

Editorial

The Importance of Illustration

We live in an undeniably and increasingly digital world. I sit here with my computer, tablet, and smartphone all at hand... each with some form of image-capture technology. My teaching and research microscopes are also outfitted with carefully chosen, high quality cameras, which I would argue are invaluable tools. These devices make taxonomic research much easier, if not more robust. None-the-less, there is still much to be said for a well-crafted illustration.

Digital imagery, while an exceptional resource, still does not completely capture the morphological complexity and minutia of insects such as the Chironomidae quite like a hand-drawn or digitally-inked illustration. Even with expensive and high-quality techniques such as “z-stacking,” it is still difficult, if not impossible, to fully capture minute details that can be easily conveyed with a simple stroke of the pen. To echo Gilka (2008), drawings are perhaps the most critical component of taxonomic descriptions, and are especially crucial for dipterans.

While some insect taxonomists have been allured by the simple “click of a button” technology, particularly as compared to the often many painstaking hours with the pen (traditional or digital), there are so many details that are simply lost or not completely captured. For example, when comparing illustrations and images (e.g. Figure 1), I would argue that the digital images, while high-quality, still do not quite capture all of the details of the corresponding inked illustration. When it comes down to it, these minute intricacies may mean the difference between one species or two, or species ‘A’ or ‘B’, especially in groups that are difficult to differentiate. These situations certainly are not difficult to come by when dealing with Chironomidae.



Figure 1. Comparison of digitally inked illustrations and digitally photographed images. Illustrations inked in Adobe Illustrator; photographs taken using a Leica DFC420 digital camera on a Leica DM6000 compound microscope. Figure shows hypopygium of *Micropsectra penicillata* Anderson, Stur and Ekrem, 2013.

Now, I’m definitely not advocating that we not utilize this technology. On the contrary, I think it can be used to our benefit. Images can be of great help during the illustration process, and in many cases can add great value to a manuscript. But, unless the manuscript is littered with images taken at slightly different depths or angles, the traditional illustrative techniques cannot and should not be replaced.

Another important advantage of illustration, as pointed out by Holzenthal (2008), is that the illustrator becomes intricately familiar with the specimen in question. What better way to become so familiar with the male chironomid terminalia than by sitting at the microscope, pencil in hand under the drawing tube, while making careful focusing adjustments with the other?

As careful taxonomists, we should use all techniques available to us. Just as molecular and morphological species delineation techniques complement each other, so too do digital image capture and hand-crafted illustrations. Often, they will lead to the same conclusions, but in some cases, one method will allow the observer to see features in a new light – or allow you, or other researchers, to ask further probing questions.

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