Preparation of Electronic Key Figures

1. SCOPE AND APPLICATION

This method details the preparation of electronic figures for use in taxonomic keys.

2. SUMMARY OF METHOD

Images are scanned, manipulated, saved electronically as TIFF files, and stored or burned to CD.

3. APPARATUS AND EQUIPMENT

3.1 Document scanner

3.2 Image manipulation software (Adobe Photoshop, Adobe Photoshop Elements, Corel Draw)

3.3 Computer with CD burning capabilities/software

3.4 Blank CD (preferably CD-RW)

4. METHODS

4.1 Determine which figures are desired. When applicable, obtain permission to use any copyrighted figures before use. To get copyright permission, a letter must be written to the publisher of the book, article, etc. that contains the figures desired, identifying the specific figures and for what purpose the figures will be used.

Note: In most cases, line drawings are better than photographic images for illustrating taxonomic details. Line drawings often emphasize the relevant part that the text mentions.

4.2 Scan each figure separately using the appropriate or desired DEP scanner. Set the Image Type to Grayscale and the Image Quality to 300 dpi. Always use TIFF as the file type.

Note: Scanning at higher resolution and in grayscale helps reduce line "jaggies" if the image is enlarged over its original size. However, the dramatic increase in file size from scanning a figure at 600 DPI is generally not worth the increase in resolution unless the figure will have to be enlarged substantially before use. Saving as a grayscale image vs. saving as a black and white photograph will help you save space on your hard drive without degrading the image.

TIFF - Tag Image File Format. TIFF is the most widely supported format across platforms. TIFF creates a large file, but it uses lossless compression, which means you always have all the information collected in the original scan, without data loss. If one might need to modify and write more than once, using a non-glossy format like TIFF for a master file prevents gradual deterioration of the image quality. TIFF files are generally given file names with the suffix ".tiff".

4.3 Save the image with the desired file name to a folder.

Note: When deciding on a file name, it is very important to include the original figure number, and a brief description of the image, for example, "Figure 1a Hydropsyche sp. head dorsal view". Also, be sure to note where a figure comes from by either including the information in the file name, or by some other means.

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4.4 Open and manipulate the scanned image using an image manipulation program such as *Adobe Photoshop* or *Adobe Photoshop Elements*. The final image should be saved as a TIFF file. This is the image that will be used for the final manipulations and placement into the electronic key.

Notes: Each image will usually differ in quality, so most manipulations will be unique to an image.

The tools most commonly used for manipulations using Adobe Photoshop will be the rectangle selection function; the text function, and the line function (located on the vertical toolbar), the Adjust function and Rotate Canvas function (located under the [Image] button on the horizontal toolbar) and the Sharpen function (located under the [Filter] button).

Usually, you will have to redo the original text, arrows, etc., of the image for optimal quality. When you do this, keep in mind the figure's estimated final screen size, so the text, arrows, etc., that you put into the image will be the correct size for comfortable viewing on a computer screen. Remove and do not replace the figure number (i.e. Fig. 1A). The person building the electronic key(s) will do this manipulation.

For placement in the electronic keys, once the final changes are completed, illustrations are generally saved in a format providing a smaller file size through image compression (such as jpeg). If further changes do become necessary, one should go back to the TIFF image to make the changes, and then resave in the smaller file format. Otherwise, each successive compression will result in increasing loss of image detail.

4.5 Store resulting figures in a secure location. Figures being sent to an outside contractor can either be emailed (if they have a wide-bandwidth internet connection) or, preferably, burned onto a CD.

5. QUALITY CONTROL AND DOCUMENTATION

5.1 Obtain permission to use any copyrighted figures before use. Save correspondence in secure location for future reference.

Appendix of Changes

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