

# A decade of *ODE*: looking back and looking forward

Olaf R. P. Bininda-Emonds

Received: 12 January 2010 / Accepted: 12 January 2010 / Published online: 9 March 2010  
© Gesellschaft für Biologische Systematik 2010

## Looking back ...

The end of the previous decade saw a remarkable convergence of important dates in taxonomy and evolution: the 300th anniversary of the birth of Carl Linnaeus in 2007, the 250th anniversary of the 10th edition of *Systema Naturae* (and therefore the birth of modern taxonomy) in 2008, and the 200th anniversary of the birth of Charles Darwin as well as the 150th anniversary of the publication of *The Origin of Species* in 2009. (Intriguingly, both Linnaeus and Darwin were 50 years old when they published their signature works.)

Although not anywhere in the same league as these events, *Organisms Diversity & Evolution (ODE)* celebrates its first full decade of existence in 2010. In these 10 years, much has changed in systematics and taxonomy as well as for the journal itself. And much will continue to change in the future on both fronts.

*ODE* premiered in 2001, shortly after the founding of the (German) Association of Systematic Biology in 1997. Both events were intended to capitalize upon and further advance the revival of biological systematics. As pointed out in the leading editorial of the inaugural issue (Haszprunar et al. 2001), the revival was due to three factors: the growing availability of DNA sequence data in combination with the rigorous method of phylogenetic systematics, the increased awareness of the relevance of biological systematics to other fields in biology, and the rise of biodiversity studies. The latter was fuelled in part by initiatives such as

Systematics Agenda 2000 (Claridge 1995) that were designed to try and catalogue the inventory of life in the face of the growing extinction crisis. Together with *Zootaxa*, *ODE* was one of the first journals to build on this upswing, having since been joined by others including *Systematics and Biodiversity* and, most recently, *Zookeys*. Nearly 10 years on, it is interesting to revisit these three factors as well as the impact of systematics and taxonomy on the scientific community today.

Although the promise of molecular systematics was readily apparent in 2001, its true scope as revealed over the past decade was probably unforeseen by many. At the turn of the century, molecular phylogenetic studies were generally limited to hundreds of taxa (and this often being the exception), both because of limited data availability and computational power, with maximum parsimony and neighbour joining being the only viable options for studies of this scale. Today, likelihood-based analyses of hundreds of taxa are more or less routine and the bar has been raised to analyses involving thousands if not tens of thousands of taxa. In addition, the growth of high-throughput sequencing has further fuelled the acquisition of molecular sequence data, both on the scale of individual genes and of whole genomes. This, in turn, has led to the establishment of both DNA barcoding (Hebert et al. 2003) and DNA taxonomy (Tautz et al. 2003) as viable, if somewhat controversial, tools in taxonomy and systematics. The molecular revolution has been so swift and thorough that, 10 years on, the role that is left for morphology in biological systematics has become an open question to many (e.g., see Scotland et al. 2003).

How central a role biological systematics plays in biology today depends on which part of this field one is talking about. Whereas the importance of phylogenetic systematics is becoming increasingly entrenched in biology

O. R. P. Bininda-Emonds (✉)  
AG Systematik und Evolutionsbiologie, IBU – Fakultät V,  
Carl von Ossietzky Universität Oldenburg,  
Carl von Ossietzky Strasse 9–11,  
26111 Oldenburg, Germany  
e-mail: olaf.bininda@uni-oldenburg.de

(in part through the appreciation of the need to correct for phylogenetic relatedness; see Harvey and Pagel 1991), taxonomy, like many of the species and taxa it names, is becoming increasingly threatened. Despite initiatives like Systematics Agenda 2000, the European Distributed Institute of Taxonomy (EDIT; <http://www.e-taxonomy.eu/>), or the Encyclopedia of Life (<http://www.eol.org/>), fewer and fewer taxonomic positions continue to exist (and then largely concentrated in the natural history museums) and the options for publishing purely taxonomic research remain limited. Another telltale sign is that while much of the recent attention was focused on the Darwin Year, and perhaps understandably so, the anniversary of modern taxonomy in 2008 went largely unnoticed, even within the taxonomic community.

Taxonomic research lays a crucial foundation for all research in biology: put simply, we need to know what species we are investigating. It also has a more direct impact on fields like systematics, biogeography, ecology, and, of course, biodiversity. Our mistake as taxonomists has arguably been to assume that the remainder of the scientific community also realizes the fundamental and important role of taxonomic research to biology. They haven't. The increased competition for funding means that scientists are too busy promoting their own research agendas. The same needs to be true of taxonomy, both actively through continuing lobbying efforts, but also passively through more integrative research. In my opinion, the taxonomic community should be doing much more to integrate their research with other areas of biology (such as the ones listed above) as a form of "applied taxonomy" rather than continuing with publishing pure taxonomic research (e.g., species descriptions or taxonomic revisions) and hoping that the remainder of the scientific community will see the value of such research and apply it themselves.

Finally, what of biodiversity and its impact on systematic biology? The pending extinction crisis provided a new urgency to biodiversity studies over the past decade, with the taxonomic research often associated with it simultaneously receiving a much needed boost. Although hard numbers are difficult to come by (an exception being the SOS reports of the International Institute for Species Exploration of Arizona State University; <http://species.asu.edu/SOS>), the pace of species discovery has seen a strong upsurge over the past few years. Initiatives such as the Census of the Diversity of Abyssal Marine Life (CeDAMar; <http://www.cedamar.org>)—with *ODE* devoting a special volume to the results of its DIVA-1 expedition (Martínez Arbizu and Schminke 2005)—have also extended our investigations to previously unexplored realms like the deep sea to reveal a stunning and unexpected amount of biodiversity. Molecular methods have also played their part via the combination of environmental sampling and a form of DNA taxonomy (e.g., Venter et al.

2004). Indeed, the boom has been so great that there are often more samples than there are trained taxonomists to analyze them. Thus, biodiversity research has often amounted to purely cataloguing what is out there rather than being able to ask the more integrative questions of why they are out there (and not over there, or there, or there) and which ones might not be there for very much longer. The highly bookkeeping nature of much of the biodiversity research undertaken to date also means the first wave of the biodiversity boom has passed (in Germany at least) and that funding for purely exploratory research is again proving more difficult to obtain. As for taxonomy, there exists a need to integrate biodiversity studies with other areas of biological systematics and other fields of biological research.

### ... looking forward: the evolution of *ODE*

With volume 10, *ODE* itself continues to evolve. Two obvious developments are a change in both the publisher and the editorial team (and its structure). Numerous other changes are also being made so that *ODE* can continue to maintain its strong profile in the systematics and taxonomic communities.

#### Publishing

After 9 years with Urban & Fischer and later their new owner Elsevier, we are excited to be moving to Springer, a worldwide leader in scientific publishing that is committed to helping *ODE* increase its impact and profile in the systematics community even further.

Apart from a revamped look, including a full-colour cover, three important changes associated with the move to Springer revolve around improving the electronic presence of *ODE*. First, *ODE* has finally instituted an online submission system for manuscripts through the well established and user friendly Editorial Manager system (<http://www.editorialmanager.com/odae/>). This development, which is now commonplace in scientific publishing, will undoubtedly help to streamline and better organize the entire review process for papers submitted to the journal. Second, to help minimize the delay between acceptance and publication, articles will be published online as soon as possible following acceptance as part of Springer's Online First option. Although it must be kept in mind that the taxonomic status of taxa nomina published in this manner remains unclear at present, the overall advantages of Online First in terms of reduced times to publication clearly outweigh any potential taxonomic disadvantages (or, more properly, difficulties). Finally, through Springer there are increased opportunities for open-access publishing in *ODE*.

In the first instance, authors can choose, for a price, to make their articles open access from day one through Springer's Open Choice program. In the second instance, all articles published in *ODE* by Springer automatically become open access after 2 years, meaning that the back issues will essentially become available to all.

#### Editorial team

After having been with the journal from its inception and having served as its *de facto* Editor-in-Chief for the past few years, Gerhard Haszprunar is stepping aside from his editorial duties for *ODE*. At this point, I can only thank Gerhard for the tremendous job he has done in getting the journal up and running (together with Joachim Kadereit and Wolfgang Wägele) and also in guiding *ODE* to the well respected position that it now enjoys in the systematics community. I can only hope to do the job as well.

The editorial structure, however, will also be revamped slightly beyond this, moving from a system of four taxonomically delineated Editor-in-Chiefs to a single Editor-in-Chief supported by an increased number of largely taxonomically delineated Associate Editors (the odd paraphyletic assignment notwithstanding). A diverse and international Editorial Board remains to support the editors in their duties and to help promote the journal worldwide. In assembling the new editorial team, a conscious effort was made to make it more international at the levels of the Associate Editors and the Editorial Board. At present, 15 different countries are represented among the 26 person strong editorial team.

Altogether, these structural changes both provide a clearer decision-making process and also largely reflect the *de facto* organizational scheme that was already in place at *ODE*, where Gerhard Haszprunar handled the majority of the manuscripts over the past few years. New to the editorial structure is a Managing Editor for the journal (Julia Gockel), whose role it will be to coordinate and troubleshoot all aspects of the submission and pre-production processes. Finally, rounding out the editorial team is Martin Spies, who with his combined English language skills and taxonomic expertise will be continuing his excellent work as the Language and Copy Editor for the journal.

#### Content

Like before, *ODE* remains committed to publishing the highest quality papers integrating information about the systematics, taxonomy, and/or evolution of all organismal groups (living or fossil) as well as in the theory and issues underlying these areas. This diversity is one of the hallmarks of *ODE*. In disseminating this information,

original research articles will continue to form the core of *ODE*. An important change here, however, is that species descriptions in the future will only be published as part of a larger, more integrative study placing the new species in a broader context. As important as publishing species descriptions is, this slight change in policy reflects both the need for taxonomists to integrate their research with other fields in biology ("applied taxonomy") as well as the existence of several other, taxon-independent journals today that will publish pure species descriptions (e.g., *Zookeys* or *Zootaxa*), something that was not the case nearly a decade ago.

Rounding out the categories of papers are review articles, forum articles discussing (controversial) issues and themes relevant to biological systematics, and methodological papers. The two former categories have long been recognized at *ODE*, but never really realized to date. For instance, in the past 3 years (volumes 7–9), only a pair of explicitly non-empirical papers has been published—those of Lee and Skinner (2008) and Matheson et al. (2007)—and hardly any reviews, Böggeman (2009) representing a noteworthy exception. To kickstart the review papers at least, *ODE* has taken on Rudolf Meyer as the Associate Editor in charge of reviews, who, in turn, will be reviving an approach adopted in the *Fortschritte der Zoologie* (Advances in Zoology) series that presented regular summaries of the important systematic changes and advances in selected taxonomic groups. The uncritical reviews were geared towards non-specialists of the group (the specialists already presumably knowing the contents) and so represented a wonderful resource to keep abreast of the biological systematics of other groups of organisms. The tremendous surge in the number of phylogenetic systematic studies (apparently as much a problem then as now; see Tihen 1962), together with the increased number of novel and/or conflicting hypotheses being proposed for an ever increasing number of taxonomic groups, make the need for such a series of articles more pressing than ever.

Finally, new to *ODE* is the category of purely methodologically based papers, brief papers intended to highlight new techniques or tools useful to conducting research in systematics and taxonomy. Although such content has been published previously in *ODE*, it usually played a supporting role in an empirical study and therefore might have been missed by researchers not interested in the group in question. By instead giving the methods priority (as in Matheson et al. 2007), be they laboratory techniques or bioinformatic tools, it is hoped to give these advances more visibility to a wider audience, who can then apply the methods to their own particular study group.

One casualty of the recent restructuring is the *ODE Electronic Supplement (ODES)*. *ODES* was originally conceived as a separate repository for information that

could not easily be accommodated in the main journal or for articles that were too large for *ODE*. In the end, *ODES* proved to be neither “Pisces” nor Galloanserae (taxonomically speaking), with its relationship to *ODE* never always being absolutely clear. Although previously a separate entity with its own ISSN number, *ODES* was partially rolled into *ODE* in 2007—an awkward arrangement at best—and was used primarily to provide the supporting information for descriptions of new species. But with electronic appendices now commonplace in scientific publishing, the need for an independent *ODES* has passed.

### Biodiversity of ODE

One of the strengths of *ODE* is its commitment to “biodiversity” in terms of the organisms that appear in the journal, the data and methods used, and the authors that choose to publish there. Again, a survey of the papers published in *ODE* over the past 3 years (volumes 7–9) reveals some interesting trends. Papers about arthropods comprise the largest group (35.6%, with 12.6% about insects alone), but several other groups are also well represented: remaining protostomes (28.7%), green plants (19.5%), and deuterostomes (12.6%). Noticeably underrepresented are prokaryotes, the “primitive” green plants, and the remaining eukaryotes as well as contributions involving fossil specimens. The goal of *ODE*, however, remains to cover all of the Tree of Life and *ODE* will continue to welcome submissions for all organisms, with the editorial team also actively recruiting submissions for the underrepresented groups.

More impressively, the corresponding authors of the 87 papers published over this time span hail from 23 different countries. Unsurprisingly, German authors continue to dominate this group (44.8%)—*ODE* is the journal of the German Association of Systematic Biology after all—followed by other European authors (28.7%), but contributors from North and South America, Asia, and Southeast Asia are also present.

As before, the new decade promises to be an exciting and critical time for research in biological systematics.

Whereas the molecular revolution is helping to make our goal of elucidating the Tree of Life increasingly realizable, sadly the same can be said to be true of the pending extinction crisis and taxonomic impediment. Together, both factors are threatening to rapidly make the Tree that much smaller than it currently is. With the need for biological systematics thus arguably never being greater, *ODE* remains committed to promoting this field by publishing integrative papers of the highest possible quality that it has to offer.

### References

- Böggeman, M. (2009). Polychaetes (Annelida) of the abyssal SE Atlantic. *Organisms Diversity & Evolution*, 9, 251–428.
- Claridge, M. F. (1995). Introducing systematics agenda 2000. *Biodiversity and Conservation*, 4, 451–454.
- Harvey, P. H., & Pagel, M. D. (1991). *The comparative method in evolutionary biology*. Oxford: Oxford University Press.
- Haszprunar, G., Kadereit, J. W., & Wägele, J. W. (2001). Editorial. *Organisms Diversity & Evolution*, 1, 1.
- Hebert, P. D. N., Cywinska, A., Ball, S. L., & DeWaard, J. R. (2003). Biological identifications through DNA barcodes. *Proceedings of the Royal Society of London B*, 270, 313–321.
- Lee, M. S. Y., & Skinner, A. (2008). Hierarchy and clade definitions in phylogenetic taxonomy. *Organisms Diversity & Evolution*, 8, 17–20.
- Martínez Arbizu, P., & Schminke, H. K. (2005). DIVA-1 expedition to the deep sea of the Angola Basin in 2000 and DIVA-1 workshop in 2003. *Organisms Diversity & Evolution*, 5(Suppl. 1), 1–2.
- Matheson, C. D., Muller, G. C., Junnila, A., Vernon, K., Hausmann, A., Miller, M. A., et al. (2007). A PCR method for detection of plant meals from the guts of insects. *Organisms Diversity & Evolution*, 7, 294–303.
- Scotland, R. W., Olmstead, R. G., & Bennett, J. R. (2003). Phylogeny reconstruction: the role of morphology. *Systematic Biology*, 52, 539–548.
- Tautz, D., Arctander, P., Minelli, A., Thomas, R. H., & Vogler, A. P. (2003). A plea for DNA taxonomy. *Trends in Ecology and Evolution*, 18, 70–74.
- Tihen, J. A. (1962). Review of *Fortschritte der Zoologie*. *American Midland Naturalist*, 68, 250–251.
- Venter, J. C., Remington, K., Heidelberg, J. F., Halpern, A. L., Rusch, D., Eisen, J. A., et al. (2004). Environmental genome shotgun sequencing of the Sargasso Sea. *Science*, 304, 66–74.