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Review of What Wasp is That?

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Buffington, Matthew L., "Review of What Wasp is That?" (2008). *USDA Systematic Entomology Laboratory*. 76.
https://digitalcommons.unl.edu/systentomologyusda/76

Software Review

WHAT WASP IS THAT? by N.B. Stevens, C.J. Stephens, Muhammad Iqbal, J.T. Jennings, J. LaSalle and A.D. Austin. Australian Biological Resources Study (ABRS)/ Centre for Biological Information Technology (CBIT). Recommended retail price AU$64.90 inclusive of GST. Add AU$6.70 for postage within Australia, For all other destinations add AU$$12.85. ISBN 978 0 642 56851 9 (CD-ROM), 2007.

The digital revolution is in the midst of changing the very nature of systematic entomology. The discipline has been wrenched from the confines of traditional paper outlets for the dissemination of data through the brave new world of the internet, on-line journals and email attachments. At the root of this renaissance, however, there exists a need for the expertise, experience and basic courage of high-quality researchers to continue probing the Earth for the unusual, the spectacular, and the unbelievable.

What Wasp is That? brings together the fruits the digital revolution with the expertise capable of delivering accurate, high quality data. This cd-rom digital key, built with the Lucid3 Interactive Key Builder, is a cross-platform, Java-driven application viewed through an internet browser. The key focuses on Hymenoptera of the Australasian Region: although most hymenopteran families are present in Australia, applicability of the key on a world-wide basis is not commended since global morphological diversity has been pruned to the region.

Prior to this product, the mainstay of hymenopteran systematics has been *Hymenoptera of the World: An Identification Guide to Families* (1993, edited by H. Goulet and J. Huber). This book, affectionately referred to in the business as the 'coloring book', revolutionized the ability to identify any hymenopteran. This is no simple task. The Hymenoptera are one of the four megadiverse orders, and, if one follows the arguments of Grissel (1999), the order may end up eventually having the most described species of any insect group. Consequently, the morphological diversity inherent in the group is overwhelming, and to some researchers, downright catastrophic. The need for accurate identification of this group is underscored by the fact that parasitic Hymenoptera, which compose the majority of species diversity within the order, are responsible for regulating many insect populations around the globe.

What Wasp is That? takes up this identification challenge through the use of non-linear keys. Using these keys takes some getting used to. For instance, you can get your unknown identified terribly quick, which for most people, is unusual in itself. This is achieved through the immediate exclusion of whole taxa and characters that are determined inapplicable after just a few character choices have been made. A user of the key simply examines the unknown specimen under the microscope, and goes through the list of characters on a computer, checking off the character states that apply to the unknown. If you do not understand the character, that is not a problem either; each state is supplied by an image to illustrate the character. Eventually through choosing characters that apply, the user is led to only a handful, and eventually a single, choice for identity of the unknown.

There is much more, however, to *What Wasp is That?* A dizzying array of bibliographic, biological, ecological and classificatory data also comes with the disk. I personally found this extremely useful, and builds from the foundations of *Hymenoptera of the world*. There is another section devoted exclusively to understanding the morphology of this group. This in itself is a fantastic addition to Hymenoptera research, where several 'competing' terminologies exist.

However, no identification keys are perfect. I asked Dave Smith (Systematic Entomology Lab) to pull some random Australian Hymenoptera from the USNM collection, without telling me their identities, so I could 'objectively' test the key. The first three went without a hitch, taking an average of 5 minutes to make a correct identification. The fourth took longer, due only to my error in interpreting a character state. The final specimen, however, was problematic. Half-way down the list, the character state chosen (distance between toruli) removed the taxon in question *off* the list. Having known the 'undetermined' specimen was a figitid (of which I am a specialist), I was unhappy when that taxon was removed from the list. I assumed this was simply an error in the assignments of character states to taxa. This made me carefully re-examine the character list. As stated above, one of the advantages of a Lucid key is how certain characters can be removed from the choice list if previously chosen character states automatically make them inapplicable. I found this is part of the key that could be greatly expanded. For instance, when I chose 'multiple closed cells in forewing', the character state further down the list describing 'plate present on scutellum', a state *only* found in eucoiline Figitidae, should have automatically been excluded since no Figitidae possess more than a single closed forewing cell.

Another criticism of the key is actually a criticism of Lucid3. Each character state can only be illustrated with a single image file; the authors of *What Wasp is That?* circumvent this limitation by creating compositions of individual wasp images into a single image. This seems to work, although some of the images are a bit 'busy' with wasps in various poses. I would prefer to choose among various individual image files.

What Wasp is That? is a truly revolutionary tool, and like all such tools, requires some fine-tuning when first

implemented. My criticisms of this product are only meant to help with the next, hopefully global, hymenopteran key. In closing, I feel this product is the epitome of the merging of the classically-trained morphologist with the tech-savvy world of mass dissemination of information. Possibly most important is that a product like this brings out the fascinating world of Hymenoptera to non-specialists, such as ecologists, biological control workers and educators.

I congratulate the authors on their initiative to produce this key, and I hope this product helps to motivate further work on such products with a global scope.

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References

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