

# 12<sup>th</sup> International Workshop on Subfossil Chironomids

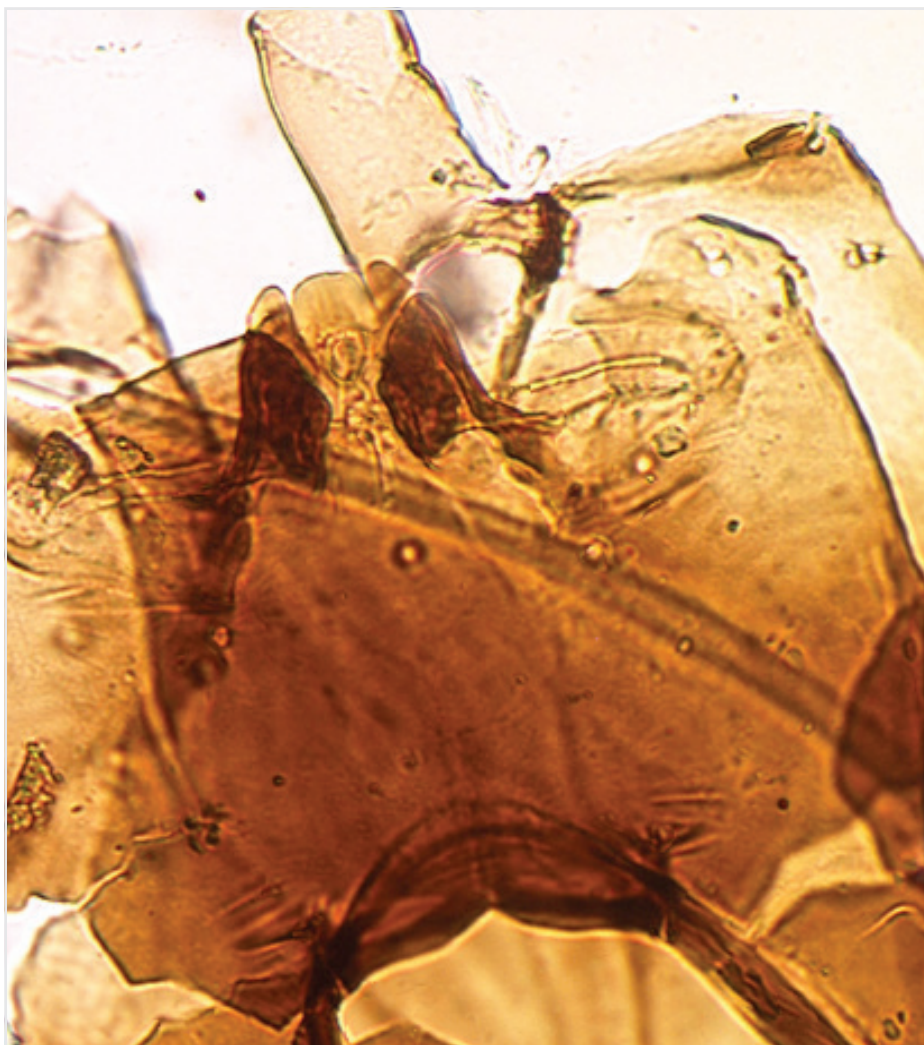
Peter Langdon<sup>1</sup> and Steve Brooks<sup>2</sup>

New Forest, UK, 10-13 June 2013

Forty scientists met in the New Forest to attend the 12<sup>th</sup> International Workshop on Subfossil Chironomids. This three-day meeting, hosted by the University of Southampton, brought together researchers from Europe, North America, South America and Asia.

Since 1997 the series of international subfossil ("deadheads") chironomid workshops have been fundamental for furthering developments in research on chironomid paleoecology. In particular, the workshops have been important in fostering coherence and cooperation within the community and introducing and integrating new researchers into the field. They have also been instrumental in developing a standard approach to subfossil chironomid larval taxonomy and analytical methods, which has been vital in maintaining rigor in the subject. Furthermore, they have enabled the community to keep abreast of new developments and methods to tackle emerging problems, and have provided a forum for developing new joint research initiatives. This meeting continued in the same vein - delegates discussed a range of key topics that have dominated paleoecological techniques in recent years in addition to many new developments.

The use of transfer functions in chironomid paleoecology was central to many discussions. This has been an important topic of recent debate within the whole paleolimnology and paleo-science communities, following the recent work of Juggins (2013). Steve Juggins attended the meeting and presented a précis of his research. The discussion that followed was very positive, focusing on the best way to move the science forward. Clearly there is still a lot of potential in using chironomid-based transfer functions to reconstruct summer temperatures (and other parameters where appropriate), but as a community we need to consider the ecological relationships in our calibration sets carefully, and how well these relationships are replicated in space, before applying them in time. Indeed one study showed how training set selection, taxonomic resolution and taxon deletion can be critical in influencing model performance and resulting reconstructions. Much of the discussion around this subject focused on two key issues: (i) how to develop more stringent ways to test calibration data (training sets) and evaluate the performance of inference models; and (ii) improving the reliability of the reconstructions by identifying the effects of confounding secondary variables. It was agreed that cross-validation of results from other sites or against other independent proxies is an appropriate way to validate chironomid-inferred reconstructions.



**Figure 1:** Subfossil head capsule of *Corynocera ambigua* (image from Brooks et al. 2007). This taxon is relatively easy to identify but its (paleo)ecology is not straightforward. It is seemingly a good cold indicator in the Lateglacial and in northern regions but also appears to tolerate warm, eutrophic conditions in southern parts of its range during the late Holocene. This illustrates the potential problems of using transfer functions, as raised by Juggins (2013).

Another key topic discussed at length was the effectiveness of using chironomids for temperature inferences from sequences spanning the last interglacial to the Holocene from sites across the world. Other discussions focused on the responses of chironomids as environmental gradients are crossed, and how best to interpret the effects of secondary gradients; trophic changes and human impacts; the use of stable isotopes within chironomid paleoecology; and biodiversity and lake restoration.

The location and date of the next International Workshop on Subfossil Chironomids is still to be confirmed, but may coincide with the next International Paleolimnology Symposium to be held in China in 2015.

## AFFILIATIONS

<sup>1</sup>Geography and Environment, University of Southampton, UK

<sup>2</sup>Department of Life Sciences, Natural History Museum, London, UK

## CONTACT

Peter Langdon: P.G.Langdon@soton.ac.uk

## REFERENCES

Brooks SJ et al. (2007) The identification and use of Palaeartic Chironomidae Larvae in Palaeoecology. QRA Technical Guide No. 10, Quaternary Research Association, 276 pp

Juggins S (2013) Quat Sci Rev 64: 20-32