



The Newsletter of the Society of Australian Systematic Biologists.

Issue 1 (October 2008)

## Editorial

Welcome to the first edition of the Society of Australian Systematic Biologists Newsletter. The aim of this newsletter is to communicate to the society and to provide a forum to help advance systematic research in Australia and New Zealand. As such, the intention is to publish hints and tips of a technical nature, particularly those that tend to be picked up by experience or passed on by word of mouth. If you've found yourself having to explain certain techniques or protocols frequently, this may be a good place to air them once and for all! Reviews of good papers, software and websites and news of upcoming events are all acceptable and much appreciated.

The name of the newsletter takes its name from the tree genus described by Carolus Linneaus filius in honor of Sir Joseph Banks. Sir Banks visited Australia as the naturalist on Cook's first expedition in the *Endeavour*. He collected a number of plants and animals providing the first material for the systematic study of the Australasian biota.

As always, this newsletter will only be as good as the material that is submitted to the editor. Any and all contributions for the newsletter would be most welcome. Constructive feedback and ideas for future editions would also be greatly appreciated.

*Samuel Brown*

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## About the Society

### SASB Officers:

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### The Society:

The Society of Australian Systematic Biologists is open to all people who are committed to using the science of biological systematics as a basis for the study and understanding of nature. The Society is a non-profit inter-disciplinary organisation whose purposes are to promote the scientific study of biological systematics and to disseminate scientific and educational information related to its fields of interests.

### Membership:

Membership is free. Details are available on the society website (<http://www.sasb.org.au/the-society/membership/>) and from the secretary.

## **Murphy's Law applies in taxonomy, too**

On 17 April I sent off to ZOOTAXA a 19000-word manuscript revising and expanding two genera of mainland Australian millipedes, with a total of 21 species. The draft had taken several months of on-and-off work, in part because I live in Tasmania, and the opportunities for quickly clarifying issues of morphological variation by doing a bit more collecting in remote parts of NSW and Queensland... well, they're pretty limited, so the split-or-lump muscles in my brain had gotten a workout, and I'd spent many hours staring at a remarkably small number of borrowed museum specimens.

Four days later my wife and I were on a holiday-style field trip in Victoria, revisiting the Licola area near central Gippsland. Since our last visit in 2004, the high country behind Licola had suffered an intense bushfire and subsequent flooding. Road crews were still doing repairs of wash-outs as we drove up to the high Bennison Plains. Here we found a healthy, recovering, subalpine woodland. Many of the recuperating eucalypts had shed long, flat sheets of bark, and under these we found large numbers of one of the new species I'd just described. We saw more than 100 over about half an hour, and I took a few as vouchers.

Back in Tasmania on 24 April I put one under the microscope and... Oh, s--t. Species 22, in details not the least bit like the species I'd thought it was, in the field. Fortunately the relevant ZOOTAXA editor was happy to let me revise the submitted manuscript as per reviewer's suggestions, then himself review the new text and figure for No. 22.

*Bob Mesibov*

## **State of European taxonomy**

In the past six months, two reports regarding the state of taxonomy and systematics in Europe have been released. The first, written by the European Distributed Institute of Taxonomy (EDIT) is a forward-looking document that tries to predict the opportunities and challenges that face the discipline and offer a strategy to best utilize them. The second, a report by the British House of Lords is more of a snapshot of the current situation, with some indication of a strategy for the future.

The EDIT report is an attempt to predict the course of taxonomy as a discipline and how it will change in the next decade. As such, it is not a policy document, but is more a discussion article which may influence choices in research direction within the community. A significant theme is the industrialization of taxonomy with the internet providing a major role both in conducting research and in communicating the results to other scientists and the public.

The House of Lords recognized the importance of taxonomy and considered it was in an unacceptable position in the UK. They criticized the UK Research Councils and their Research Assessment Exercise (RAE) for being unaware and unhelpful for the advancement of systematic biology. Among their recommendations were that communication between taxonomists and end users be opened up, and that encouraging an interest in Natural History in school children was an important task. Encouraging amateurs and volunteers was also recommended, though exactly how this should be done was not explained beyond suggesting that scientists mentor volunteer taxonomists.

As usual, these reports paint a picture of taxonomy as a discipline undergoing challenging times.

Unfortunately, these reports neglect taxonomy's rich theoretical and philosophical basis presenting it as merely being a service for further research or conservation purposes. Whilst taxonomy does indeed provide a highly valuable service to the rest of biology, it does not follow that it is less scientific as other biological disciplines. In not valuing taxonomic research for its own merit, they continue to present as being less worthy of funding because of a perceived lack of scientific rigor. What I also felt was unhelpful was the indication of taxonomy as being completely automatable and capable of being conducted devoid of human input and intellect.

Exactly how much clout these documents will have remains to be seen (history would suggest relatively little), but either way it is encouraging that the state of the discipline is being talked about. While there are a number of parallels in the situation between UK and Australia, I gather that the situation in Australia is somewhat more positive. It was encouraging to see Australia ranked in the top 5 of countries in the two measures of taxonomic output given in the report.

Both reports are available online. The EDIT report is found on their website: <http://www.e-taxonomy.eu/node/366>, while the House of Lords report is available from <http://www.publications.parliament.uk/pa/ld/ldsctech.htm>

*Samuel Brown*

## **National Postgraduate Taxonomic Workshop**

**(Adelaide University, 21-25 July 2008)**

The idea for this workshop came from discussions with numerous colleagues over the previous 18 months that a significant number of students currently undertaking PhDs in the area of taxonomy and related fields lack some of the basic skills required by professional systematists. This lack of skills is largely because of a reduction in relevant training at senior undergraduate level, but also because some students transfer their interest to systematics from other areas after they have completed their undergraduate training.

To remedy this, a broad-ranging training workshop was conceived and a proposal forwarded to ABRs for funding for a workshop to be run at the University of Adelaide. A date was set for the workshop of 21-25 July 2008 to coincide with the University mid-year break so that we would have access to lecture rooms and a computer laboratory outside of normal teaching time. The workshop was widely advertised by an email poster, through scientific societies, directly to colleagues, via the ABRs and ARC EFN websites, and various other sources. A registration form was developed and distributed by email at the same time requesting specific information about the applicant, their institution, project title and source of funding (scholarship, etc.) and, importantly, asked them for specific feedback on what areas they would like covered in the workshop. Forty-four applications were received, which was reduced to 29 by rejecting those people whose projects did not have a significant taxonomic or phylogenetic component (one application was from a guy doing a PhD in electrical engineering at UNSW!)

A local organising committee was formed comprising Prof Andy Austin, Ms Sarah Bray (PhD student), Prof Steve Donnellan (SA Museum), and postdoctoral fellows Drs Michelle Guzik, Kate Hudson and Nick Murphy. A number of key systematists from around Australia were asked to run various aspects of the workshop, including Dr Sophie Bickford (Carbon Planet Ltd, South Melbourne), Dr Mark Harvey (WA Museum), Dr Camilla Myers (CSIRO Publishing), Dr

Cameron Slatyer (ABRS), Dr Kevin Thiele (WA Herbarium), and Dr Judy West (CSIRO Plant Industries, Canberra). The remaining presenters came from local institutions – Adelaide University, SA Museum and SA Herbarium, and included Drs Bill Barker, Robyn Barker, John Jennings, Mike Lee, Nick Murphy, Hugh Cross, Steve Donnellan, Michelle Guzik, Helen Vonow, and Ian Whittington, with Liz Perkins and Adam Skinner helping out in the phylogenetics lab.

The program included the following major themes:

- Phylogenetic analysis
- Molecular data
- DNA barcoding
- Developing interactive identification keys
- Collections and their management
- Publishing systematics
- Mapping and GIS overlays
- Imaging techniques
- The taxonomic process
- What PhD students want (discussion with ABRS staff)
- Funding and job opportunities

An important part of the workshop was the 10 minute seminars that each student was required to present to inform each other of their research and provide an opportunity to network and discuss their projects further.

The outcomes of the workshop are best judged by the evaluation we ran in the last session. They indicated a very strong level of engagement and satisfaction on the part of the participants. In the written responses several aspects of the workshop were highly valued by the participants. These include 1) the opportunity to interact and network with other systematic students and the staff, 2) the phylogenetics section, 3) the enthusiasm of the staff, 4) Camilla Myers' presentation on publishing, and 5) the taxonomic process section. Comments aimed at improving future workshops overwhelmingly highlighted more time devoted to the phylogenetics section, and more on GIS and mapping including a hands-on component.



Workshop participants in the Adelaide University computer laboratory learning the essentials of phylogenetic analysis.

Photos: Andy Austin

There were no problems encountered during the organisation of the workshop or during its running. This said, there was much that was learnt during the process, given that this was the first such workshop in Australia, and clearly it would be easier to organise and run any subsequent workshops given this experience. In several respects, Adelaide is an ideal venue for this type of workshop and it has the following attributes that are worth considering in deciding on a location for any future event: 1) it has good teaching facilities and meeting rooms and, importantly, is prepared to make them available at little or no cost, 2) it also has good computer laboratories that can be configured for phylogenetic workshops at minimal cost, 3) the SA Museum and State Herbarium are within easy walking distance from the University, and their staff have a very close association with the University, and 4) there is good cheap accommodation for students and a range of other accommodation and eating venues very close to the University (ie. within walking distance).

The workshop was generously sponsored by the following organisations who covered the costs of all participants and interstate staff involved:

ABRS - <http://www.environment.gov.au/biodiversity/abrs/>  
ARC Environmental Futures Network - <http://www.adelaide.edu.au/efn/>  
ARC Vegetation Function Network - <http://www.vegfunction.net/>  
CERF Taxonomy Research Information Network - <http://www.taxonomy.org.au/>  
Australian Centre for Evolutionary Biology & Biodiversity - <http://www.adelaide.edu.au/acebb/>

*Prof Andy Austin*

## **Discussion topic**

Richard Dawkins is well known for his excellent popular science writing, his defense of evolution and for being a particularly enthusiastic evangelist for atheism. The following quote is from his 2004 book "The Ancestor's Tale". Bob Mesibov and Volker Framenau give their opinions, but we would really like to know yours. Email responses to [browns3@lincoln.ac.nz](mailto:browns3@lincoln.ac.nz). Comments will be published in the next issue of the newsletter.

"There is a correct tree of life\*, but we don't yet know what it is. There is still room for human judgment, but it is judgment about what will eventually turn out to be the undisputable truth. It is only because we haven't looked at enough details yet, especially molecular details, that we are still unsure what that truth is. The truth really is hanging up there waiting to be discovered.

\*With the slight reservation that this tree will actually be a majority consensus of gene trees"

*Dawkins, R. (2004). The ancestor's tale: a pilgrimage to the dawn of life. London: Phoenix (ISBN 978-0-7538-1996-8)*

The responses:

*As for my view, I think it's nonsense. It's faith-based pseudoscience to believe that there's One True Tree and that the mission of systematics is to discover this truth. A phylogeny is an hypothesis which aims to explain the distribution of characters or*

*sequences (or both) in extant organisms, that's all. As an historical explanation it can only be tested, and in very limited ways, by fossil evidence. Dawkins apparently thinks that as you throw more and more separate phylogenies into the mix, the One True Tree is approached closer and closer and becomes clearer and clearer through the murk of character and sequence noise. One True Tree of what? Species? Populations? Individuals? Gene clusters? Genes? The blurring that goes on when you assume there's One True Tree makes it impossible to tease out these separate strands, which are the nuts and bolts of evolutionary history. Further, the One True Tree based on extant organisms completely excludes the uncountable extinct lineages that contributed so much to the history of life. Dawkins' One True Tree is a triumph of reductionism that contains no real history whatsoever - no definable historical objects, no dates and no places. It's a diagram of relationships between unknowns, with unspecified uncertainties on every branch, and no allowance at all for reticulation (hybridisation, lateral gene transfer). Sorry, that's not science.*

*Bob Mesibov*

*I don't necessarily support the notion of 'that there is a real tree of evolution'. Doesn't this neglect hybridization or gene transfers between organisms which will make the true tree some sort of a "web"? And does the truth require judgment? I am not a philosopher, but I perceive 'truth' as a condition independent from human interpretation, but "judgment" clearly involves awarding human values to something. And in relation to finding the 'true tree of life', wouldn't it be better to spend more time and money on documenting the earth's diversity first, before asking the question 'what is related to what'? Of course, the first task may sometimes involve the second, but with the current rate of extinction we should make sure, that we document what we have before it's gone.*

*Volker Framenau*

Quote provided by Bob Mesibov. Email responses and further discussion topics to the newsletter editor.

## Software

### R

The statistical package R provides a free, open-source alternative to commercial packages such as SAS, Genstat, and the like. One of R's strengths is the number of packages that can be downloaded to expand its capabilities beyond model fitting and basic statistics. The list of packages is long, and continues to grow with more and more functions being added to the program. Of particular interest are R's phylogenetic and sequence data capabilities in the form of the packages *ape*, *seqinr* & *ade4*. These provide some good tools for doing further analyses and comparisons once you have your tree. The authors do hope to get tree optimization algorithms implemented in the future,



Rimu leaflets. (*Dacrydium cupressinum*).  
Photo: Samuel Brown

but they're still a little way off. They do support distance methods which I have found useful and easy to use once the commands have been learned.

A potential downside of R is that it is completely command-line based. This is really useful once the commands have been learnt, but it does mean that the learning curve is a bit steeper than for programs with a nice user interface.

Documentation is pretty good, though you have to learn how to find and read it. There are also several mailing lists populated by many helpful folk who answer your questions when you get stuck. R is also able to handle scripts, so you can save the commands to make routine analyses a breeze to perform.

R can be downloaded free of charge from the R CRAN site <http://cran.ms.unimelb.edu.au>. Ape, seqinr and other packages can be installed from within R if connected to the internet. More information is available on the ape home page <http://ape.mpl.ird.fr>



Kowhai flowers (*Sophora tetraptera*)  
Photo: Samuel Brown

*Samuel Brown*

## Upcoming events

### Charles Darwin Symposium 2009

Next year, it will be 200 years since Charles Darwin – considered by many to be one of the greatest scientists to ever have lived – was born. It will also be 150 years since he published his seminal publication “The Origin of Species” which revolutionised biology and changed the way humanity thought about itself. A symposium to mark the occasion is being held in Darwin, Northern Territory, 22-24 September 2009. For further information and registration see the website: [www.cdu.edu.au/cdss2009](http://www.cdu.edu.au/cdss2009).

## Website review

### SASB Homepage

It makes sense to review in this first newsletter the excellent website of the SASB – [www.sasb.org.au](http://www.sasb.org.au). I am very impressed with the depth and breadth of the information and presentation of the site. The glossary of systematic terms by Mike Crisp and the documents in the “About Systematics” are particularly good features. The former has definitions for 73 words that are frequently encountered and easily misunderstood by those coming into the field (and for some who have been in it for a while too!). As such it is a useful reference to have on hand for quick reference. The “About Systematics” section has a number of interesting articles including book reviews, lists of computer programs used in the trade, and articles on systematics and

conservation. An under-utilised aspect of the site is the “Members” section which offers members of the society to showcase their research interests and results. Hopefully as more people begin to frequent the site, more profiles will be added to this section. If you can’t find what you want on the SASB site itself, it has a comprehensive list of links to other websites that would probably give you what you’re wanting. It links to a number of other Australasian societies and institutions as well as other sites of interest to systematists.

*Samuel Brown*

## Missing Members

The following people were members of the society who have moved on and have not sent us a change of address card. If anyone knows their whereabouts, please let the secretary know.

ALDERSLADE, Phil	FOLEY, Des	LARA, Marcia	REICHEL, Hanna
ALQASSAB, Sarwat	FROMONT, Jane	LAVERY, Tyrone	RICHARDS, Greg
ANDREWS, Dan	FUNK, Vicki	LAWLER, Susan	RICHARDS, Karen
ANDREWS, Ross	GALWAY, Nora	LAWRENCE, John	RICHARDSON, Alastair
AVERY, Lynda	GAMBACORTA, Salvatore	LYNE, Andrew	RICHARDSON, Barry
BAIN, Bonnie	GEBERT, Wayne	LYONS-WEILER, James	RICHDALE, William (Bill)
BANKS, Jonathan	GHAFOOR, Abdul	MARKS, Shona	ROUSE, Greg
BARKER, Clive	GILLESPIE, Jayson	MARTIN, Jon	ROWE, Melissah
BARTON, Diane	GOVEDICH, Fredric	MCCALLUM, Anna	SCHODDE, Richard (Dick)
BOCK, Philip	GOWLETT-HOLMES, Karen	MCCUSKER, Alison	SCHULZE, Paul
BOUCHARD, Pat	GRIGGS, Jackie	MCFADDEN, Michael	SCHWARZ, Michael
BOWER, Colin	GROWNS, Jane	MCTAGGART, Alistair	SCOTT, Bronwen
BRADBERRY, John	HACOBIAN, Bart	MELLICK, Rohan	SCOTT, Ian
BRITT, Steven	HALL, Kathryn	MERRIN, Kelly	SEPPELT, Rodney
BROADHURST, Linda	HANSEN, Brita	MILLER, Liza	STOREY, Melissa
BROOKS, Kristine	HART, Jennifer	MILLS, Penelope	STREIBER, Nikola
BROWN, Graham	HARVEY, Mark	MITCHELL, Anthony	SUMMERELL, Brett
BRUCE, Matthew	HAYWARD, Craig	MUIR, Glenn	SUMNER, Joanna
BURTON, Tom	HOBBS, Trevor	MURPHY, Nick	SUTER, Phil
CALDER, Andrew	HOCHBERG, Rick	MURRAY, Shauna	SYME, Anna
CARDALE, Josephine	HODDA, Mike	MURRELL, Anna	TEO, Regina
CHANDLER, Greg	HUMPHREY, Margaret	MYERS, Camilla	TILLEKARATNE, Hiran
CLARKE, Kerri	HYMAN, Isabel	NEISH, Peter	TIMANA, Martin
CLARKSON, John	INGRAM, Glen	NELSON, Gareth	TSYRLIN, Edward
DONALDSON, John	IRVINE, Tony	NEMOMISSA, Sileshi	URQUHART, Chris
DURRANT, Bradley	IRWIN, Nancy	NEW, Tim	VADALA, Anthony
EDGECOMBE, Greg	JENKINS, Suzanne	O’MEALLY, Denis	VOLSCHENK, Erich
ELSON-HARRIS, Marlene	JERMIIN, Lars, Sommer	ORCHARD, Tony	WEILLER, Carolyn
EVANS, Ivor	KARANOVIC, Ivana	ORR, Albert, George	WESTCOTT, David
EY, Peter	KARANOVIC, Tom	PARNRONG, Supatra	WHALEN, Molly
FARRER, Simone	KAWAKAMI, Takeshi	PATTERSON, David	WILCE, Matthew
FAULDER, Richard	KERSWELL, Keven	PIKE, Nathan	WILSON, Peter
FINLAY, Kyla	KING, Rachael	QIN, Ting-Kui	WINTERTON, Shaun
FLETCHER, Murray		QUEALE, Lynette	
		QUINN, Chris	