

Scratchpads: getting biodiversity online, redefining publication

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Abstract. Taxonomists have been slow to adopt the web as a medium for building research communities. Yet, web-based communities hold great potential for accelerating the pace of taxonomic research. Here we describe a social networking application (Scratchpads) that enables communities of biodiversity researchers to manage and publish their data online. In the first year of operation 466 registered users comprising 53 separate communities have collectively generated 110,000 pages within their Scratchpads. Our approach challenges the traditional model of scholarly communication and may serve as a model to other research disciplines beyond biodiversity science.

Implementation

We have developed an intuitive web application ([Scratchpads](#)) that enables researchers collaboratively to build, share, manage and publish their biodiversity data online. Our architecture is based on the [Drupal](#) content management system and provides a scalable, flexible resource that facilitates the collaboration of distributed communities of taxonomists. Sites are hosted at the [Natural History Museum](#) London, and offered free to any scientist that completes an online registration form. Registrants assume responsibility for the contents of each site, which (on approval) are instantiated at domains of their choice. The default Scratchpad template has the capacity to support bibliographies, image galleries, specimen records, documents, custom data sets and maps. Data are classified and aggregated around a taxonomy supplied by the user. Authenticated users optionally supplement this with information from high quality web accessible databases (currently [Genbank](#), [GBIF](#), [Biodiversity Heritage Library](#), [Yahoo! Images](#), [flickr](#) and [Google Scholar](#)) to facilitate the automatic construction of content rich web pages about any documented taxon. Content is published under [Creative Commons \(by-nc-sa\)](#) license, which is a condition of use for all site contributors. Administrative functions including the control of permissions, user roles and the development of new functionality is centrally managed. As a derivative of Drupal, our source code is covered by version 3 of the [GNU General Public License](#) and is available from a [Subversion repository](#).

Results

In the first year of operation, the Scratchpads have attracted 466 registered users from more than 30 countries, across 53 separate sites. Collectively these users have produced more than 110,000 web pages, attracting an average of 6,000 visits and 50,000 page views per month. Example use cases include:

Phasmid Study Group (<http://phasmid-study-group.org/>)

A non-profit-making society with 54 contributing members worldwide, focused on the study of Stick and Leaf insects (order Phasmida). Site contents include extensive image galleries, a forum, accounts of species and host plants, a database and web form of UK phasmid sightings, and several online publications including the e-journal [Phasmid Studies](#) (ISSN 1750-3329). Comparable Scratchpads include the [Blattodea Culture Group](#) (cockroaches), [JEMU](#) (The Joint Experimental Molecular Unit) and [EUNOPS](#) (The European Network of Palm Scientists).

Mosquito Taxonomic Inventory (<http://mosquito-taxonomic-inventory.info/>)

An authoritative resource on the global diversity of mosquitoes (family Culicidae). The website provides a taxonomic framework for the group with information on type specimens, classification, distribution, phylogeny, characteristics, bionomics, medical and economic importance, and key references to mosquito taxa. Comparable Scratchpads include [Fungus Gnats Online](#), [African Dungbeetles Online](#) and [Nannotax](#) (Nannofossil research).

Checklist of Birds of the World (<http://birds-howardandmoore.org/>)

The fourth edition of the Howard & Moore Complete Checklist of Birds of the World is being fact-checked through a Scratchpad. The editor and a distributed team of collaborators are checking the dates and spellings of all names and original descriptions used in the compilation of the checklist. The eventual goal is to release as much of the final checklist as possible through their Scratchpad website. Comparable Scratchpads include the [World Bee Checklist Working Group](#).

Conclusion

Ongoing work is linking the Scratchpads to the [Encyclopedia of Life](#) project, and the [EDIT Cybertaxonomy platform](#). The template of our architecture may serve as a model to other research communities developing knowledgebases outside biological taxonomic research. Further details from <http://scratchpads.eu>.

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Fig. 1. Home pages from a selection of Scratchpads, accompanied by a montage of screenshots illustrating the types of content found and supported by the Scratchpad web application.

