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Syngraph: An application for graphic display and interactive use of synonym lists

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Abstract

Multiple names that refer to a single species (synonyms) and more than one species being referred to by the same name (homonyms) bedevil taxonomy. They produce ambiguity about the entity under discussion. Syngraph is a computer application that organizes information about synonyms and homonyms. It can track different names that potentially have been applied to the same species, or identical names that have been applied to different species. It can create a list of synonyms in conventional format for use in publication, as for a taxonomic monograph. It can also display and print names so they are linked, thereby providing information on the conceptual basis of a name and the action taken in a publication. In the display, each name is imposed on a color-coded rectangle; all names on rectangles of the same color refer to records that stem from a single description. This allows quick visualization of the taxonomic history. When linked to a geographical information system application, the color can be used for points plotted on a map that displays the geographical locality of specimens referred to in each record. This visualization of the geographic distribution of the nominal species can provide tests of the hypothesis that the names are, indeed, synonyms. Syngraph is available for download; help files accompany the executable files.

Key words: synonymy, homonymy, chresonymy

Introduction

A list of synonyms and homonyms is an essential element of most species treatments, be it part of a monograph (Berta *et al.* 1995) or the description of a new species (Winston 1999). Linking synonymous names and differentiating between uses of the same name for organisms that really belong to different taxa are basic to biological research. Tracking synonyms (and, to a lesser degree, homonyms) is a monumental bookkeeping task (Dubois 2000). It rarely suffices to make a simple statement that one name equals another (signifying that two names have been applied to a single species). A usage may apply to multiple species, in which case the synonymy is only in part (*pro parte*), some usages are subsequently disagreed with by taxonomists, some specimens are thought to have been misidentified, etc. Table 7.1 of Winston (1999), which is entitled "Terms and abbreviation used in synonymies and taxonomic description," runs to nearly three pages.

We have developed Syngraph, a computer application that uses a relational database to allow linkage of any published name to any other using a lexicon of modifiers that are conventional in taxonomy, anchoring each use to its bibliographic reference. Such an instance is what is referred to as a “Taxon Name Usage” (TNU) in the Global Names Architecture (http://gnapartnership.org). Through the use of color and other symbology, the graphical synonym list generated by the report function of our application provides more information than is provided in conventional lists about relationship of the name to other members of the list and about confidence in that usage. Syngraph also allows access to all published uses of a name: print lists

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