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## **New perspectives on Aboriginal rock art in the Kimberley**

**Dr Phillip Playford**  
**Honorary Research Scientist**  
**Geological Survey of Western Australia**

**7 pm, 17<sup>th</sup> November 2008**  
**Kings Park Administration Building**  
**off Fraser Avenue, Kings Park**

Dr Phillip Playford has undertaken research in the Kimberley for more than 50 years. Most of his work has concentrated on geology, but he has also maintained a keen interest in Aboriginal art and culture in this area. His first paper on rock art was published by the Royal Society of Western Australia in 1959, and his most recent paper on this subject appeared in 2007.

During this talk he will outline his views on the famous Bradshaw and Wandjina art forms of the Kimberley. The more recent Wandjina style has undoubtedly been painted by people belonging to the present race of Aborigines, but some authorities have claimed that the much older Bradshaw art (some of which may be as much as 20,000 years old) was painted by a distinct race of people who later died out. However, there are clear similarities between some Bradshaw figures and Aborigines participating in corroborees during recent times. Phil maintains that these remarkable Bradshaw paintings, among the oldest known in the world, should be credited to antecedents of modern Aborigines.

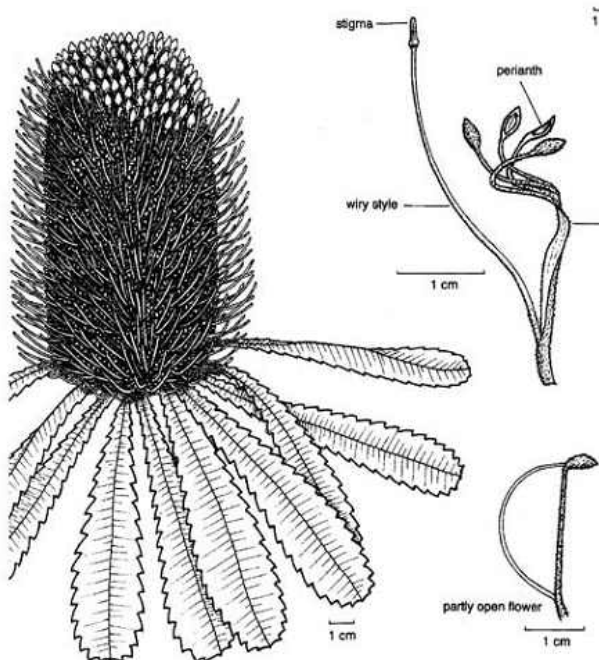
He will also outline evidence that the Wandjina figures may have originated with the first appearance of white people on the coast of the Kimberley, perhaps sailors from Tasman's voyage of 1644. The Aborigines would have regarded such men as superhuman beings from the Dreamtime, and may have recorded them in their paintings as Wandjina figures, some of which appear to be clothed.

## Atlas of living Australia – sharing biodiversity knowledge to shape our future

On October 22<sup>nd</sup>, some 50 members, guests, and the general public attended an interesting presentation by Donald Hobern from the CSIRO at the Social Sciences Lecture Theatre, The University of Western Australia, on “Atlas of Living Australia - sharing biodiversity knowledge to shape our future” co-sponsored by The Royal Society of Western Australia and The University of Western Australia.

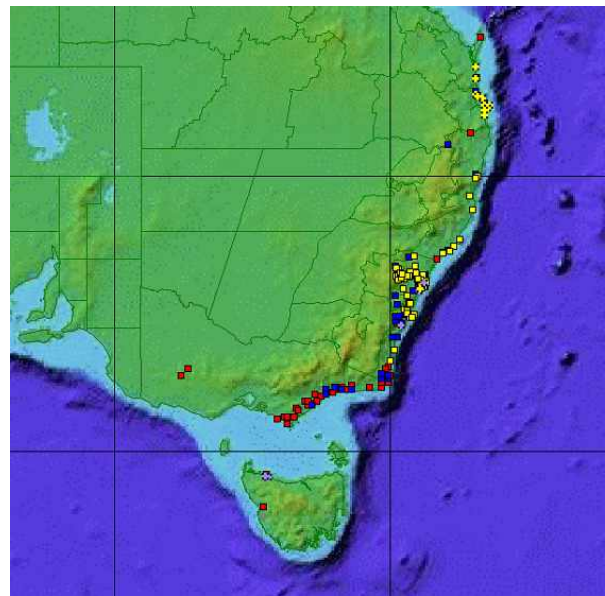
After a welcome and an introduction by Professor Tony O’Donnell, the new Dean of the Faculty of Natural and Agricultural Sciences, Donald commenced his presentation with an outline of the importance of the proposed Atlas of Living Australia using the Integrated Botanical Information System, and its subset the Australian Plant Names Index, to outline that its information and standards would be useful for the public, industry and government to judge and evaluate matters such as environmental management, or the effects of climate change. To illustrate this point, Donald began with *Banksia serrata* as an example of the use of the proposed Atlas.

*Banksia serrata*



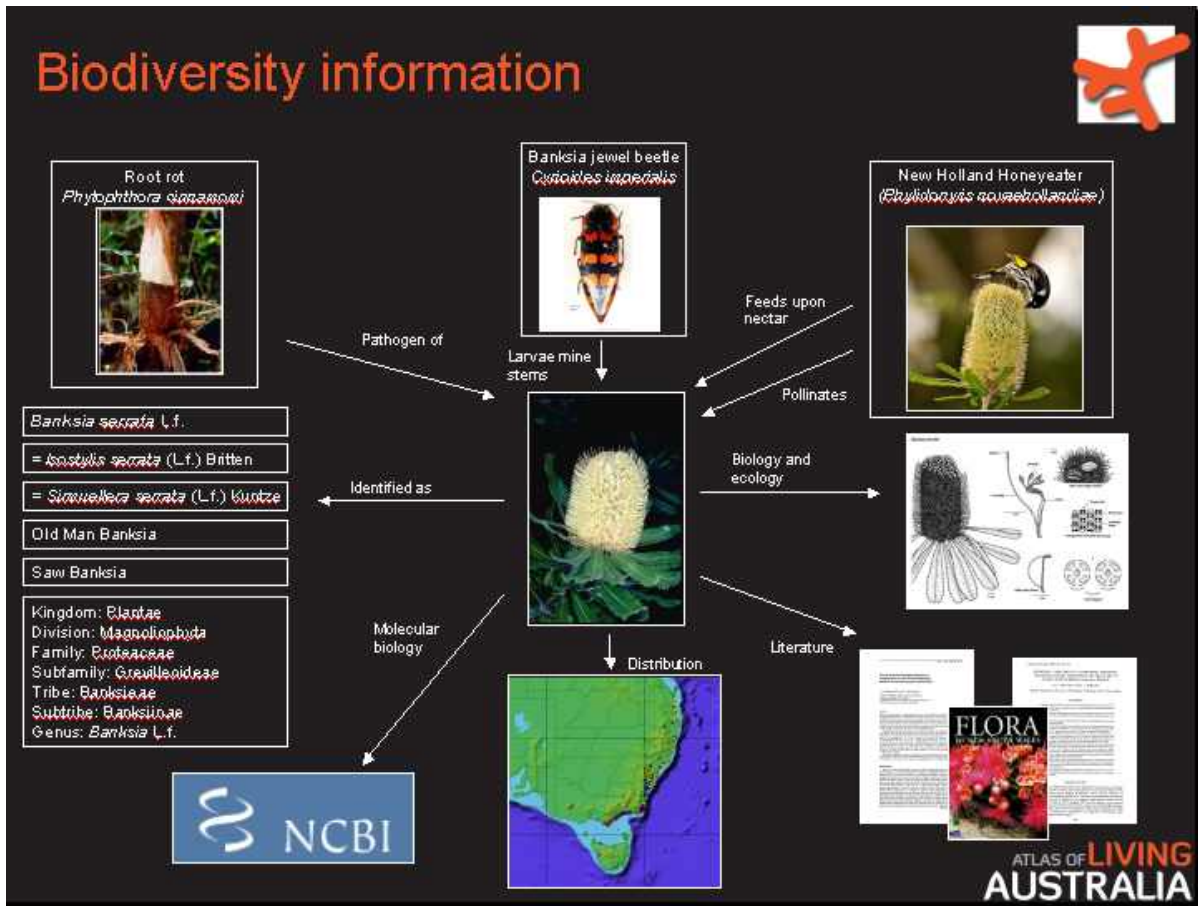
Botanical details of *B. serrata* that would be accessible from the Atlas of Living Australia

*Banksia serrata* has a long history in terms of its original description, its synonymy, and in use of its common names, all of which would be readily accessible from an integrated Atlas of Living Australia. If available, the Atlas would provide information on *Banksia serrata* on the history of its names as listed in the Australian Plant Names Index, its interactions biologically in its environment and with other species, its parasites, its grazers, its function in the ecosystem, and literature for information on its distribution, molecular data, biodiversity data.



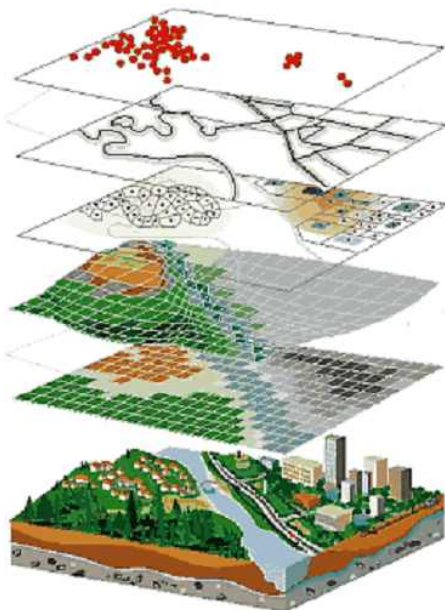
Distribution of *B. serrata* with clues to its climate and habitat setting that would be accessible from the Atlas of Living Australia

For other species, particularly those from inter-State or Globally, the Atlas would also provide rapidly available biosecurity data where all categories of information need to be brought together for quarantine purposes (e.g., identification tools involving images and keys; distribution data, as related to its climate and soils, how its is spread, features of its natural habitat and requirement to assess how it may be spread). Biosecurity data answers questions such as: what is this organism? is it a pest? does it carry or cause disease? could it spread in Australia? how can it be controlled? Information needed to answer these questions include: names and classification, identification keys, images, distribution data, food webs, and literature on its biology and control.



Example of the integrated use of biodiversity information on *B. serrata*

By providing names and classification of biota, distribution data, food webs, and literature on biology, information in the Atlas can be used for land-use planning as it will provide data as to what species occur in a region, if these species are threatened, what are their needs, how impacts can be minimised, and how habitats can be restored.



Information for land-use planning – the top layer is biological data

The Atlas can also be used in conservation and assessing impact of climate change. In posing the questions such as which species will be affected, how will their ranges be affected, can they colonise more favourable regions, will pest species benefit. In this regard, the information the Atlas would provide includes species names and classification, climate change models, distribution data, environmental niche models, food webs, and literature on conservation and biology.

Donald then described some of other uses of the proposed Atlas, including: crop improvement, sustainable use, health and medicine, biomaterials, forensic science, taxonomy, and leisure.

There are a number of sources that would be used as the basis of the biodiversity information, e.g., Natural History collections and herbaria, living collections, field studies data, the literature, molecular research, images and multimedia, and consulting of the experts in their specialty. Much of this information may be available, and the Atlas

seeks to provide integrated access of the information from these diverse sources. Having established the usefulness and functionality of the proposed Atlas, Donald then described workings of the proposed Atlas in terms of its stakeholders, participants, funding, and timing and relationship to other similar projects in Australia and globally.

The Atlas Government (NCRIS) project is funded to June 2011. Its mission is firstly to develop an authoritative, freely accessible, distributed and federated biodiversity data management system that links Australia's biological knowledge with its scientific reference collections and other custodians of biological information, and secondly to share biodiversity knowledge to shape Australia's future. Participants in the project include the CSIRO, The Australian Museum, The Museum Victoria, The Queensland Museum, The Tasmanian Museum and Art Gallery, The Southern Cross University, The University of Adelaide, DAFF, DEWHA, CHAH, CHAFC, CHAEC, and AMRRN. The Atlas of Living Australia builds on other national and global projects, including Australian Virtual Herbarium, Online Zoological Collections of Australian Museums, Australian Biological Resources Study, Global Biodiversity Information Facility, Oceanographic Biogeographic Information System, the Encyclopedia of Life, amongst others.

Donald next outlined some of the challenges facing development of the Atlas. The first is the digitising of information. This is an important factor because much information is currently present in non-digital form (e.g., history of printed descriptions and other literature, specimen labels estimated to be at 1.5 billion globally, and field notebooks). It will require millions of dollars to make all this information fully accessible. An example of digitising literature was provided by New Zealand where BUGS (a bibliography of New Zealand terrestrial invertebrates 1775-1985) is available, BUGZ is available online, there are scanned entomological literature, there are searchable texts, and downloadable PDFs. The result is that there is a significant body of literature more accessible and better managed than ever before.



Integrating information on New Zealand terrestrial invertebrates via BUGS and BUGZ

Standardising information is important. There is need to structure data for machine use, need for agreed standard data elements (e.g., for scientific names, whether latitude and longitude are decimalised, and the degree of coordinate precision), and need for standard formats for data values (e.g., New South Wales *versus* NSW *versus* N.S.W., Australia *versus* Australian *versus* AU, whether dates are to be 2008-05-15 or 05/15/2008 or 15 May 2008). Adhering to standards allows data to be combined and reused.

Another challenge is detecting errors, e.g., misspelling of taxonomic names (*Ornithorhynchus* / *Ornithorhynchus*?) or place names (Mt. Tambourine / Mt. Tamborine?); problems of coordinates (positive values for South or West, latitude/ longitude values transposed, coordinates not near locality or of unknown precision); and issues such as the same record shared through different routes, and unknown collecting strategies.

Some of the challenges relate to the handling and history of taxonomy. There is a 250-year record of taxonomy of Australian biota, which is being used to interpret biodiversity, but problems exist, such as the many names for the same species (*e.g.*, *Ornithorhynchus anatinus* versus *Ornithorhynchus paradoxus*, species being described more than once, species being moved to a new genus, species being split into multiple species concepts, a number of species being merged into one species concepts). the common names for species, and alternative opinions on higher classification. The result is related information found under different names.

While the Atlas of Living Australia is intended for general usage, there are also challenges in its design in relation to restricted data. For instance, some data will not be fully public (*e.g.*, sensitive data, or unpublished research). In addition data integration should be seamless (*i.e.*, each user should see all data for which they have authorisation; data may include both public and restricted data sets; and tools for visualisation and analysis should combine all these data. Efficient data integration requires an overall view of the data that needs to be integrated - distributing requests across many data sets is expensive, while central data indexes facilitate rapid search and integration. Finally, there is a need to integrate restricted data without compromising security.

Developing the Atlas of Living Australia requires analyses what users need (*e.g.*, how users find biodiversity information today), design of collaborative software (*e.g.*, reuse code from GBIF data portal, support Australian data networks such as AVH, OZCAM, APPD, AMRIN, share components with Encyclopedia of Life, OBIS, *etc.*, develop taxonomic tools with ABRS and ANBG); work with other Australian infrastructure projects (*e.g.*, NCRIS Platforms for Collaboration, NCRIS Integrated Biological Systems, NCRIS Terrestrial Ecological Research Network, and NCRIS Australian Biosecurity Information Network), and start with a general purpose tool and later develop portals for specific user groups.

The presentation ended with discussion of matters of metadata underpinning the Atlas. This involves describing all resources, including collection databases, ecological/observational databases, images and image libraries, online bibliographies and literature, sequence data, and International networks. The metadata itself includes description, ownership and access details, terms from vocabularies, gazetteers, ontologies.

In the final analysis, the Atlas of Living Australia will contain components of “Yellow Pages” (using a phone directory analogy), including Yellow Pages for species and a Regional biodiversity atlas wherein there will be georeferenced data for Australian biota, integrated GIS layers, an index by regions, fact sheets and species lists for each region and collaboration with existing networks.

In relation to information on his presentation, and for more information on the Atlas of Living Australia, Donald Hobern can be contacted via [Donald.Hobern@csiro.au](mailto:Donald.Hobern@csiro.au), or visit: <http://www.ala.org.au/>



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**EDITOR'S REPORT**

October 2008

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**Manuscripts Accepted:**

Variation in age to first flowering and fruiting of *Banksia baxteri* and *Banksia coccinea* in south-western Australia – a consequence of drought?

L McCaw, R H Smith & J E Neal

Pelagic ecology of the Ningaloo region, Western Australia: influence of the Leeuwin Current:

C E Hanson & A D McKinnon

Historical and contemporary influence of the Leeuwin Current to the marine biota of the Southern Western Australian Continental Shelf and the Recherche Archipelago:

G A Kendrick, N A Goldberg, E S Harvey & J McDonald

**Workshop with Deep Ecologist:  
John Seed**

**Wild Earth, Wild Heart, Wild Mind**  
28-30<sup>th</sup> November 2008

Nanga Bush Camp, Dwellingup  
\$200

For more information and Registration:  
[johnaralia@gmail.com.au](mailto:johnaralia@gmail.com.au) or  
Phone 0432 273 458

**Physics Around the Country  
November 2008**

Coming events include a 'Physics in Industry' day in New South Wales and AGMs in Western Australia, Tasmania, Victoria and Queensland. Physics seminars are listed at seven different institutions and the other events include a public lecture in Melbourne by Jocelyn Bell Burnell from the University of Oxford, who will also be a plenary speaker at the AIP Congress.

For more information view online:  
[www.aip.org.au](http://www.aip.org.au)

**The Desert Knowledge  
Symposium and Business**

**Showcase** 3-6<sup>th</sup> November 2008

Alice Springs Convention Centre. More than 300 people are attending the Symposium with delegates and speakers from South Africa, India, USA, Denmark, Indonesia, New Zealand and most Australian states and territories.

The event explores six key themes:

- Making remote governance work
- Networking business and knowledge
- Learning and education for desert futures
- Capturing industry opportunities for desert people
- Seizing the desert environment opportunity
- Exporting desert knowledge.

To view brief abstracts of each presentation topic go to

<http://www.desertknowledge2008.com/abstracts.asp>

**RSWA Events Calendar**

Date	Time	Venue	Event
November 17 <sup>th</sup>	7 pm	Kings Park	New perspectives on Aboriginal rock art in the Kimberley: Dr Philip Playford
December 17 <sup>th</sup>	3:30 pm	Xmas Function	Botanic Gardens & Parks Authority Research Centre
Shifted to 2009	TBA	TBA	Forum: "Bioscience in the future" - various speakers
Shifted to 2009	TBA	TBA	Forum: "Isotope Science in WA - uses, benefits, problems, and the future" - various speakers
Shifted to 2009	TBA	TBA	Forum: "Fire, Forest, & Bushland" – various speakers

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