

CHIRONOMIDAE (INSECTA, DIPTERA) FROM HUNGARY 3.  
THE PUPA OF *Paratendipes nubilus* (MEIGEN)

BIRO, K.<sup>1</sup> and KLINK, A.<sup>2</sup>

<sup>1</sup>Ludwig Herr Strasse 12, 79713 Bad Säckingen, Germany, E-mail: kalman@biro.li

<sup>2</sup>Dipl. Ing. Hydrobiologisch Adviesburo Klink  
Boterstraat 28, 6701 CW Wageningen, The Netherlands

The pupa of *Paratendipes nubilus* (MEIGEN) is described and figured for the first time based on material from Hungary and The Netherlands.

MEIGEN (1830) described the imago of *Paratendipes nubilus* (type locality not given). ALBU (1980) described and figured the male imago too (Fig. 1), but she did not know the larva or pupa. We found a male pupa from the River Tisza (Tiszaroff, Hungary) and a male pupa from the River Rhine (Waal, The Netherlands) in which we could see the hypopygium (Fig. 2). This hypopygium closely resembles that figured by ALBU (loc.cit.) and CRANSTON *et al.* (1989) (Fig. 3). The pupa differs from the generic diagnoses of PINDER and REISS (1986) and LANGTON (1991): intersegmentally III/IV and IV/V there is no band of shagreen and segment VIII has 5 lateral taeniae, not 4. *Paratendipes basidens* TOWNES (EPLER & FERRINGTON, 1994) is very similar but *P. nubilus* has cephalic tubercles, lacking in *P. basidens*.

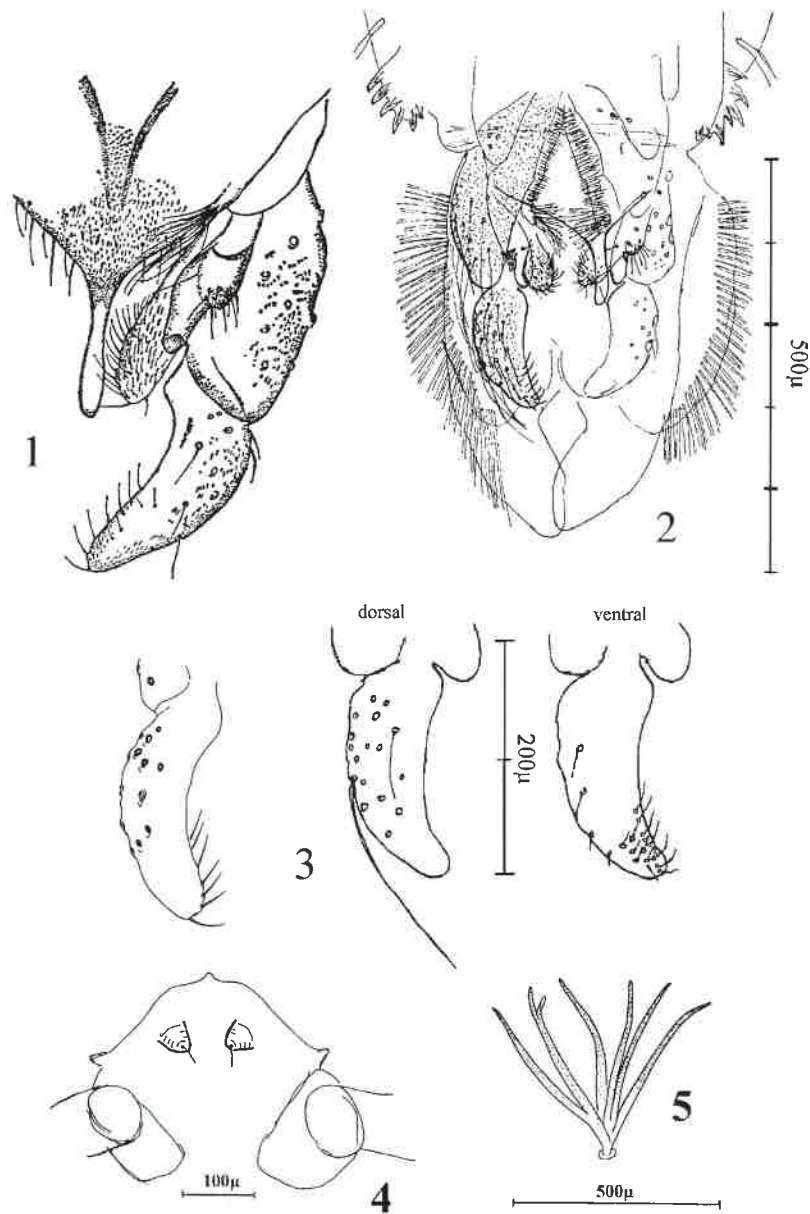
Pupal description (n = 2)

Colour: exuviae brownish.

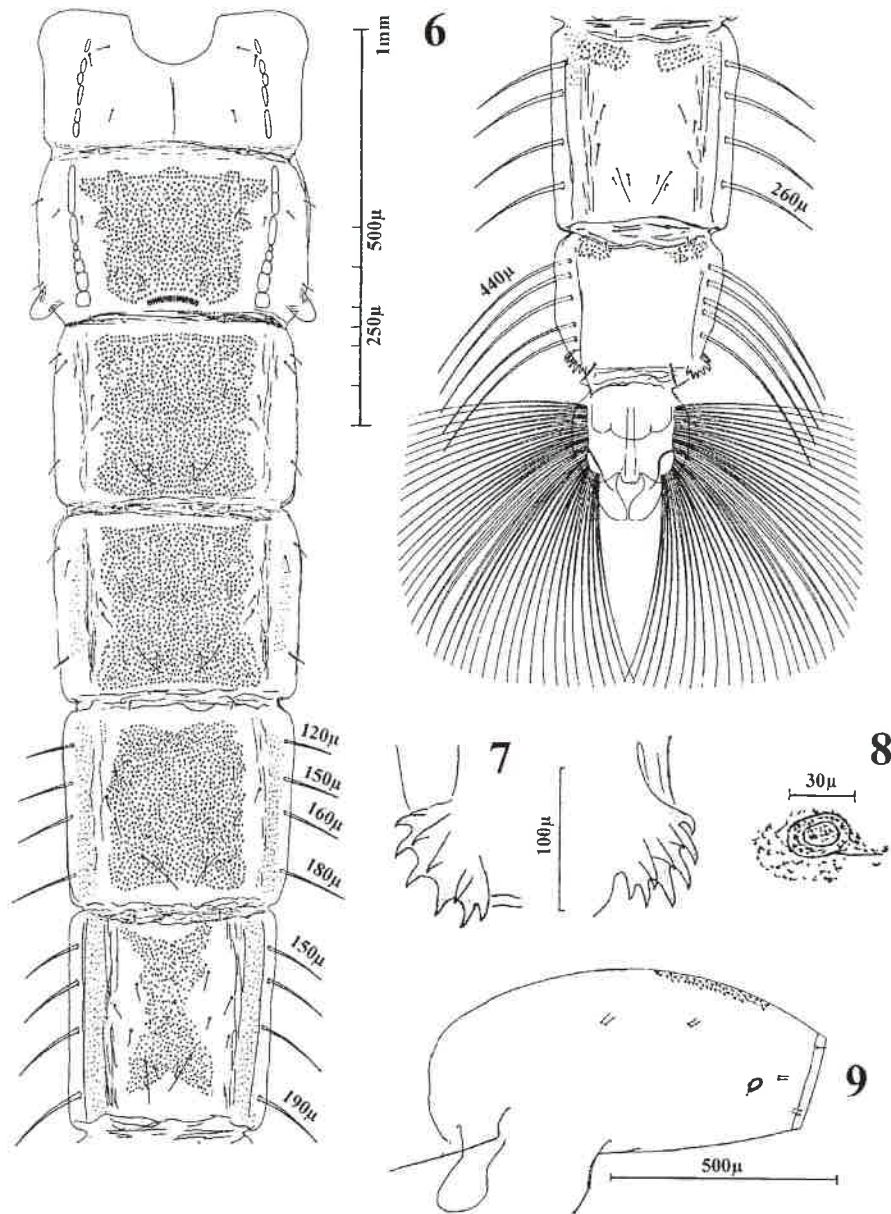
Length: Total 4.9–5.3 mm. Cephalothorax 1.1–1.2 mm. Abdomen 3.8–4.1 mm.

Cephalothorax: Cephalic tubercles present, bearing 30 µm long frontal setae; frontal warts absent (Fig. 4). Thorax with a dorsomedial group of small tubercles; 2 precorneal and 3 anteprenotal setae; dorsocentral seta 1 adjacent to 2, and 3 adjacent to 4 (Fig. 9). Thoracic horn apparently with 6 smooth, slender branches, one of them bifid at apex (Fig. 5); its base is oval with a circular/oval tracheal bundle (Fig. 8).

Abdomen: Tergite I bare; tergites II–V with a more or less rectangular area of coarse points; tergite VI with the point patch roughly X-shaped; tergites VII and VIII with a small oval/elliptical patch of fine points on each side anteriorly; tergite IX bare. Hook row of segment II of 20 weak hooklets. Paratergites IV–VI with a band, nearly the length of the paratergite, of very small points; on VII the band is only 1/4 the length of the paratergite (Fig. 6). Sternite I with a few scattered small points; II–VIII apparently bare. Parasternite with moderately developed vortex. Comb of segment VIII a cluster of 6 large pointed teeth with 3 smaller basally (Fig. 7). Well-developed pedes spurii B present on segment II. Conjunctions III/IV and IV/V bare. Tergites with 1 pair of small O-setae. Lat-



**Figs 1–5.** *Paratendipes nubilus* (MEIGEN) pupa. 1 = hypopygium after ALBU, 2 = segment IX and hypopygium from The Netherlands, 3 = hypopygium after CRANSTON, 4 = frontal apotome, 5 = thoracic horn



Figs 6–9. *Paratendipes nubilus* (MEIGEN) pupa. 6 = tergites, 7 = comb of segment VIII, 8 = basal ring of thoracic horn, 9 = thorax

eral setae of segment I 0, II–IV 3; lateral taeniae of V 3 (120–180  $\mu\text{m}$  long), VI 4 (150–190  $\mu\text{m}$  long), VII 4 (260  $\mu\text{m}$  long) and VIII 5 (440  $\mu\text{m}$  long). Anal lobes with a uniserial fringe of 36/38 taeniae plus a pair of narrow dorsal taeniae. Genital sacs of male extend beyond the anal lobe by half its length.

**Biology and distribution.** Pupae and pupal exuviae were obtained from large lowland rivers with moderate to slow flow, in The Netherlands and Hungary during June 1993.

## DISCUSSION

The pupa of *P. nubilus* differs from those of *albimanus* (MEIGEN) and *P. nudisquama* (EDWARDS) described in PINDER and REISS (1986) and LANGTON (1991) as follows (*P. albimanus* and *P. nudisquama* in parentheses): thoracic horn with 6 branches (10); frontal setae short, 30–32  $\mu\text{m}$  (60–125  $\mu\text{m}$ ); basal ring of thoracic horn more circular (more oval); armament of tergites II–V more or less rectangular (more or less like a broad X); conjunctives III/IV and IV/V bare (armed); hook row of segment II with 20–21 hooklets (25–75); hook row 130  $\mu\text{m}$  long (300–430  $\mu\text{m}$ ); dorsal setae 4 of tergites III–VII twice as long as the other dorsal setae (all dorsal setae more or less equal in length); tergite VIII has 5 lateral taeniae (4); comb of segment VIII different.

Associated imago not examined.

\*

*Acknowledgements* – We wish to thank PETER H. LANGTON for kindly correcting our manuscript. We thank also PÁL GULYÁS (VITUKI Budapest), who supported this work; as well PÉTER JUHÁSZ and BÉLA CSÁNYI who kindly helped us by collecting the material.

## REFERENCES

- ALBU, P. (1980) Chironomidae – Subfam. Chironominae. *Fauna Rep. Soc. România, Insecta, Diptera* 11: 1–320. [In Rumanian]
- ASHE, P. & CRANSTON, P. S. (1991) Family Chironomidae. Pp. 11–449. In SOÓS, A. & PAPP, L. (eds): *Catalogue of Palaearctic Diptera. Vol. 2. Psychodidae – Chironomidae*. Elsevier Science Publishing Co., Inc., Amsterdam.
- CRANSTON, P. S., DILLON, M. E., PINDER, L. C. V. & REISS, F. (1986) The adult males of Chironominae (Diptera: Chironomidae) of the Holarctic region. Keys and diagnoses. *Ent. Scand. Suppl.* 28: 353–502.

- EPLER, J. H. & FERRINGTON, L. C. (1994) The immature stages of *Paratendipes basidens* Townes (Diptera: Chironomidae: Chironominae). *J. Kansas ent. Soc.* **67**: 311–317.
- KLINK, A. & BY DE VAATE, A. (1994) De Tisza, een ecologische referentie voor makro-evertebraten in nevengeulen langs de Rijn. *Hydrobiologisch Adviesburo Klink, Rapporten en Mededelingen* **50**: 31 pp.
- LANGTON, P. H. (1991) *A key to pupal exuviae of West Palaearctic Chironomidae*. P. H. Langton, Huntingdon, Cambridgeshire. 386 pp.

Revised version received August 31, 2005, accepted October 3, 2005, published October 31, 2005

*Amphistomes of the World*  
*A check-list of the amphistomes*  
*of vertebrates*

O. Sey

The amphistomes are one of the rare groups of digenetic trematodes which have a broad spectra of the definitive hosts together with a wide geographical distribution, forming a continuous evolutionary lineage from fishes to mammals. At the same time, some species of them are causative agents of devastating disease of domestic and wild animals, mainly ruminants. Therefore, amphistomes may have professional and practical interests for research and thus a great number of information has been accumulated on their classification and biology. The intention of this check-list is to bring together a comprehensive list of the amphistomes, presently known and sources of references of their hosts and geographic distribution (87 pages). This list consists of three main parts. In the first "Parasite/host check-list" (137 pages), parasites were listed under their scientific names, followed by the synonyms, then the name of the authorship as well as the name of the countries from which they were reported. In the second "General host/parasites check-list" (31 pages), host were listed systematically under their scientific names from fishes to mammals, followed by amphistomes described in them in alphabetical order. In the third "Host/parasites check-list by countries" (63 pages), countries were listed alphabetically, hosts systematically and their parasites alphabetically. When it seemed to be necessary some comments were given and they are found in Chapter 7 "Notes" (5 pages). Three indexes (parasite, host and countries) are added to the list (29 pages).

Published in 2001. Hard bound, 368 pages. Price: 30 euro plus p. and p.

ISBN 963 641 865 9

**Orders should be sent to**

The Library, Hungarian Natural History Museum  
H-1088 Budapest, Baross u. 13, Hungary  
Fax: (36-1) 3171669