

Comments on some species in tribe Chironomini

Henk Vallenduuk

Prof. Gerbrandystraat 10, 5463BK Veghel, Netherlands.
E-mail: buro.vallenduuk@home.nl

During the work of identifying Chironomini collected at various localities in the Netherlands, I made some observations in species interpretation that I think are useful to share with the readers of the Chironomus Newsletter on Chironomidae Research. I hope that in particular ecologists and other users of larval identification keys will find the below comments helpful.

Reinterpretation of some species in *Chironomus*

Chironomus macani

I obtained males and females from single-reared larvae. Peter Langton identified them as *Chironomus* (*Chaetolabis*) *macani* Freeman, 1948 and confirmed that the male imagines are conspecific with the holotype of *Chironomus* (*Chaetolabis*) *macani*, held in the Natural History Museum in London, but not with those of Prof. Wolfgang Wülker presently kept in the Zoologische Staatssammlung, München. The Wülker's specimens thus do not belong to the true *C. macani* and should be renamed (Langton & Vallenduuk 2013). The larvae of both species are morphologically very similar but can be differentiated.

Chironomus dorsalis

Chironomus (*Lobochironomus*) *longipes* Staeger, 1839 was listed as a junior synonym of *Chironomus* (*Lobochironomus*) *dorsalis* Meigen, 1818 by Spies & Sæther (2004). However, the name *Chironomus* (*Chironomus*) *dorsalis* Meigen, 1818 has also been used (e.g. Strenzke 1959). *Chironomus dorsalis* Meigen *sensu* Strenzke is a misidentification and synonymous with *C. alpestris* Goetghebuer, 1934 (Sæther & Spies 2013).

I reared single larvae of *C. dorsalis* Meigen and *C. alpestris* Goetghebuer. It appears that the imago of *C. longipes* described by Shilova (1980) as *Einfeldia* does not match with *C. dorsalis* Meigen in Strenzke (1959: 23, fig. 12) and Langton & Pinder (2007, Vol. 1: 163; Vol. 2: Fig. 203B). The larvae of both types differ in morphology. Judging from the drawings by Shilova (1980, fig. 10), there are two characters in *C. longipes sensu* Shilova that differ from *C. dorsalis* Meigen. In *C. longipes sensu* Shilova, the lateral mental tooth 4 is shallower than tooth 5 similar to *C. alpestris* (see Webb & Scholl, 1985: 365 as *dorsalis*). The pecten epipharyngis seems to have equally sized teeth. In *C. dorsalis* Meigen the lateral mental tooth 4 is somewhat longer than 5 (gradually declining lateral teeth 1-5), as in Vallenduuk & Langton (2010: Fig. 18-21). The pecten epipharyngis has narrower and shorter interstitial teeth (Fig. 1).

As a result, there appear to be these 3 species:

Chironomus (*Chironomus*) *alpestris* Goetghebuer, 1934.

Chironomus (*Lobochironomus*) *dorsalis* Meigen, 1818.

Chironomus (*Lobochironomus*) *longipes* Staeger, 1839 *sensu* Shilova (1980) as *Einfeldia* has to be examined to determine which species the specimens belong. These probably are **not** *C. dorsalis* **nor** *C. longipes* and should be renamed.

Notes to species interpretations in identification literature:

Chironomus dorsalis Meigen in Webb & Scholl (1985), Langton & Pinder (2007), Vallenduuk & Moller Pillot (2002 and later) and Moller Pillot (2009a: 41) must be *C. alpestris* Goetghebuer.

Chironomus longipes Staeger in Vallenduuk et al. (1997) and Vallenduuk & Moller Pillot (2002 and later) must be *C. dorsalis* Meigen.

Chironomus longipes Staeger *sensu* Shilova (1980) in Vallenduuk & Langton (2010: Table 2) is not synonymous with *C. dorsalis* Meigen.

Chironomus longipes Staeger, 1839 in Moller Pillot (2009a: 45) probably is *C. dorsalis* Meigen.

The reported changes in species interpretation require information in former publications to be treated

carefully. The autecological information (e.g. in Moller Pillot 2009a) appears to be correct, but has to be updated.

The pecten epipharyngis in larvae of the subgenera *Lobochironomus* and *Chaetolabis*.

On finding interstitial teeth of the pecten epipharyngis in the species belonging to both subgenera, I believed that this character would be unique for them (Fig. 1). I later found that some specimens of other species in *Chironomus* also can have these interstitial teeth (Fig. 2). Jon Martin made similar observations (pers. comm.). When comparing different species it appears that the structure of the teeth varies. The teeth in *Lobochironomus* and *Chaetolabis* appear to differ from other species, but in a way that is very difficult to explain properly in keys. Therefore, this character is better not to be used as a character for distinguishing *Lobochironomus* and *Chaetolabis*.

Single reared larvae “versus” cytology and DNA

For identification and/or description of a species its stages, karyotype (cytology) or DNA sequences can be used. In my opinion each method has its positive and negative aspects and it is not the aim of these remarks to discuss which method is the best. In my point of view, all three methods bring us insight into the autecology of a species. With this knowledge, the “character” of the water, its biological quality, can be determined. When these data are available, environmental changes over a certain period can be determined.

Over the past years I have reared many species from single larvae. As shown for *Chironomus macani*, this process can be very valuable because it results in associated material of all life stages.

After rearing a larva, cytological analysis is not possible any more and DNA sequences can be found using a part of the imago. Mass-rearings can produce material also for cytology, but associations are unreliable since there can be multiple species of the same genus at anyone locality. However, by using standardized DNA sequences (e.g. DNA barcodes), both life stage and karyotype association is possible.

My aim is to create a publicly available collection of associated life stages from all species in Chironomini. Who wants to join this work? With the help of more workers it might be possible to build up a large reference collection (a utopian thinking?). Please contact me if you are interested!

References

- Langton, P.H. and Pinder, L.C.V. 2007. *Keys to the adult male Chironomidae of Britain and Ireland. Volume 1: Introductory text, keys, references checklist and index.* Freshwater Biological Association, No. 64, 240p.
- Moller Pillot, H.K.M. 2009. *Chironomidae Larvae of the Netherlands and Adjacent Lowlands. Biology and Ecology of the Chironomini.* KNNV Publishing, Zeist, 270p.
- Sæther, O.A and Spies, M. 2013. Fauna Europaea: Chironomidae in: Beuk, P. & T. Pape (Eds.) *Fauna Europaea: Diptera Nematocera. Fauna Europaea Version 2.6.2* Internet database (<http://www.faunaeur.org/>), accessed August 2013.
- Shilova, A.I. 1980. K sitematike roda *Einfeldia* Kieff. (Diptera, Chironomidae). – *Trudy inst. biol. vnutr. Vod* 41 (44): 162-191.
- Spies, M. & Sæther, O. A. 2004. Notes and recommendations on taxonomy and nomenclature of Chironomidae (Diptera). – *Zootaxa* 752: 1-90.

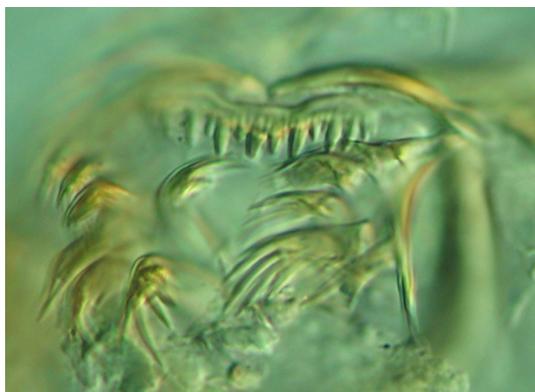


Figure 1. *Chironomus (Lobochironomus) dorsalis*, pecten epipharyngis.



Figure 2. *Chironomus (Chironomus) holomelas*, pecten epipharyngis.

- Strenzke, K. 1959. Revision der Gattung *Chironomus* Meig. 1. Die Imagines von 15 norddeutschen Arten und Unterarten. – *Archiv für Hydrobiologie* 56: 1-42.
- Vallenduuk, H.J., Moller Pillot, H.K.M., van der Velden, J.A. and Wiersma, S.M 1997. *Bijdrage tot de kennis der Nederlandse Chironomidae (vedermuggen): de larven van het genus Chironomus*. Lelystad, rapport 97.053. 30p. + app.
- Vallenduuk, H.J. & Moller Pillot, H.K.M. 2002. *Key to the larvae of Chironomus in Western Europe*. privately published, XXp
- Vallenduuk, H.J. & Langton, P. 2010. Description of imago, pupal exuviae and larva of *Chironomus uliginosus* and a provisional key to the larvae of the *Chironomus luridus* agg. (Diptera: Chironomidae). – *Lauterbornia* 70: 73-89.
- Langton, P. & Vallenduuk, H.J. 2013 in press. The karyotype and morphology of all stages of *Chironomus (Chaetolabis) macani* Freeman, 1948 and *Chironomus (Chaetolabis) bitumineus* nom. nov. for *C. (C.) macani* Wiederholm, 1997 nec Freeman. – *Lauterbornia* 76: 12-19.
- Webb, C.J. and Scholl, A. 1985. Identification of larvae of European species of *Chironomus* Meigen (Diptera: Chironomidae) by morphological characters. – *Systematic Entomology* 10: 353-372.
-