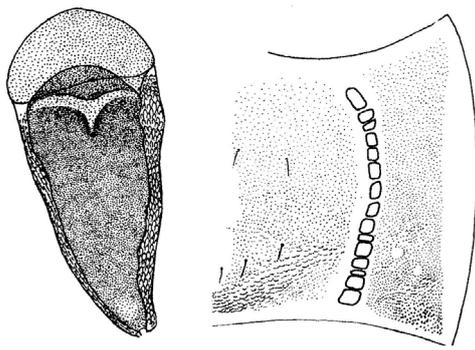


Figure 2. *Procladius* (*H.*) sp. 'from Norway' thoracic horn, armament of tergite and paratergite IV.

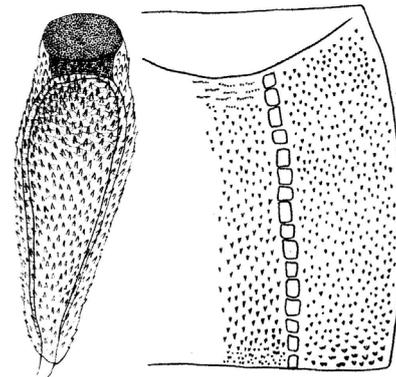


Figure 4. *Procladius* (*H.*) *simplicistylus*: thoracic horn, armament of tergite and paratergite IV.

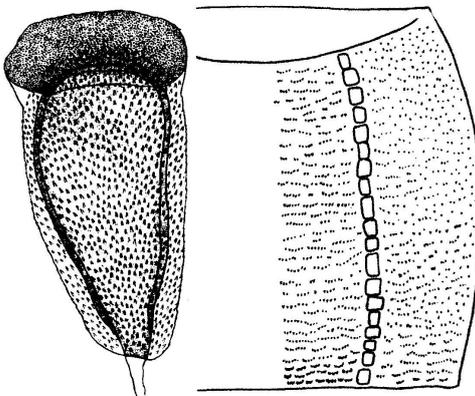


Figure 3. *Procladius* (*H.*) *tatrensis* Gowin; thoracic horn, armament of tergite and paratergite IV.

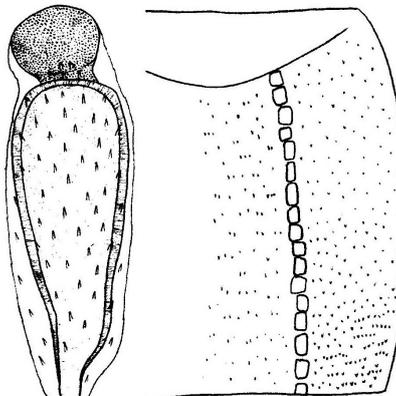


Figure 5. *Procladius* (*H.*) Pe4 Langton; thoracic horn, armament of tergite and paratergite IV.

– Horn atrium usually with distal margin entire, never as above. Plastron plate attached to the horn atrium by a very short neck, often only visible at the sides .....  
 ..... *Procladius* (*H.*) *tatrensis* Gowin (Fig. 3)<sup>3</sup>

5(4). Armament of tergite IV of small points; in central part and mainly posteriorly arranged in transverse rows; plastron plate mostly narrower than 101 µm ..... 6

– Tergite IV, especially posterolaterally, with strong, dense, irregularly arranged points in which the circular bare patches around the dorsal setae show up very clearly; plastron plate mostly wider than 101 µm ..... *Procladius* (*H.*) *simplicistylus* Freeman (Fig. 4), (*Procladius* (*H.*) Pe1 Langton, 1991)<sup>4</sup>  
 6(5). Ratio PpB:ThB > 0,67 ..... 7

– Ratio PpB:ThB < 0,67 (thoracic horn coarsely toothed) ..... 9

7(6). Thoracic horn robust, covered with strong, sharply pointed teeth; points on tergite IV generally larger than those on tergite VIII ..... 8

– Thoracic horn nearly smooth and very fragile, often damaged or missing; abdominal segments colourless, shagreen very fine; points on tergite IV arranged irregularly, on paratergites arranged in rows only posteriorly; points on tergite IV smaller than on tergite VIII .....  
 ..... *Procladius* (*H.*) Pe 4 Langton 1991 (Fig. 5)

8(7). Armament of paratergites and tergites II-VII posteriorly of scale shagreen .....  
 ..... *Procladius* (*H.*) *islandicus* (Goetghebuer) (Fig. 6)<sup>5</sup>

<sup>3</sup> Subalpine and alpine lakes in the Tatra Mountains in Slovakia and Poland.

<sup>4</sup> Specimens from a dystrophic lake in the Tatra Mountains, but widely distributed in the West Palaearctic.

<sup>5</sup> Associated material from Lake Myvatn, Iceland, leg. Jón Olafsson (Fig. 6).

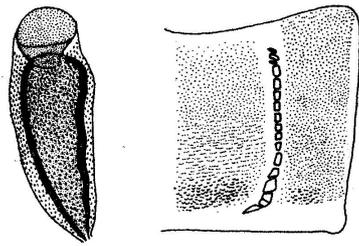


Figure 6. *Procladius (H.) islandicus*. Thoracic horn, armament of tergite and paratergite IV.

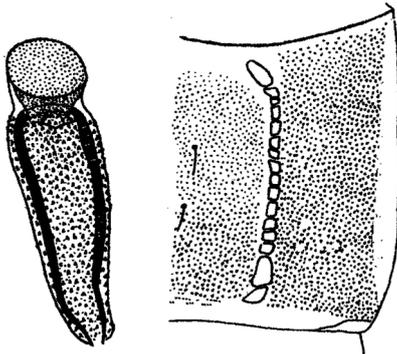


Figure 7. *Procladius (H.) fimbriatus*. Thoracic horn, tergite and paratergite IV.

– Armament of paratergites and tergites of discrete points .....  
 .. *Procladius (H.) fimbriatus* Wülker 1959 (Fig. 7)<sup>6</sup>

9(6). Thoracic horn usually narrower than 129 µm; points on thoracic horn tapered and without pigmented tip; points on tergite IV the same size as those on VIII ..... 10

– Thoracic horn usually wider than 129 µm (average = 150 µm); points on thoracic horn with rounded and pigmented tip; abdominal segments brown; points on tergite IV larger than on VIII .....  
 ..... *Procladius (H.) Pe5* (Fig. 8)<sup>7</sup>

10(9). Tergites II – VII with points arranged in obvious, short transverse rows, posteriorly in the segments II – IV curved producing a “fish-scale” effect; transverse rows present on paratergites II – V too, but fish-scale shagreen is restricted to posterior corners; ThL:ThB = 3.26; exuviae brownish .....  
 ..... *Procladius (H.) choreus* (Meigen) (Fig. 9)

– Armament of tergites II – VII of transverse rows but without “fish-scale” effect; paratergites with transverse rows at best posteriorly, anterior and middle part covered with irregularly arranged

<sup>6</sup> Originally described from Finland by W. Wülker, associated material of this species was collected in 1993 from Lake Korta, MM474994, 150m asl., Norway by P. Langton.

<sup>7</sup> Material from three small ponds in northern Slovakia

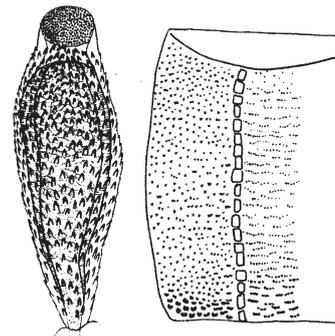


Figure 8. *Procladius (H.) Pe5*; thoracic horn, armament of tergite and paratergite IV.

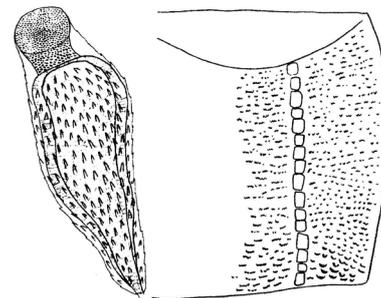


Figure 9. *Procladius (H.) choreus* (Meigen); thoracic horn, armament of tergite and paratergite IV.

points, occasionally grouped in pairs; ThL : ThB ≤ 3.26; abdominal segments with distinct brown anterior edging (*Procladius (H.) Pe3* Langton, 1991) ..... 11

11(10). Respiratory atrium transversely reticulate internally (best seen focused on the far inner surface at a magnification of x300) .....  
 ... *Procladius (H.) signatus* (Zetterstedt) (Fig. 10a)

– Respiratory atrium with at most vague indication of reticulation internally, usually without any such structure .....  
 ... *Procladius (H.) sagittalis* (Kieffer) (Fig. 10b, c)<sup>8</sup>

12(1). Thoracic horn gradually expanded for about two thirds its length, thereafter narrowed evenly to a pointed apex; respiratory atrium rounded apically, without plastron plate; segments III – VI laterally fringed with taeniae; six lateral taeniae on segment VII, five on segment VIII .....  
 ..... *Procladius (H.)*, Type A<sup>9</sup> Fittkau & Murray 1986 (Fig. 11)

– Thoracic horn *Tanytus* like, swollen D shaped with apical tubercle .....  
 ..... *Procladius (H.) crassinervis* (Zetterstedt) (Fig. 12)<sup>9</sup>

<sup>8</sup> The above separation is tentative, but has associated material to justify it.

<sup>9</sup> This would appear to be the *Procladius (H.) pectinatus* (Kieffer) of middle European workers, but we refrain from formally synonymising the species pending a revision of the genus.

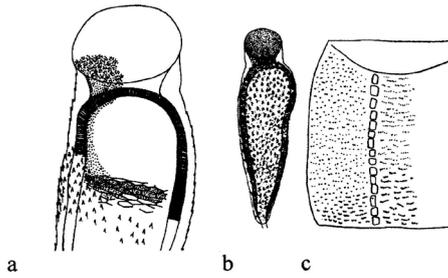


Figure 10. a, *Procladius (H.) signatus* thoracic horn; b-c, *Procladius (H.) sagittalis*, b, thoracic horn, c, armament of tergite and paratergite IV.

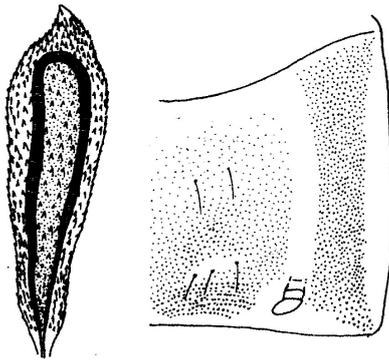


Figure 11. *Procladius (H.)* 'Type A' Fittkau & Murray, thoracic horn, armament of tergite and paratergite IV.

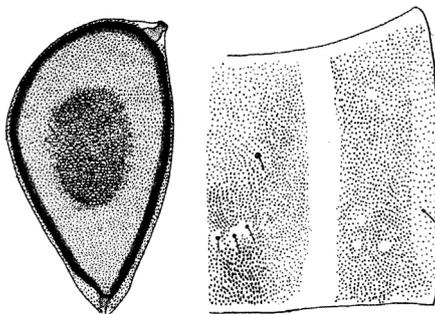


Figure 12. *Procladius (H.) crassinervis*, thoracic horn, armament of tergite and paratergite IV.

### Acknowledgement

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