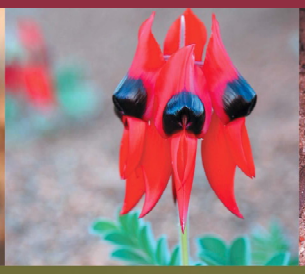
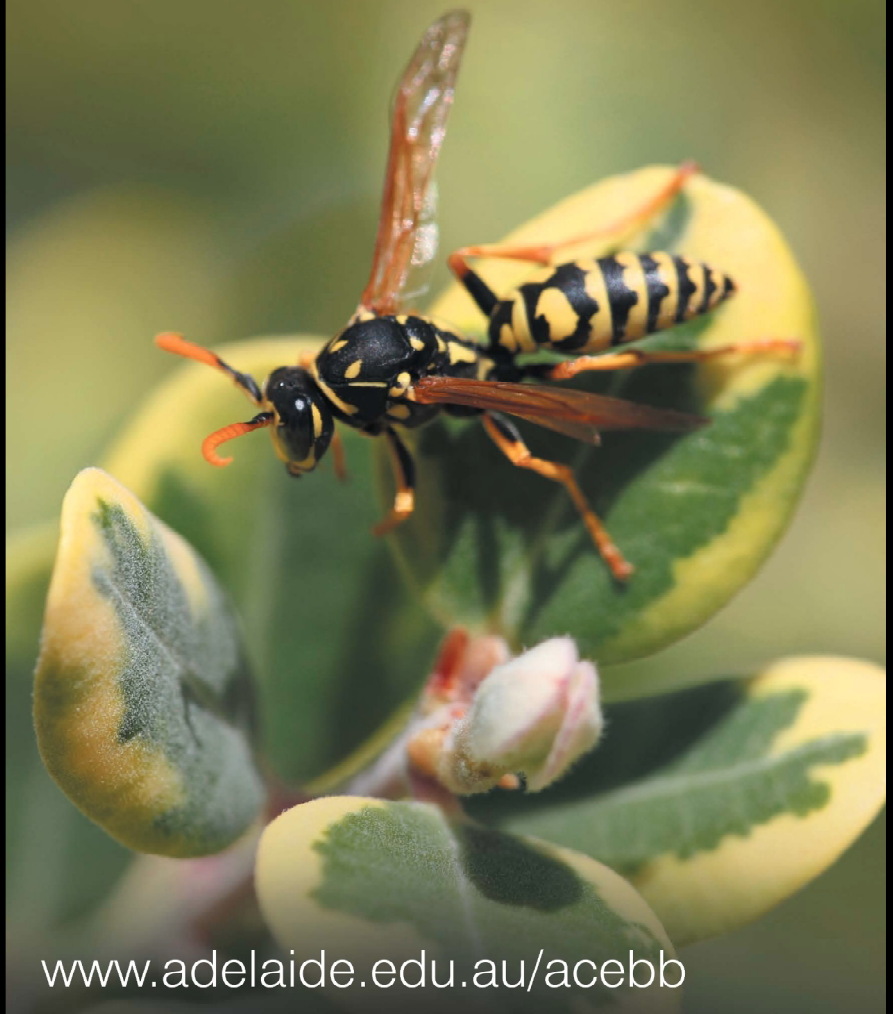
THE UNIVERSITY OF ADELAIDE
AUSTRALIA

2009 Annual Report

Australian Centre for Evolutionary Biology and Biodiversity


ACEBB is a nationally recognised centre of expertise in systematics, evolutionary biology and biodiversity science.



www.adelaide.edu.au/acebb

Life Impact The University of Adelaide

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Director's Report

The Australian Centre for Evolutionary Biology and Biodiversity (ACEBB) is a University-designated research centre within the Environment Institute that brings together expertise from three key organisations: The University of Adelaide, the South Australian Museum and the Department for Environment and Heritage's (DEH) Science Resource Centre, housing the State Herbarium of South Australia and the Bioknowledge group. The sharing of this expertise from different institutions in one centre is viewed enviably as the "best practice" model in Australia. As well as the critical mass in research capability it creates, an important strength of this relationship is the access to high quality collections.

ACEBB has been tremendously successful since its inception in 2000, and 2009 has been no exception. With regard to outputs and outcomes, the centre has expanded every year, has an influential external board, successfully underwent its 5-year review in 2006 and is described as a nationally leading research centre in evolutionary biology, systematics and biodiversity. ACEBB members are also recognised as a leading group of academics, both nationally and internationally. Within the recent Research Quality Framework (RQF) preparation assessment, ACEBB academics were placed as a leading group within the Faculty of Sciences and across the University as a whole.

The **Mission** of the ACEBB is to be a leading national and international centre for research and training in evolutionary biology and biodiversity science, with an emphasis on fauna and flora of Australia. It aims to:

- Provide a focus for, and a recognition of, the high-calibre research already being undertaken by researchers in Adelaide;
- Provide more secure funding and first-class infrastructure and integrated networking/coordination through collaboration among its members and with colleagues externally;
- Attract postgraduates of excellence;
- Be a focus for national and international visitors, and
- Foster communication and ideas among members through seminars, discussion groups, workshops and conferences.

ACEBB's new directions initiative was launched at the National Wine Centre on 4th December by Dr Judy West, Director of the Australian National Herbarium, Canberra. The event was very successful and was attended by around 100 guests, including the external advisory board. The main focus of the launch was to highlight ACEBB's new research directions, which now revolves around four key theme areas:

Species Discovery and Phylogenetics

Building on ACEBB's key strength in biodiversity discovery, taxonomy, systematics and phylogenetics, new molecular methods are being developed to progress understanding of the evolutionary relationships of species and their rapid identification, including applications of DNA barcoding. In addition methods to incorporate evolutionary history into conservation assessments of species are being developed (e.g. phylogenetic diversity and endemism).

Evolutionary and Landscape Adaptation

Strengths in this area include; macroevolution, life history trait analysis, adaptational evolution, biogeographic history, phylogeography and recent landscape genetic and ecological changes due to contemporary pressures. Through this research ACEBB scientists are able to advance our understanding of evolutionary adaptations in Australian systems due to historical impactors (long term climatic change, geological change) and contemporary landscape influences (fragmentation, invasives, climate change).

Biodiversity and ecosystem analysis and monitoring

This theme aims to improve our understanding of the dynamics of species and ecosystems and how they change over time in response to climate change, fragmentation and invasive species through analysis and modelling. Part of the research involves establishing large scale remote monitoring programs in terrestrial and marine environments to track the trajectory of biodiversity and ecosystems over time, and includes the development of novel monitoring techniques, such as DNA barcoding, environmental genomics, image capture and analysis and remote data feedback.

Biodiversity management and conservation decision-making

At the applied end of science, we are using the unique capabilities of ACEBB to combine genetic and adaptation understanding into biodiversity and ecosystem analysis and modelling for conservation decision-making. This is a new and expanding area of ACEBB's focus. Novel technical skills in environmental forensics and assessment that use DNA barcoding and phylogeographic data are also being developed.

This Report covers the activities of the Centre during 2009, a period which has seen the consolidation of a number of new collaborations and activities begun in 2006, and expansion of ACEBB capabilities into new biodiversity science areas, with the appointment of Prof Barry Brook and Associate Prof Corey Bradshaw within the School of Earth and Environmental Science.

ACEBB currently has 21 academic staff (both core staff of the University of Adelaide, joint appointments and affiliated staff from SAM and SHSA equivalent to 11 university FTEs), 24 postdoctoral fellows and associates and 57 PhD students. In 2009 ACEBB held 71 grants with a total value of ~$5.6M), and produced 149 peer-reviewed publications, of which 37.5% were in A* and A journals, including papers in internationally leading journals such *PNAS, Genetics, Evolution, Biology Letters, Proc Roy Soc* and *TREE*.

Major new funding successes in 2009 included:

Andrew Austin - Phylogeography and host specificity of stemborer parasitoids (ARC)
Corey Bradshaw - Estimating fishing-related mortality and sustainable management (ARC); Density regulation and population persistence (ARC)
Barry Brook - Planning for a transformed future (ARC)
Steve Donnellan - Phylogeography, evolution and taxonomy of rats (ARC)
Fred Gurgel - Marine benthic algae of the Great Barrier Reef (ARBS), Ecology, physiology and phylogeography of the invasive *Caulerpa taxifolia* (ABRS), Genetic diversity of calcareous macroalgae (DIISR)
Bob Hill - Global differentiation of the conifer flora (ARC)
Andrew Lowe - Genomic approaches to DNA barcoding Australasian Trees (ABRS)
Mike Lee - The first land vertebrate fauna from the Tertiary of New Zealand (ARC)
Kate Sanders - Sea Snake Diversification (ARC)
Mark Stevens - The origins and dispersal patterns of invertebrates in the Antarctic (AAD)
Professors Lowe and Brook were also part of the successful consortia for the Terrestrial Biodiversity node of the National Climate Change Adaptation Research Facility (NCCARF, total node funding $1.6M, from DCC) and the Premier's Science Research Funded project "Building Research Capability to Identify Climate Change Vulnerability and Adaptation Options for South Australian Landscapes" lead by Professor Wayne Meyer ($1.2M).

Acknowledgements

On behalf of the members of the Centre, I would like to thank the following people for their help with the successful operation of ACEBB: Professor Bob Hill (Executive Dean, Faculty of Sciences); Associate Professor Sue Carthew (Head, School of Earth & Environmental Sciences); 2009 Advisory Board members; Dr Steve Morton (Chair), Dr Ian Gould, Professor Suzanne Miller, Mr John O'Malley and Professor Mike Young (Executive Director, Environment Institute, University of Adelaide); Ms Kerry Jaeger (Executive Officer to the DCV-Research, University of Adelaide); and Ms Abi Saxon and Mrs Karen Lancaster for administrative support.

Professor Andrew Lowe
ACEBB Director

Advisory Board

The Advisory Board for ACEBB was expanded during 2009 with the addition of two new members, Ross Knowles and Dr Judy West from 2010. The Board forms an important part of the overall management structure of the Centre, and comprises the Centre's Management Committee (Professors Lowe, Austin, Brook, Donnellan, and Assoc Prof Cooper), the Director of the Environment Institute (Professor Mike Young), and six external members. These are:

Dr Steve Morton - Group Executive, Manufacturing, Materials & Minerals, CSIRO. Steve's expertise is in arid-zone ecology, resource management and sustainability. He currently chairs CSIRO's Steering Committee for Indigenous Engagement Strategy, is Director of Bush Heritage Australia, and is the current Chair of the ACEBB Advisory Board.

Dr Ian Gould - Chancellor, University of South Australia. Ian has a long standing and high level association with the Australian mining industry, and a strong commitment to environmental research. Among other positions he is presently Chair of St Andrew's Hospital Board, the CSIRO Minerals Sector Advisory Council and is a member of the South Australian Economic Development Board. He is a past Chair of the Australian Institute of Marine Science (AIMS) and the Australian Biological Resources Study (ABRS) Advisory Committees.

Ross Knowles - Director, Ethinvest Pty Ltd. Ross was the co-founder of Ethinvest, the first Australian financial planning practice with a specialist ethical investment division. He was also the founding Co-President of the Ethical Investment Association (now the Responsible Investment Association of Australasia), and was editor of the book Ethical Investment (CHOICE Books 2000). Ross is a keen environmentalist and has had a close association with a number of Australian environmental NGO's over many years.

Professor Suzanne Miller – Director, South Australian Museum, and Affiliate Professor, School of Earth & Environmental Sciences. Suzanne has 20 years experience in geology and earth sciences including 12 years with National Museums Scotland where she was Head of Natural Sciences. She took up her current position with SA Museum in 2007 where she is utilising her keen interests in presenting, interpreting and communicating natural history through the medium of museum collections and exhibition displays.

John O'Malley - Executive Director, Department of Environment & Heritage, South Australia. John has been with the DEH for 31 years, performing various operational, strategic and executive management roles. He is currently Executive Director of the Information, Science and Technology Directorate and Chief Information Officer for DEH. His focus is on building a sustainable information management platform for DEH and the broader SA Government based on the life cycle of strategic asset management principles.

Dr Judy West - Executive Director, Australian National Botanic Gardens & Assistant Secretary, Parks & Biodiversity Science, Department of the Environment, Water, Heritage & the Arts. Judy has for some years been a Senior Principal Research Scientist in CSIRO Plant Industry and Director of the Centre for Plant Biodiversity Research and Australian National Herbarium. She has an adjunct Professorial position at Australian National University; for her contributions to Australian plant systematics she was awarded the Nancy Burbidge Memorial Medal in 2001, and an Order of Australia in 2003. Her scientific expertise is in plant systematics and phylogenetics, biodiversity informatics and conservation biology.

ACEBB Research in the News

"850 new species discovered living underground"

This is just one of the by-lines used by the media in what was one of the most successful media releases to come out of the University of Adelaide during 2009 The story was picked up by over 250 radio stations, newspapers, and science websites, internationally - Just Google "850 new species"! It was reporting on research undertaken by Centre members Professor Andy Austin, Associate Professor Steve Cooper, postdoctoral fellow Dr Michelle Guzik and a number of interstate colleagues. Over the last several years they have been surveying the diversity of invertebrates that occur in a range of subterranean habitats across Australia's arid zone, including the underground aquifers associated with limestone calcretes of the Yilgarn region of Western Australia. Using a range of sampling techniques and molecular methods this research, funded through the Australian Research Council's Linkage Program, has uncovered a series of new biodiversity 'hotspots' below the desert surface.

What is particularly remarkable about this work is the sheer numbers of new species that have been uncovered; almost 850 species have now been formally described or characterized using DNA sequence data – and this is thought to be less that 20% of the true diversity of the subterranean fauna, given that huge areas of the continent are yet to be examined. The aquatic fauna includes water beetles, various crustacean groups and worms, while in the micro-voids above the water table there are numerous spiders, speudoscorpions, mites, beetles and millipedes, to name a few. One of the unique finds from the Yilgarn was the palpigrade *Eukoenenia guzikae*, named after Michelle Guzik, the first indigenous record of this arachnid order from the continent. All these animals display a range of adaptations for living in complete darkness, such as elongate sensory structures, loss of functional eyes and body pigment (most are white or pale in colour), and having a reduced metabolic rate.

Apart from documenting an important new component of Australia's biodiversity, this research is also providing insights into the effects of climate change on the Australian biota, given that much of the subterranean fauna is derived from surface ancestors from a time when the current arid zone was covered in mesic vegetation including rainforest. Also this work is providing much needed data on the distribution of species that are potentially impacted by the extraction of underground water by mining operations and pastoral activities.

"Anyone for frogs' legs?"

Professor Corey Bradshaw was part of an international team who undertook a biodiversity analysis which demonstrated that the global trade in frog legs for human consumption is threatening their extinction.

Corey and his team found that the global pattern of harvesting and decline of wild populations of frogs appears to be following the same path set by overexploitation of the seas and subsequent "chain reaction" of fisheries collapses around the world. The researchers called for mandatory certification of frog harvests to improve monitoring and help the development of sustainable harvest strategies. "Frogs legs are on the menu at school cafeterias in Europe, market stalls and dinner tables across Asia to high end restaurants throughout the world," says Associate Professor Bradshaw. "Amphibians are already the most threatened animal group yet assessed because of disease, habitat loss and climate change - man's massive appetite for their legs is not helping, and the absence of essential data to monitor and manage the wild harvest is a large concern."

The annual global trade in frogs for human consumption has increased over the past 20 years with at least 200 million and maybe over 1 billion frogs consumed every year. Only a fraction of the total trade is assessed in world trade figures. Indonesia is the largest exporter of frogs by far and its domestic market is 2-7 times that. This story received wide-spread coverage in Australian and international media during 2009.

Membership

Management Committee

Professor Andrew Lowe. ACEBB Director. Joint position as Professor of Plant Conservation Biology, School of Earth & Environmental Sciences and Head of Science, State Herbarium and Bioknowledge, South Australian Department for Environment & Heritage

Professor Andrew Austin. ACEBB Deputy Director. School of Earth & Environmental Sciences

Professor Barry Brook. Foundation Sir Hubert Wilkins Chair of Climate Change, School of Earth & Environmental Sciences

Professor Stephen Donnellan. Head of the Evolutionary Biology Unit, South Australian Museum, and Affiliate Professor in Schools of Earth & Environmental Sciences and Molecular & Biomedical Sciences.

Academic Staff and Affiliates

Dr Jeremy Austin. ACEBB affiliate. Deputy Director of ACAD, School of Earth & Environmental Sciences

Dr Bill Barker. State Herbarium of South Australia, Department of Environment & Heritage

Associate Professor Corey Bradshaw. ACEBB affiliate. Joint position as director of the Marine Biology Program and with the South Australian Research and Development Institute

Associate Professor William Breed. School of Medical Sciences.

Dr John Conran. School of Earth & Environmental Sciences

Dr Steven Cooper. South Australian Museum, and Affiliate Senior Lecturer in School of Earth & Environmental Sciences and School of Molecular & Biomedical Science

Dr Hugh Cross. State Herbarium of South Australia, Department of Environment & Heritage

Dr Jack da Silva. School of Molecular & Biomedical Science

Dr Mike Gardner. School of Earth & Environmental Sciences

Dr Fred Gurgel. Joint-appointment among the School of Earth & Environmental Sciences, State Herbarium of South Australia, Department for Environment and Heritage and South Australia Research & Development Institute, Aquatic Sciences.

Professor Robert Hill. School of Earth & Environmental Sciences, and South Australian Museum

Dr Mark Hutchinson. South Australian Museum and Affiliate Lecturer in School of Molecular Biosciences

Dr John Jennings. School of Earth & Environmental Sciences

Dr Jürgen Kellermann. State Herbarium of South Australia, Department for Environment and Heritage.

Associate Professor Mike Lee. South Australian Museum and School of Earth & Environmental Sciences

Dr Mark Stevens. South Australian Museum, and Senior Lecturer in School of Earth & Environmental Sciences

Associate Professor Ian Whittington. Joint appointment, South Australian Museum and School of Earth & Environmental Sciences

Postdoctoral Fellows and Research Associates

Dr Edward Biffin. School of Earth & Environmental Sciences
Dr Ray Carpenter. School of Earth & Environmental Sciences
Dr Francis Clark. School of Earth & Environmental Sciences
Dr Kerrie Davies. School of Agriculture, Food & Wine
Dr Steve Delean. School of Earth & Environmental Sciences
Dr Gaynor Dolman. CSIRO, and School of Earth & Environmental Sciences
Dr Damien Fordham. School of Earth & Environmental Sciences
Dr Michelle Guzik. School of Earth & Environmental Sciences
Dr Lee Heard. School of Earth & Environmental Sciences, and SA DEH
Mr Andrew Hugall. South Australian Museum and School of Earth & Environmental Sciences
Dr Kate Hutson. School of Earth & Environmental Sciences
Dr Rachael King. South Australian Museum and School of Earth & Environmental Sciences
Dr Melanie Lancaster. School of Earth & Environmental Sciences
Dr Remko Leijs. South Australian Museum, and School of Earth & Environmental Sciences
Dr Camille Mellin. School of Earth & Environmental Sciences
Dr Nicholas Murphy. School of Earth & Environmental Sciences
Dr Kym Ottewell. School of Earth & Environmental Sciences
Dr Rosemary Paull. South Australian Museum and School of Earth & Environmental Sciences
Dr Peter Prentis. University of Queensland
Dr Mathieu Rousseau. School of Earth & Environmental Sciences
Dr Kate Sanders. School of Earth & Environmental Sciences
Dr Adam Skinner. School of Earth & Environmental Sciences
Dr Gary Taylor. School of Earth & Environmental Sciences
Dr Lochran Traill. School of Earth & Environmental Sciences

Postgraduate Students

Kym Abrams	Systematics and phylogeny of the Parabathynllidae (Bathynellacea, Crustacea) of Australia	A Austin, S Cooper, M Guzik, R King
Adam Allford	Biology and ecology of stygofauna in the Yilgarn region of Western Australia	A Austin, S Cooper
Wahi Azmi	Ecological aspects of aquatic invertebrate communities in tropical and temperate streams	J Jennings, J Facelli
Tessa Bradford	Modes of speciation in subterranean water beetles	S Cooper, A Austin
Andrew Breed (UQ remote)	Assessment of the risk of introduction of Nipah virus to Australia via flying-foxes	S Donnellan
Martin Breed	Restoration genetics in Murray Mallee and Neotropical Forests: implications for management and planning	A Lowe, M Gardner, K Ottewell
Aaron Camens	Diprotodontid palaeobiology and systematics	M Lee
Alejandro Velasco Castrillon	Molecular studies on the origins and dispersal patterns of invertebrates in the Antarctic and sub-Antarctic	M Stevens, A Austin, S Cooper
Craig Costion	The Australasian Floristic Interchange. Tree barcoding, conservation, and evolutionary origins of the Australasian wet tropics flora	A Lowe
Siobhan de Little	Demography and control of disease-carrying tropical mosquitoes in northern Australia	C Bradshaw, B Brook
Adam Dinsdale (UQ remote)	Phylogeography and landscape genetics of whitefly	A Lowe
Eleanor Dormontt	Why do only some exotics become invasive? Combining ecological and genomic approaches to address alternative hypotheses in a recent Australian weed.	A Lowe
Renate Faast	Pollination and reproductive success of terrestrial orchids: Implications of habitat fragmentation	J Facelli, A Austin
Nicholas Fuller	Population genetics and socioecology of bats (*Nyctophilus gouldi* and *N. geoffroyi*) in fragmented populations of south-eastern Australia	S Cooper
Jaro Guzinski	Genetic population structure in parapatric ticks	S Donnellan
Nerissa Haby	Does the inclusion of fine scale information to coarse parameter models improve population viability forecasts for small coastal and arid mammals?	B Brook
Julie Hagen	Behavioural ecology and population structure in the Solomons Islands prehensile-tailed skink	S Donnellan
Bert Harris	The interactive effects of habitat degradation and climate change on Southeast Asian and Australian birds	B Brook, D Fordham
James Hereward (UQ remote)	Host association, coevolution and gene flow in mirids	A Lowe
Salvador Herrando-Pérez	Factors controlling population size and extinction risk	C Bradshaw, B Brook

Margaret Heslewood	Phylogeography and biogeography of genera in the family Cunoniaceae in Australia	A Lowe
Christopher Izzo	Telomere based ageing of chondrichthyan & teleost species	S Donnellan, B Gillanders
You Li	Conservation genetics of the southern brown bandicoot	S Cooper, M Lancaster
Andrew Lowther	Social and genetic factors shaping alternate foraging strategies within and between Australian sea lion subpopulations	S Donnellan
Jarod Lyon	Murray River riparian and in-stream habitat restoration	C Bradshaw
Fran McGillivray	Tracking phenological shifts and evolutionary impacts due to climate change	A Lowe, J Conran
Rohan Mellick	The affect of Quaternary climate change on the distribution of a rainforest gymnosperm (*Podocarpus elatus*) along the east coast of Australia using palynological and molecular evidence	A Lowe
Allan Mooney	Life history of *Zeuxapta seriolae* (Monogenea: Heteraxinidae), a gill parasite of *Seriola lalandi* (Pisces: Carangidae)	I Whittington
Kate Muirhead	Biosystematics and biology of the *Cotesia falvipes* complex of wasps	A Austin, S Donnellan
Liberty Olds	Comparative studies on native rodents in NW Western Australia	B Breed, D Taggart, B Ostendorf
Paul Oliver	Biodiversity and evolution of Australian geckos	M Lee, S Cooper
Elizabeth Perkins	Molecular systematics, phylogeny & radiation of Capsalidae (Monogenea)	I Whittington, S Donnellan
Sally Potter	Life history and population genetics of rock wallabies in the north Kimberley	S Cooper, D Taggart, M Eldridge
Luke Price	Systematics of the Australo-Papuan tree frogs	S Donnellan
Ihsan Abdl Azez Abdul Raheem	Systematic and evolutionary studies of the eastern and southern Australian clade of the genus *Hibbertia* Andrews subgenus *Hemistema* (Thouars) J.W.Horn	J Conran
Nicolas Rawlence	Moa evolution and ancient DNA	A Cooper, J Austin, M Lee
Terence Reardon	Systematics and biogeography of *Mormopterus* (Chiroptera:Molossidae)	S Cooper
Jolene Scoble	Novel approaches for assessing historical and contemporary vegetation condition in Australian rangelands	A Lowe
Ana Sequiera	Behavioural ecology of filter-feeding sharks: seasonal space use and foraging behaviour	C Bradshaw
Pranay Sharma	Integrating Morphological and Genetic Techniques for a Systematic Inventory of Zooplankton Communities in South Australian Drinking Water Reservoirs	S Mills
Udani Sirisena	Systematic studies on fringe lilies	J Conran
Mark Sistrom	The systematics and evolutionary history of the Gecko genus Gehyra in Australia	M Hutchinson, S Donnellan

Kate Sparks	Molecular systematics and ecology of the *Monomorium rothsteini* species complex (Hymenoptera: Formicidae)	A Austin, S Donnellan
Elisa Sparrow	Reproductive biology and genetical relationships in wombats	B Breed, S Cooper, D Taggart
Tasha Speight	Kidney disease in koalas	B Breed, J Haynes, D Taggart, W Boardman
Michael Stead	How the differing ecological traits of eucalypt species might influence their individual responses to climate change	B Brook, C Bradshaw
Nicholas Stevens	Systematics of Australian agathidine wasps (Insecta: Hymenoptera: Braconidae); solitary endo-parasitoids of lepidopteran leaf-rolling larvae	A Austin, J Jennings, N Murphy
Nuttawat Tithipramote	Seasonal changes in germ cell production in bandicoot rats	B Breed
Sally Thompson	Systematics and biogeography of the parasitic wasp genus Oxyscelio (Hymenoptera: Scelionidae)	A Austin, S Cooper, J Jennings
Karleah Trengove	The ecology and management of reintroduced populations of the greater bilby, *macrotis lagotis*, in South Australia	B Breed, S Cooper
Daniel Walker	Potential control methods for the Western Cape Form of bridal creeper	J Conran
Thomas Wanger	Impact of land-use and climate change on amphibians and reptiles of Sulawesi (Indonesia)	B Brook
Harsha Wechaleker	Effect of whole body heating on sperm production in rodents	B Breed, E Peirce, M Ricci, B Setchell
Jessie Wells (UQ remote)	Spatial ecology of plant regeneration in secondary rainforests of the wet tropics	A Lowe
Rissa Williams	Oral treatments for monogenean parasites of farmed yellowtails, *Seriola* spp. (Carangidae)	I Whittington
Maria Zammit	Studies into the Ichthyosaur *Platypterygius lonemani* (Reptila: Diapsida: Ichtyopterygia)	J Jennings, B Kear, R Norris
Dandong Zheng	Risks, impacts and responses of sea-level extremes in Port Adelaide, an investigation into human-environment interaction	B Brook, G Hugo



Staff Profiles

Hugh Cross is the molecular biologist for the State Herbarium of South Australia. His current position covers a broad range of areas, including evolution of plants and fungi, ancient DNA, as well as practical applications of molecular tools, such as DNA barcoding and genetic tracking and monitoring of timber. This diversity of approaches is reflected in his experiences prior to arriving in Adelaide. Hugh did his PhD at Columbia University on crop evolution and systematics in the cucumber family. He then went on to a post doctoral position in Leiden, where he set up an ancient DNA laboratory and continued his research on plant systematics. He then returned to the US to a job at Harvard University establishing a mycology laboratory in the Biology Department and conducted research on the ecology and evolution of invasive fungi and lichens.

Hugh arrived in Adelaide in 2008 and since that time has continued genetic research on plants and fungi in collaboration with staff at the State Herbarium and Adelaide University. He has also started several research projects in ACAD, and together with Andrew Lowe has begun some international projects on DNA barcoding of trees and grasses. The barcoding projects have received support and collaboration from the International Barcoding of Life Project (iBOL), in Guelph, Canada.

Through these various experiences and projects he has learned to appreciate a diversity of perspectives in the study of biodiversity. The next phase of his position in Adelaide represents a culmination of these research approaches. Hugh will be part of several large-scale projects with ACEBB and ACAD that involve ecological and genetic study of plant and fungal specimens from literally thousands of collections sites across Australia. The aim is to use genetic data from multiple plant and fungal species, from both current sites and historical and ancient DNA, to reconstruct the vegetation history of Australian ecosystems. For the species included, this will also involve an investigation into the modes of speciation and population change across space and time.

Michael Lee grew up in Brisbane in the 70s and 80s, when it was still a lazy subtropical city bursting with biodiversity, with bearded dragons on every wooden fencepost and green tree frogs in every outside dunny. He completed his undergraduate studies in zoology at the University of Queensland and his Ph.D in palaeontology at the University of Cambridge. His research is rather wide-ranging, but consistently uses evolutionary trees and multidisciplinary approaches to understand major evolutionary problems.

His previous work included description of key "missing links", such as fossil snakes with well-developed legs (discovered in a slate quarry in the disputed West Bank). His research group is currently trying to reconcile controversial "molecular clock" dates with the fossil record, and using molecular genetics and high-resolution CT scanning to understand relationships and evolution

of several intriguing reptile groups. These include the venomous australian snakes (and their direct descendants, the sea snakes), the scincid lizard *Lerista* (where multiple lineages have convergently gone from fully limbed to totally limbless), and Australian geckos (which have very high levels of undiscovered or "cryptic" species diversity).

Despite an increasing interest in the burgeoning wealth of molecular data, his research still retains a strong component of palaeontology. Recent fieldwork with several colleagues has uncovered an amazing "Burgess Shale" type fossil deposit on Adelaide's doorstep (Kangaroo Island), and he is involved in a major project on Queensland dinosaurs that involves several regional museums and local councils.

Kate Muirhead completed her PhD work at The University of Adelaide in late 2009, and recently started an ARC Linkage-funded postdoctoral fellowship to examine the *Cotesia flavipes* species complex of parasitoid wasps. Members of this complex are economically important worldwide for the biological control of lepidopteran stemborer species associated with gramineous crops. The absence of clear diagnostic characters to separate the species in the complex have confounded past efforts to assess the impact of specific introductions. Moreover, geographic populations have exhibited variation in host-parasitoid physiological compatibility and reproductive success. In addition, the species and populations in the complex harbour different strains of polydnaviruses (PDV). These PDVs are integrated in the wasp genome and play an important role in host immune suppression and, in turn, successful parasitism and host range. Differences in PDV symbionts among populations have potentially important implications for host utilisation and thus, the diagnosis of appropriate strains for biological control against specific host species.

Kate is particularly interested in the Australian species, *Cotesia nonagriae*, which is genetically and biologically distinct to other species in the complex. One aspect of the work will investigate whether this species will successfully parasitize pest borers from Indonesia and PNG that are considered potential threats to the Australia sugar industry. In this respect, BSES Ltd is the key industry partner which is charged with fostering research of benefit to the industry locally and regionally.

Kate also has a keen interest in subterranean and cave invertebrates, which she developed while working for a Perth based consulting company from 2007-2009. She is also a wholehearted animal lover. Growing up in Michigan, her family took in and nursed orphaned or injured birds and mammals through the harsh winter months. Kate also worked at the Nature Education Centre, SA, from 2000-2008 as an animal attendant and educational officer, where she looked after and hand-reared many Australian native reptiles and marsupials.

Research Groups

Evolution, Systematics and Biology of Terrestrial and Groundwater Invertebrates

Principal Investigators: Professor Andy Austin | Dr John Jennings | Associate Professor Steve Cooper | Dr Kerrie Davies | Dr Michelle Guzik | Dr Rachael King | Dr Remko Leijs | Dr Nick Murphy | Dr Gary Taylor

PhD Students: Kym Abrams, Adam Allford, Wahi Azmi, Tessa Bradford, Alejandro Castrillon, Renate Faast, Kate Muirhead, Kate Sparks, Nicholas Stevens, Sally Thompson

Our research, although fundamental in nature, has direct application to numerous real-world issues. For example, we are studying wasps that have application as biological control agents of pest insects; groundwater beetles and crustaceans whose habitat preferences have been dictated by climate change; insects and crustaceans that have very narrow distributions and represent significant challenges for conservation agencies; groundwater species that can be used to monitor habitat integrity and the impact of mining operations; and insects that are being considered as biological control agents of Australian native plants that are weeds overseas.

A major aspect of our research is the documentation of Australia's biodiversity, and in this respect we have recognised many new species of insects and crustaceans. These include the cryptic species that can only be identified using DNA sequence data.

Major Projects:

1. Evolution and Biodiversity of Mound Spring Fauna
2. Evolution of Stygofauna in calcrete aquifers
3. Evolution and Systematics of parasitic Hymenoptera
4. Insect-Plant and Multitrophic Interactions.

Systematics of the Australian flora

Principal Investigators: Dr Bill Barker | Dr H.R. Toelken | Dr R.J. Chinnock | Mr G.H. Bell | Professor Brian Womersley | Dr D.E. Symon | Ms R.M. Barker | Ms. Pat Catcheside | Dr Ray Carpenter

The State Herbarium coordinates with other Australian herbaria and systematists in advancing the knowledge of the Australian flora through advancing plant classification. Its work includes recognition of new species and resolution of species complexes in South Australia to more intensive revisions of the classification of genera and families in Australia or the Australian region. The latter involve traditional morphological study but increasingly involves collaboration with molecular researchers in other institutions.

Major projects:

1. Systematics of Australian Solanaceae
2. Systematics of naturalised blackberry (Rubus: Rosaceae) in Australia
3. A taxonomic monograph of the Myoporaceae.
4. Systematics and evolution of Australian Scrophulariaceae
5. Systematics and evolution of Stackhousiaceae
6. A taxonomic revision of Hibbertia (Dilleniaceae)

7. A taxonomic review of Australian Cactaceae.

Evolution of Mammalian Gametes and Gonads

Principal Investigators: Associate Professor Bill Breed | Associate Professor Steve Cooper | Emeritus Professor Brian Setchell | Dr David Taggart | Dr Mario Ricci | Dr Eleanor Peirce | Mr Chris Leigh

PhD Students: Liberty Olds, Elisa Sparrow, Tasha Speight, Nuttawat Tithipramote, Karleah Trengove, Harsha Wechalekar

Major Projects:

1. Environmental and genetic effects on reproduction
2. Evolution of mammalian sperm and eggs
3. Evolution of testis size and its relation to breeding system
4. Application of reproductive technology to conservation.

Global Ecology Group

Principal Investigators: Professor Barry Brook | Professor Corey Bradshaw | Dr Camille Mellin | Dr Francis Clark | Dr Steve Delean | Dr Damien Fordham | Lee Heard

PhD students: Siobhan de Little, Nerissa Haby, Bert Harris, Salvador Herrando-Pérez, Jarod Lyon, Ana Sequeira, Michael Stead, Lochran Traill, Thomas Wanger, Dandong Zheng

Primary Research Foci:

1. Extinction dynamics
2. Invasive species biology
3. Computational and statistical modelling
4. Climate change
5. Sustainable energy
6. Synergies between human impacts on Earth systems.

Adaptive evolution of the Australian flora

Principal Investigators: Dr John Conran

PhD students: Ihsan Abdl Azez Abdul Raheem, Udani Sirisena, Daniel Walker

The diversity of the Australian flora is generally thought to be a result of adaptive response to environmental change and/or co-evolution with pollinators, dispersers, etc. There are numerous projects being undertaken to examine these hypotheses using morphological and molecular approaches, as well as studies of reproductive biology.

Major projects:

1. Diversity and biology of carnivorous plants in Australia, particularly *Byblis* (Byblidaceae) and *Drosera* subgen. *Bryastrum* (Droseraceae)
2. Ultraviolet floral patterning in Australian flowers in relation to pollination strategies within and between families, genera and species
3. Diversity, biology and the role of hybridisation in *Alyogyne* (Malvaceae)
4. Relationships, ecology and biology of the SW-WA endemic family Eremosynaceae
5. Evolution, diversity and biology of Australian petaloid monocots, especially Laxmanniaceae, Boryaceae and Hemerocallidaceae

6. Evolution and ecology of the basal monocot family Hydatellaceae.

Systematics, phylogeography and molecular ecology of Australian fauna

Principle Investigators: Assoc. Prof. Steve Cooper | Mr Mark Adams | Prof Andy Austin | Prof. Roger Butlin | Assoc. Prof. Sue Carthew | Dr Gaynor Dolman | Dr Michael Gardner | Dr Bill Humphreys | Dr Taki Kawakami | Dr Melanie Lancaster | Dr Remko Leijs | Ms Kathy Saint | Assoc. Prof. Mike Schwarz | Dr Mark Stevens | Dr David Taggart | Dr Andrea Taylor | Dr Chris Watts | Dr Mel Lancaster

PhD Students: Tessa Bradford, Nicholas Fuller, Magda Halt, Paul Oliver, Sally Potter, Terence Reardon, Pranay Sharma, Elisa Sparrow, Karleah Trengrove, Alejandro Castrillon, You li

Major projects:

1. Phylogeography of Australian fauna: the biogeographic history of organisms and factors that influence speciation. Collaborators: Prof. R. Butlin (University of Sheffield, UK), T. Kawakami (Kansas State University, US): morabine grasshopper evolution. Dr. M. Gardner (Flinders University), Mr. M. Adams (SA Museum): phylogeography.

2. Molecular ecology of marsupials in fragmented forests of south-east South Australia; collaborators: Assoc. Prof. S. Carthew, The University of Adelaide; Dr. A. Taylor, Monash University; post docs: Dr Melanie Lancaster, Ph.D students: Mr Nicholas Fuller, Ms. You li (The University of Adelaide).

3. Conservation/ population genetics/ social behaviour/ systematic studies of bats, beetles, reptiles, marsupials, wasps, spiders and polychaetes; collaborators: Assoc. Prof. S. Carthew, Dr M. Lancaster, Dr. D. Taggart, Prof. Andy Austin, University of Adelaide; Dr M. Harvey WA Museum. Dr. C. Kemper, Mr M. Adams, Ms. K. Saint, Dr M. Stevens SA Museum, Dr. M. Malekian, Iran; Ph.D students: Mr T. Reardon, Ms. K. Trengrove, Ms. E. Sparrow, Ms. Magda Halt, Mr. P. Oliver, Ms. S. Thompson, Ms. S. Potter, Mr A. Castrillon.

4. Evolution of social behaviour and the biogeographic history of Australian native bees (Collaborating with Assoc. Prof. M. Schwarz, Flinders University).

The Process of adaptation at the molecular level: HIV and the immune system

Principal Investigator: Dr Jack da Silva

Progress in understanding the process of adaptation at the molecular level has been impeded by the lack of a mature population genetic theory of adaptation and by a poor understanding of the sources and targets of selection. One way forward is to model a system that is well understood at the molecular level and then use ‘simulation experiments’ to test hypotheses about which factors affect the rate and limit of adaptation. This approach has two main advantages: it allows manipulations that would be impossible, too costly, or unethical with real experimental systems, and it allows a reductionist approach to modelling that does not require the unrealistic or untested simplifying assumptions often required of more tractable (analytical) mathematical models. However, a major obstacle to this approach, when applied to the protein level, is that it requires knowledge of the fitness effects of all amino acids at all

sequence sites. I solve this problem by using site-specific amino acid frequencies as correlates of fitness effects, and apply this approach to model the adaptive evolution of human immunodeficiency virus type 1 (HIV-1). Simulations with this model are being used to investigate the effects of mutation rate, mutation bias, epistasis, pleiotropy, cell superinfection, and viral recombination on the rates and limits of adaptation at the molecular level.

Evolution and Diversity of Australasian Vertebrates

Principal Investigators: Professor Steve Donnellan | Dr Kyle Armstrong | Dr Terry Bertozzi | Dr Gaynor Dolman | Dr Mike Gardner | Dr Mark Hutchinson

PhD Students: Andrew Breed, Jaro Guzinski, Julie Hagen, Christopher Izzo, Andrew Lowther, Luke Price, Mark Sistrom,

Primary Research Foci:

1. Discovery and description of biodiversity in the Australasian region
2. Evolutionary history of the Australasian vertebrates
3. Understanding the evolutionary basis of the generation and maintenance of biodiversity

These basic research approaches generate knowledge and expertise that can be used for natural resource management and conservation and so consequently many opportunities arise for us to provide research solutions for a range of government and private resource management and conservation agencies.

We have substantial resources to support our exciting and diverse research program, including the Australian Biological Tissue Collection, one of the worlds largest tissue collections for molecular genetic research, a regional facility fully equipped and staffed for molecular ecology and evolutionary research, a world class ancient DNA laboratory, local supercomputer facilities for data analysis and a diverse field work program.

Our research is supported by the Australian Research Council, the Australian Biological Resources Study, the Commonwealth and South Australian Governments, and numerous private companies and foundations. We collaborate with a large number of researchers elsewhere in Australia and overseas and often organise reciprocal laboratory exchanges to facilitate our research.

Major Projects:

1. Conservation genetics of malleefowl
2. Telomere biology of fishes
3. Evolutionary ecology of island continental birds
4. Population biology of sea lions
5. Ecological restoration strategies for endangered amphibians
6. Systematics and Evolution of Australasian vertebrates
7. Diversification in major continental vertebrate radiations.

Evolution and Palaeobiology of the Australian flora

Principal Investigators: Prof Bob Hill | Dr Rosemary Paull

Southern Australia is the best place in the world to study the effects of long-term climate change on vegetation. This is because Australia has moved through approximately 20° of latitude since it separated from Antarctica about 35 million years ago, and during that time

this movement has had a profound impact on the global and, more specifically, Australian climate. The study of the effect of this climate change on the vegetation is made possible by the excellent preservation of Cainozoic plant fossils in central and south-eastern Australia. This has been coupled with physiological research on the nearest living relatives of the fossils so that a reconstruction of the reasons behind plant evolution and/or distributional change can be attempted. This program utilises the fossil record and the living relatives of the fossils to document the impacts of lowering temperatures and reduced water availability on the vegetation of a large region. Such data are vital to our understanding of the potential impact of future, much shorter term, climate change.

Molecular Systematics, Biogeography, Ecology and Evolution of Marine Plants (Phycology)

Principal Investigators: Dr Fred Gurgel | Dr Bob Baldock | Ms Maria Marklund | Ms Carolyn Ricci

PhD students: Gareth Belton, Nuttanun Soisup

Our researchers use the latest technology to investigate evolutionary and ecological questions in phycology, that is the study of algae and seagrasses (marine botany, if you will). Our results help inform pressing marine and conservation issues (e.g. biodiversity, invasive and endangered species, design of marine protected areas). This is facilitated through a strong and continuous partnership with the SA Department of Environment and Heritage (DEH), the State Herbarium of SA, and the South Australian Research and Development Institute Aquatic Sciences (SARDI - Aquatic Sciences).

Major project:s

1. Invasive species biology, ecology and genetics
2. Biogeography and biome assembly
3. Climate change
4. Phylogeography and population genetics
5. DNA barcoding and taxonomy
6. Biodiversity and ecosystem science
7. Floristic surveys
8. Genetic resources
9. Applied phycology (e.g. aquaculture).

Evolution, Molecular Phylogenetics, Palaeontology

Principal Investigator: Associate Professor Michael Lee | Dr Mark Hutchinson | Dr Kate Sanders | Dr Adam Skinner

PhD Students: Aaron Camens, Andrew Hugall, Paul Oliver, Nicolas Rawlence

We use molecular approaches, comparative anatomy, and the fossil record to understand major evolutionary events, such as adaptive radiations and major anatomical transitions. Reptiles - especially Australian lizards and snakes - are our study organisms of choice

Our research group uses multidisciplinary approaches to understand major evolutionary events - this includes molecular phylogenetics, anatomy, and the fossil record. Our group interacts with the Molecular Biology labs (Evolutionary Biology Unit), the Australian Centre for Ancient DNA (ACAD), and the Earth Sciences Section of the SA museum. Most students

and postdocs are also affiliated with one or more of these groups and benefit from the multidisciplinary perspective.

Major Projects:

1. Snake origins and evolution
2. Biodiversity, phylogeny and evolution of Australian reptiles
3. Phylogenetic methodology, including morphological and molecular analyses, and molecular clocks
4. The "Cambrian explosion"

Ecological and Evolutionary Genetics of Plants

Principal Investigators: Professor Andrew Lowe | Dr Ed Biffin | Dr Hugh Cross | Dr Mike Gardner | Dr Kym Ottewell | Dr Peter Prentis

PhD Students: Martin Breed, Craig Costion, Adam Dinsdale, Eleanor Dormontt, Patricia Fuentes-Cross, James Hereward, Margaret Heslewood, Fran MacGillivray, Rohan Mellick, Jolene Scoble, Jessie Wells

Our main research interests are in examining gene flow at different spatial, temporal and biological organisational scales, and the response of organisms to the 'evil trio' of major environmental impactors; habitat fragmentation, invasive species and historical and ongoing climate change.

Major Projects:

1. Restoration and Landscape Genetics
2. Invasive Species Genetics
3. Biogeography and Biome Assembly
4. Climate Change and Phylogeography
5. Current research projects
6. DNA barcoding
7. South Australian State Herbarium and Bioknowledge
8. Biodiversity and ecosystem science: Andy
9. Genetic Resources and Domestication

Biology, Systematics, Evolution of Marine Parasites

Principal Investigators: Associate Professor Ian Whittington | Dr Kate Hutson

PhD Students: Allan Mooney, Lizzie Perkins, Rissa Williams

The Monogenean Research Laboratory at The South Australian Museum and The Marine Parasitology Laboratory at The University of Adelaide focus on parasites of marine fishes. Of particular emphasis is the Monogenea, a class of flatworms with a direct life-cycle which chiefly parasitise skin, fins and gills of elasmobranch and teleost fishes. Some elements of our research are especially relevant to South Australia because teleost fish reared in sea cage aquaculture in Spencer Gulf can experience parasite problems. Activities, therefore, of some Honours and PhD students continue to investigate features of the biology, epidemiology and treatment of Monogenea on kingfish, *Seriola lalandi*, in aquaculture. Currently, our research programs embrace several discrete projects investigating parasites of wild and cultivated fish species locally and also overseas. Recent studies have also involved identifying flatworm parasites using morphological and molecular genetic methods in captivity in public display aquaria and from fish farms worldwide to determine how widespread and how host-specific some pathogens are on a global scale.

Major Projects:

1. Life cycle parameters of the monogenean parasites *Zeuxapta seriolae* and *Benedenia seriolae* from *Seriola lalandi* in South Australian finfish aquaculture
2. Cryptic species complexes among pathogenic Monogenea on wild and cultivated warm water fishes
3. Capsaline Monogenea (Monopisthocotylea) of large, cosmopolitan, migratory pelagic fishes: revisiting species composition, diversity and distribution of the parasites
4. Phylogeny and evolution of the Capsalidae (Monogenea), ectoparasitic on a diversity of fishes, using morphological characters, molecular genetics and host associations
5. Systematics of Monogenea (Platyhelminthes) from the sharks and rays of Indonesian Borneo
6. Efficacy of potential chemotherapeutants against Monogenea of farmed *Seriola* species
7. Stock discrimination of slimy mackerel (*Scomber australasicus*) throughout Australia and New Zealand using parasites, genetics and otoliths
8. Parasite assemblages of commercially important finfish species and candidate species for aquaculture in southern Australia.

All our studies are integrated to help us build a more complete picture about the evolution, associations and interactions between marine parasites and their fish hosts. A thorough knowledge of the biology of the parasites will help to develop methods by which they can be managed and controlled on captive hosts in public display aquaria and in aquaculture. During 2009, our parasitological activities involved 1 postdoctoral fellow, 3 PhD students, 1 Honours student and 1 Research Assistant.

Collaboration

Members of ACEBB have very strong links with research groups around Australia and internationally. These have resulted in several initiatives, as well as numerous joint grant applications and co-authored publications during 2009. Some of the major linkages with members of The Centre over this period are:

Andy Austin

- Dr Mark Dowton, University of Wollongong, Project: The molecular evolution and phylogeny of the parasitic Hymenoptera.
- Dr Mark Harvey, Western Australian Museum, Project: Development of an interactive key to the identification of Australasian invertebrate orders.
- Dr Bill Humphreys, Western Australian Museum, Project: The evolution and diversity of stygofauna associated with calcretes in the Yulgan region of Western Australia.
- Dr Norman Johnson, Ohio State University, Project: Systematics, phylogeny and higher-level classification of platygastroid wasps.
- Dr John La Salle, CSIRO, Entomology, Project: Development of an interactive platform for the identification of Australasian Hymenopteran families.
- Dr Jim Whitfield, University of Illinois, Project: Phylogeny of microgastroid braconid wasps.

Jeremy Austin

- Jim Groombridge, Durrell Institute of Conservation & Ecology, University of Kent, Project: Phylogeny of extinct Indian Ocean birds.
- Jane Melville, Museum Victoria, Project: Phylogeography of arid-zone reptiles.
- Paul Doughty, West Australian Museum, Project: Systematics of Australian reptiles.
- Nick Arnold, British Museum, Natural History, Project: Phylogeny of Indian Ocean island reptiles.
- Juan Sanchez, Institute of Forensic Medicine, University of Copenhagen, Project: Ancient human DNA.
- Melanie Lancaster, Department of Genetics, La Trobe University, Project: Ancient DNA from Macquarie Island to identify pre-European species.
- Gillian Gibb, Allan Wilson Centre, Massey University, Project: Mitochondrial genome sequencing of extinct birds.
- Ken Aplin, CSIRO - Sustainable Ecosystems, Project: Phylogeny of Australasian rodents.

Bill Barker

- Dr P Beardsley, Idaho State University, USA, Project: Molecular studies in the sub-tribe Mimulineae (Scrophulariaceae).
- Mr Dwayne Estes, Dept of Ecology & Evolutionary Biology, Knoxville, USA, Project: A world-wide taxonomic revision of Gratiola (Scrophulariaceae).
- Prof Michael Kiehn, Department of Biogeography and Botanical Garden, Vienna, Project: Chromosomal evolution of Stackhousiaceae.

Bill Breed

- Dr Larry Heaney - Field Museum of Natural History, Chicago, Project: Evolution of sperm morphology of murine rodents.
- Prof Richard Oko - Queens University, Kingston, Ontario Canada, Project: Cytoskeletal proteins in the sperm head of murine rodents.
- Dr Jamie Chapman - Discipline of Anatomy and Physiology, University of Tasmania, Project: Glycoproteins of the marsupial egg coat.

- Prof HDM Moore, University of Sheffield.
- Dr Ken Aplin and Dr Fred Ford. Australian National Wildlife Collection
- Dr Steve Goodman, Field Museum of Natural History, Chicago.
- Dr Mike Carleton, Smithsonian Institute National Museum of Natural History, Washington, DC.

John Conran

- Ms Jennifer Bannister and Dr Daphne Lee, University of Otago, New Zealand, Project: Fossil monocots from New Zealand.
- Prof Mark Chase, RBG Kew, Project: The molecular systematics and phylogeny of Australian monocots.
- Mr Paul Forster, Qld Herbarium, Project: Systematics of Romnalda (Laxmanniaceae).
- Dr Jie Li Xishuangbanna, Tropical Botanical Garden, Kunming, P.R. China, Project: The molecular evolution and phylogeny of the Laureae (Lauraceae).
- Mr Allen Lowrie, Perth, Project: Evolution, systematics and biology of Australian carnivorous plants.
- Dr Terry Macfarlane, DEC WA, Project: Systematics of Australian Laxmannianceae.
- Dr Paula Rudall, RBG Kew, Project: The morphological evolution and diversity of Australian monocots.
- Prof Hiroshi Tobe, Kyoto University, Japan, Project: Evolution in the Smilacaceae.
- Mr Phillip Simpson, New Zealand, Project: Fossil palms in Miocene New Zealand.

Steve Cooper

- Professor Roger Butlin, University of Leeds, UK, Project: Population genetics and evolution of morabine grasshoppers, genus *Vandiemenella*.
- Dr Bill Humphreys, Western Australian Museum, Project: The evolution and diversity of stygofauna associated with calcretes in the Yilgarn region of Western Australia.
- Assoc Prof Mike Schwarz, Flinders University, Project: Social evolution and molecular systematics of allodapine bees.
- Dr Stefano Taiti, Istituto per lo studio degli ecosistemi, Florence, Italy, Project: Systematics of *Haloniscus* isopods from calcrete aquifers of the Yilgarn region of WA.
- Dr Mark Harvey, Western Australian Museum, Project: Systematics of moggridgea spiders from Western Australia.
- Dr David Paull, University of NSW, Project: Population genetics and evolution of morabine grasshoppers, genus *Vandiemenella*.
- Dr Joo-Lae Cho, International Drinking Water Centre, South Korea, Project: Systematics of bathynellid stygofauna from the Yilgarn region of Western Australia.

Jack da Silva

- Drs Kyle Summer and Tom McConnell, East Carolina University, Project: Evolutionary Dynamics of the DAB and DXB MHC II loci in *Xiphophorus* fishes.

Steve Donnellan

- Dr Chris Austin, Louisiana State University, Baton Rouge, Project: The phylogeography of New Guinean reptiles and frogs.
- Dr Don Driscoll, Flinders University, Project: The impact on genetic diversity of drying of the palaeo-Lake Bungunnia – implications for conservation genetics.
- Dr Paul Doughty, Western Australian Museum, Project: Systematics of the brood frogs.
- Dr Joe Benshemesh, Monash University, Project: Systematics and population biology of marsupial moles.

- Dr Ken Aplin, Australian National Wildlife Collection, Project: Systematics of the Australian and New Guinean vertebrates.
- Professor Arthur Georges, Canberra University, Project: Conservation biology of the broad-shelled turtle
- Professor Craig Moritz, University of California, Project: Molecular systematics of the Australo-Papuan treefrogs (Hylidae).
- Associate Professor Michael Mahony, University of Newcastle, Project: Molecular systematics of the Australo-Papuan treefrogs (Hylidae).
- Professor Mike Bull, Flinders University, Project: Biology of Egernia group skinks lizards.

Fred Gurgel

- Sean Connell, University of Adelaide (marine ecology)
- Corey Bradshaw, University of Adelaide (modelling and mathematical ecology)
- John Runcie, University of Sydney (photosynthesis and plant physiology)
- Marty Deveney, SARDI (marine invasive species biology)
- Julian Caley, AIMS (coral reef ecology and evolutionary biology)
- John Huisman, Murdoch University (phycology)
- Karla McDermid, University of Hawaii at Hilo, USA (phycology)
- Suzanne Fredericq, University of Louisiana, USA (phycology)
- James Norris, Smithsonian Institution, Washington DC, USA (phycology)

Bob Hill

- Dr Sung Soo Whang, Chonbuk National University, South Korea, Project: Conifer morphology.
- Dr Tim Brodribb, Harvard University, Project: Conifer eco-physiology.
- Assoc. Prof. Andrew Drinnan, University of Melbourne, Project: Plant macrofossil evidence for evolution of the Australian vegetation.

Mark Hutchinson

- Arthur Georges, Canberra University, Project: Conservation Biology of the broad-shelled turtle.
- Mike Bull, Flinders University, Project: Conservation biology of endangered lizards (*Tiliqua* and *Egernia*).
- David Chapple, Victoria University of Wellington, Project: Evolution of the *Egernia whitii* complex.

John Jennings

- Dr David Smith, Systematic Entomology Laboratory, National Museum of Natural History, Smithsonian Institution, Washington, D.C., Project: Revision of miscellaneous *Pseudofoenus* and *Gasteruption* spp. (Hymenoptera: Gasteruptiidae).
- Dr Nathan Schiff, USDA Forest Service, Center for Bottomland Hardwoods Research, Stoneville, Project: Revision of the Australasian wood-boring sawflies (Hymenoptera: Xiphydriidae).

Mike Lee

- John Scanlon, University of NSW and Outback at Isa, Project: Early snake evolution.
- Mike Caldwell, University of Alberta, Edmonton, Project: Marine reptiles.
- Tod Reeder, San Diego State University, San Diego, Project: The deep scaley project (NSF Tree of Life grant).

Andrew Lowe

Hybridisation, speciation and weed evolution

- Prof Richard Abbott (University St Andrews, UK) – plant evolutionary and ecological genetics - former PhD supervisor, joint ARC discovery grant (2006-2009) and joint publications
- Prof Dave Richardson, Dr John Wilson and Dr Jaco La Roux (Stellenbosch University, South Africa) – weed ecology and evolution – joint Working for Water Programme grant, South African Government (2006-2010) and publications.
- Prof Loren Rieseberg·(University British Columbia, Canada) and Dr Peter Prentis and Daniel Ortiz-Barrientos (University of Queensland) – Plant evolutionary genetics and genomic adaptation – joint ARC discovery grant (2006-2009) and joint publications
- Dr Susanne Schmidt and Dr Peer Schenk (University of Queensland) – plant genomics and polyploid evolution – joint publication, ARC linkage application and ARC discovery grant

Phylogeography, gene flow and forest management

- Dr David Boshier (Oxford Forestry Institute, Oxford University, UK) – tree population genetics and phylogeography – joint EU project (SEEDSOURCE, 2005-2009) and joint publications
- Dr Stephen Cavers (Centre for Ecology and Hydrology, Edinburgh, UK) – tree population genetics and phylogeography – joint publications and EU project grants (GENEOTROPECO, 2002-2005; SEEDSOURCE, 2005-2009)
- Prof Bernd Degen (German Forestry Research Institute, BFI, Hambourg , Germany) – tree population genetics and phylogeography – joint publications and joint EU project grant (OAKFLOW 2000-2004; GENEOTROPECO, 2002-2005; SEEDSOURCE, 2005-2009)
- Dr Chris Dick (Michigan University, USA) – tree population genetics and phylogeography – joint publications and EU project grants (SEEDSOURCE, 2005-2009)
- Dr Carlos Navarro and Dr Bryan Finegan (Central American Tropical Research Institute, CATIE, Costa Rica) and Dr Heidy Villalobos (University of Costa Rica) – tropical tree ecology, gene flow and fitness – joint publications and joint EU project grant (GENEOTROPECO, 2002-2005; SEEDSOURCE, 2005-2009)
- Prof Beppe Vendramin (National Research Institute, CNR, Florence, Italy) – tree population genetics and phylogeography – joint publications and EU project grants (OAKFLOW 2000-2004; SEEDSOURCE, 2005-2009)
- Dr Ming Kang (South China Botanic Gardens, China) – plant phylogeography and gene flow – joint publications and hosted visit funded by Chinese Academy of Sciences (2006-2009)
- Dr Maurizio Rosetto (Botanic Gardens Sydney) – phylogeography and gene flow – joint ARC grant (2006-2009) and PhD students (Rohan Mellick, Mark Heselwood)
- Dr Ian Dawson (ICRAF) and Prof Roger Leakey (James Cook University) – plant genetic resources – joint publications

DNA barcoding, biodiversity discovery and ecosystem science

- Dr Pete Hollingsworth (Royal Botanic Gardens, UK) and Sean Graham (University of British Columbia, Canada) – DNA barcoding, biogeography and evolutionary rates – joint ARC discovery grant (2006-2009) and joint publications
- Prof Darren Crayn (Australian Tropical Herbarium, Cairns) – DNA barcoding and phylgoegoraphy - joint ARC grant (2006-2009) and PhD students (Mark Heselwood, Craig Costion)

- Dr Hugh Cross & Fred Gurgel (South Australian Herbarium) and Steve Donnellan (South Australian Museum) – DNA barcoding and tracking – joint PhD students and publications
- Prof Hugh Possingham (University of Queensland) - ecology, biogeography, dispersal and weed population dynamics – joint PhD students (Gunnar Keppel, Jessie Wells) and publications
- Dr Peter Hayman (SARDI), Profs Corey Bradshaw, Barry Brook and Alan Cooper (University of Adelaide) ecosystem monitoring, modeling and genomics – joint project (2010-2013).
- Dr Paul Coddington (University of Adelaide), Donald Hobern (Atlas for Living Australia, CSIRO), and Dan Faith (GEO BON), ecosystem and biodiversity science, advisory roles

Ian Whittington

- Professor Janine Caira, University of Connecticut, Dr Kirsten Jensen, University of Kansas, Dr Gavin Naylor, Florida State University, Drs Peter Last and John Stevens, CSIRO Marine & Atmospheric Research, Hobart, Project: Collections of parasites from sharks and rays from northern Australia and Indonesian Borneo.
- Dr Kevin Christison, Marine & Coastal Management, Cape Town. South Africa, Project: Monogenea of teleosts in aquaculture and public aquaria.
- Dr Marty Deveney, Aquatic Sciences, South Australian Research & Development Institute, Henley Beach, Adelaide, Project: Systematics of capsalid Monogenea.
- Dr Marcus Domingues, Universidade Federal de São Paulo-Campus Diadema, Brasil, Project: Systematics of hexabothriid Monogenea.
- Professeur Jean-Lou Justine, Équipe Biogéographie Marine Tropicale, Unité Systématique, Adaptation, Évolution, Institut de Recherche pour le Développement, Nouméa New Caledonia, Projects: Systematics of Monogenea from reef fishes of New Caledonia.
- Roxana Inohuye Rivera and Juan Carlos Pérez Urbiola, Centro de Investigaciones Biológicas del Noroeste (CIBNOR), La Paz, Baja California Sur, México, Project: Complexities in the systematics of *Neobenedenia* 'species' known to occur on marine fishes in the region.
- Dr Graham Kearn, University of East Anglia, Norwich, U.K., Project: Biology and systematics of Monogenea from sharks, stingrays and teleost flatfishes.
- Dr Andy Shinn, Institute of Aquaculture, University of Stirling, Scotland, Project: Image analysis and recognition of parasites using image recognition software.
- David Vaughan, Two Oceans Aquarium, Cape Town, South Africa, Project: Monogenea of elasmobranchs and teleosts in public aquaria.
- Dr Olivier Verneau, Parasitologie Fonctionnelle et Evolutive, Université de Perpignan, France, Project: Use of parasitic platyhelminths to study the early evolution of neobatrachian frogs.

Communication

The website can be found at www.adelaide.edu.au/acebb. It provides a portal into all of the activities of ACEBB, including information on members, research groups, grants, publications and seminars and workshops.

Seminars & Training

Date	Title and Speaker
20-Feb	The cashew family (Anacardiaceae) genes, fruits & dermatitus *Speaker: Susan Pell*, Brooklyn Botanic Gardens, USA
25-Mar	Evolutionary and conservation genetics of a diverse flora in a changing climate *Speaker: Margaret Byrne*, Dept. Environment and Conservation, WA
7-Apr	Applying complexity theory to the modelling and analysis of plant communities *Speaker: Lael Parrott,* University of Montreal, Canada
21-May	The Paleoclimate of the Eocene Arctic *Speaker: Hope Jahren,* University of Hawaii, USA
15-Jul	How can we help biodiversity adapt to the ravages of climate change? *Speaker: Andrew Lowe*, The University of Adelaide
4-Aug	Climate change and tropical rainforests *Speaker: Craig Moritz,* UC Berkeley, USA
11-Sep	50 years of invasion ecology: the legacy of Charles Elton *Speaker: David Richardson,* University of Stellenbosch, South Africa
30-Oct	Building the Atlas of Living Australia *Speaker: Donald Hobern,* Director, Atlas of Living Australia
6-Nov	Sex selection Speaker: *Leigh Simmons*, The University of Western Australia
20-Nov	Pines and paddocks: Socioecology and population genetics of marsupials in fragmented systems *Speaker: Melanie Lancaster,* The University of Adelaide

ACEBB publications

Summary of publications

Publication type	Count	%
A* journal	15	10.1
A journal	42	28.2
B journal	46	30.9
C journal	38	25.5
Unranked journal	8	5.4
Total journal publications	**149**	**100**
Books	1	
Book chapters	11	

Journal Articles

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Albrecht GA, McMahon CR, Bowman DMJS, **Bradshaw CJA**. 2009. Convergence of culture, ecology and ethics: management of feral swamp buffalo in northern Australia. ***Journal of Agricultural and Environmental Ethics*** 22: 361-378	1
Anderson BJ, Akcakaya HR, Araujo MB, **Fordham DA**, Martinez-Meyer E, Thuiller W, **Brook BW**. 2009. Dynamics of range margins for metapopulations under climate change. ***Proceedings of the Royal Society of London – Series B*** 276: 1415-1420	2
Austin AD, Jennings JT. 2009. A new highly aberrant doryctine wasp, *Spathius lubomiri* n. sp. (Hymenoptera: Braconidae: Doryctinae), from Lord Howe Island. ***ZooKeys*** 20: 275-284	3
Bacles CFE, Brooks J, Lee DJ, Schenk P, **Lowe A**, Kremer A. 2009. Reproductive biology of *Corymbia citriodora* subsp. *variegata* and effective pollination across its native range in Queensland, Australia. ***Southern Forests*** 71: 125-132	4
Bartholomaeus F, **Davies K**, Ye W, Kanzaki N, Giblin-Davis RM. 2009. *Schistonchus virens* sp. n. (Aphelenchoididae) and *Parasitodiplogaster australis* sp. n. (Diplogastridae) from *Ficus virens* (Moraceae) in Australia. ***Nematology*** 11: 583-601	5
Barton D, Beaufrère C, Justine J, **Whittington I**. 2009. *Polyopisthocotylean monogeneans* from carangid fishes off Queensland, Australia and New Caledonia, with a description of *Heteromicrocotyloides megaspinosus* sp. nov. ***Acta Parasitologica*** 54: 205-217.	6
Bertozzi T, **Davies KA**. 2009. *Anguina paludicola* sp. n. (Tylenehida: Anguinidae): the nematode associated with *Rathayibacter toxicus* infection in *Polypogon monspeliensis* and *Lachnagrostis filiformis* in Australia. ***Zootaxa*** 33-46	7
Bester MN, **Brook BW, Bradshaw CJA**. 2009. Shifting trends: Detecting environmentally mediated regulation in long-lived marine vertebrates using time-series data. ***Oecologia*** 159: 1	8
Boessenkool S, **Austin JJ**, Worthy TH, Scofield P, Cooper A, Seddon PJ, Waters JM. 2009. Relict or colonizer? Extinction and range expansion of penguins in southern New Zealand. ***Proceedings of the Royal Society of London – Series B*** 276: 815-821	9
Bradford T, Adams M, Humphreys WF, **Austin AD, Cooper SJB**. 2009. DNA barcoding of stygofauna uncovers cryptic amphipod diversity in a calcrete aquifer in Western Australia's arid zone. ***Molecular Ecology Resources*** 10: 41-50	10
Bradshaw CJA, Brook BW. 2009. Flooding policy makers with evidence to save forests. ***Ambio*** 38: 125-126	11
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ACEBB Book Publications

Books

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Go to http://www.adelaide.edu.au/environment/acebb/pubs/ for more information

ACEBB Funding

Summary of funding

Funding Breakdown	Amount
Category 1	$4,140,550
Category 2	$1,213,166
Category 3	$105,440
International	$51,000
ACEBB member principal investigator	$2,896,593
ACEBB member not principal investigator	$1,539,114
Non-University of Adelaide financed grants	$1,074,449
2009 Total	**$5,510,156**

ACEBB member principal investigator

Principal Investigator	Project Title	Funding Type	Funding Body and Scheme	Amount
Austin, Andrew	Systematics, biogeography and hosts of Australian scelionid wasps (Hymenoptera: Scelionidae): parasitoids of insect and spider eggs	Category 1	Australian Biological Resources Study	$36,300
Austin, Andrew	Comparative phylogeography of mound springs-invertebrates: identifying genetically divergent populations for conservation and management	Category 1	Australian Research Council, Linkage	$39,465
Austin, Andrew	Systematics and coevolution of insect herbivores on casuarinas: testing phylogenetic congruence for selection of plant biocontrol agents	Category 1	Australian Research Council, Linkage	$127,592
Austin, Andrew	Phylogeography and host specificity of stemborer parasitoids:	Category 1	Australian Research Council,	$161,392

	essential components for the pre-emptive biocontrol of sugarcane pests in Australia		Linkage	
Bradshaw, Corey	Estimating fishing-related mortality and designing sustainable management protocols for shark fisheries in Northern Australia	Category 1	Australian Research Council, Linkage	$54,396
Bradshaw, Corey	Density regulation as a major determinant of population persistence: advancing empirical and theoretical approaches to conserve biodiversity	Category 1	Australian Research Council, Discovery	$109,269
Breed, Martin	Developing best practice approaches for restoring River Murray forest ecosystems that are resilient to climate change	Category 2	Native Vegetation Council	$18,116
Brook, Barry	Planning for a transformed future: Modelling synergistic climate change and land use impacts on biodiversity	Category 1	Australian Research Council, Linkage	$189,558
Brook, Barry	Reconstructing past population dynamics to understand human and climatic impacts in prehistory	Category 1	Australian Research Council, Discovery	$221,660
Brook, Barry	The Sir Hubert Wilkins Chair of Climate Change	Category 2	State Government of South Australia	$250,000
Conran, John	Systematic studies on *Thysanotus* R.Br. (Fringed Lillies)	Category 3	Sir Mark Mitchell Research Foundation	$4,000
Cooper, Steven	Development of Australian model systems for speciation research	Category 1	Australian Research Council, International Linkage Travel Grant	$3,492
Cooper, Steven	Systematics of Chiltoniidae (Amphipoda: Crustacea) in mound springs and calcrete aquifers of Western and South Australia	Category 1	Australian Biological Resources Study	$63,000
Cross, Hugh	DNA barcoding and molecular evolution of Australian flora	Category 2	Department for Environment and Heritage	$9,950
Cross, Hugh	Molecular genetics to improve the knowledge of plants in South Australia	Category 2	Department for Environment and Heritage	$32,000
Donnellan, Stephen	Phylogeography, evolution and taxonomy of humanity s greatest pest, *Rattus rattus*: Epidemiological, archaeological and conservation implications	Category 1	Australian Research Council, Discovery	$132,633
Donnellan, Stephen	Rapid identification and taxonomic description of three frog species endemic to South Australia	Category 3	Biology Society of South Australia	$1,000
Fuller, Nicholas	Population genetics and socioecology of Gould's long-eared bat	Category 2	Department for Environment	$6,000

	(*Nyctophilus gouldi*) and the lesser long-eared bat (*N. geoffroyi*) in fragmented populations of south-eastern Australia		and Heritage	
Fuller, Nicholas	Population genetics and socioecology of Gould's long-eared bat (*Nyctophilus gouldi*) and the lesser long-eared bat (*N. geoffroyi*) in fragmented populations of south-eastern SA and western Victoria	Category 3	ANZ Charitable Trusts	$6,650
Gurgel, Fred	Marine benthic algae of the Great Barrier Reef, *Rhodophyta*: Nemastomataceae, Schyzymeniaceae, Dumontiaceae, Ceramiaceae and Rhodomelaceae	Category 1	Australian Biological Resources Study	$80,000
Gurgel, Fred	Ecology, physiology and phylogeography: an integrated approach to the study of the invasive marine green macroalga *Caulerpa taxifolia* in Australia	Category 1	Australian Research Council, Linkage	$169,122
Gurgel, Fred	Phylogeography and systematics of co-distributed marine macroalgae across Australia	Category 2	Department for Environment and Heritage	$10,000
Gurgel, Fred	Genetic diversity of calcareous macroalgae and their vulnerability to global climate changes	Category 3	Department of Innovation, Industry, Science and Research	$35,000
Harris, John	Interactive effects of climate change and habitat loss on southeast Asian birds	Category 3	Loke Wan Tho Memorial Foundation	$7,000
Hill, Robert	The role of atmospheric carbon dioxide in fostering hyperdiversity in Australian conifer palaeofloras	Category 1	Australian Research Council, Discovery	$82,509
Hill, Robert	Global differentiation of the conifer flora	Category 1	Australian Research Council, Discovery	$127,437
Hill, Robert	Discovering the past and present to shape the future: networking environmental sciences for understanding and managing Australian biodiversity	Category 1	Australian Research Council, Research Networks	$165,693
Hutchinson, Mark	Systematics and evolutionary history of the most successful Australian geckos - *Gehyra*	Category 1	Australian Biological Resources Study	$22,000
Hutson, Kate	Metazoan parasite survey of selected macro-inshore fish of southeastern Australia, including species of commercial importance	Category 1	Fisheries Research & Development Corporation	$24,931
Hutson, Kate	Metazoan parasites of selected macro-inshore fish of southeastern	Category 1	Australian Biological	$60,000

	Australia, including species of commercial importance		Resources Study	
Jennings, John	Systematics of the Australian ensign wasps (Hymenoptera: Evaniidae)	Category 1	Australian Biological Resources Study	$33,000
Kellermann, Jürgen	Systematics, taxonomy and nomenclature of Rhamnaceae	Category 2	Department for Environment and Heritage	$6,000
Lancaster, Melanie	Conservation genetics of an endangered marsupial, the southern brown bandicoot, in fragmented south-eastern South Australia	Category 2	Department for Environment and Heritage	$10,000
Lee, Michael	Insights into macroevolution using a model adaptive radiation of lizards (Lerista)	Category 1	Australian Research Council, Discovery	$91,578
Lee, Michael	The Cambrian explosion of arthropods in Australia: Ediacaran origins, evolution and biodiversity	Category 1	Australian Research Council, Linkage	$130,556
Lowe, Andrew	TreeBOL in association with Outback Blitz	Category 1	Australian Biological Resources Study	$17,900
Lowe, Andrew	Genomic approaches to DNA barcoding Australasian Trees at the Species Boundaries Project in association with Outback Blitz	Category 1	Australian Biological Resources Study	$38,600
Lowe, Andrew	Outback Blitz - Development of protocols	Category 2	Australian Biological Resources Study	$40,000
Lowe, Andrew	Genetic dynamics of lowland rainforest trees on islands in the tropical Southwest Pacific	Category 1	Australia and Pacific Science Foundation	$3,000
Lowe, Andrew	Identifying historic and contemporary refugia for arid avifauna threatened by climate change in South Australian mallee ecotonal vegetation	Category 3	Birds Australia	$3,200
Lowther, Andrew	The role of social and genetic factors in shaping alternate foraging strategies in the Australian sea lion	Category 3	ANZ Charitable Trusts	$6,000
MacGillivray, Phyllis	Tracking phenological shifts and evolutionary impacts of climate change	Category 3	Australian Orchid Foundation	$4,590
Murphy, Nicholas	Evolution of the unique fauna of the Great Artesian Basin mound springs: the impact of aridification and climate change.	Category 1	Australian Research Council, Discovery	$78,428
Olds, Liberty	Investigating small mammals of the north Kimberley rangelands	Category 3	ANZ Charitable Trusts	$3,000
Oliver, Paul	Systematics and taxonomy of Australian diplodactyloid geckos	Category 1	Australian Biological Resources Study Travel Grant	$1,000
Ottewell, Kym	Population genetics study of *Thelymitra epipactoides* on Eyre	Category 2	Department for Environment	$5,000

	Peninsula		and Heritage	
Ottewell, Kym	Understanding the distribution of genetic diversity in the critically-endangered shrub, *Acacia pinguifolia*	Category 2	Native Vegetation Council	$8,789
Ottewell, Kym	A molecular study of two threatened wetland plant species	Category 2	Department for Environment and Heritage	$9,500
Ottewell, Kym	Genetic analysis of *Allocasuarina robusta*, *Eucalyptus paludicola* and closely related species	Category 2	Department for Environment and Heritage	$18,000
Potter, Sally	Phylogeography and population genetics of rock-wallabies in the Kimberley, WA	Category 3	Australian Museum	$2,500
Potter, Sally	Reproductive biology and phylogeography of rock-wallabies in the kimberley, WA	Category 3	ANZ Charitable Trusts	$7,500
Sanders, Kate	Sea Snake Diversification: why are certain taxa and regions species-rich?	Category 1	Australian Research Council, Discovery	$87,742
Scoble, Jolene	Identifying historic and contemporary refugia for dryland avifauna threatened by climate change across ecotones of intact and relictual mallee vegetation in South Australia	Category 2	Department for Environment and Heritage	$8,545
Scoble, Jolene	Identifying historic and contemporary refugia for semi-arid avifauna threatened by climate change across ecotones of intact and rellictual mallee vegetation in South Australia	Category 3	Sir Mark Mitchell Research Foundation	$4,000
Speight, Natasha	Renal failure in koalas in the Adelaide Hills	Category 3	ANZ Charitable Trusts	$3,000
Trengove, Karleah	The ecology of the greater bilby (*Macrotis lagotis*)	Category 2	Department for Environment and Heritage	$10,000
Trengove, Karleah	The ecology of the greater bilby (*Macrotis lagotis*): determining sociality, reproductive success	Category 3	Field Naturalists Society of South Australia	$4,000
Trengove, Karleah	The ecology of the greater bilby (*Macrotis lagotis*): determining sociality, reproductive success and behaviour using field and genetic techniques	Category 3	ANZ Charitable Trusts	$7,000
Zammit, Maria	Climate-induced faunal turnover in early cretaceous high-latitude marine vertebrate assemblages from Australia	Category 3	Sir Mark Mitchell Research Foundation	$4,000
Total				**$2,896,593**

ACEBB member not principal investigator

Principal Investigator	ACEBB member	Project Title	Funding Type	Primary Funding Body	Amount
Carthew, Susan (UofA)	Cooper, Steven	Conservation genetics and socio-ecology of marsupials in fragmented populations of south-eastern South Australia: towards a regional biodiversity management plan	Category 1	Australian Research Council, Linkage	$37,867
Connell, Sean (UofA)	Gurgel, Fred	Forecasting change in subtidal habitats: connecting local pollution with global climate in temperate Australia.	Category 1	Australian Research Council, Linkage	$102,773
Cooper, Alan (UofA)	Brook, Barry; Cross, Hugh; Stevens, Mark	Environmental Genomics: Mining, climate change, water, crime and health	Category 1	Australian Research Council, Linkage	$953,208
Meyer, Wayne	Brook, Barry & Lowe, Andrew	Climate change, communities and environment: Building research capability to identify climate change vulnerability and adaptation options for South Australian landscapes	Category 2	Premier's Science and Research Fund	$389,320
Venning, Jackie	Brook, Barry	Research Institute for Climate and Sustainability, Executive Advisor	Category 2	Primary Industries & Resources SA (PIRSA)	$55,946
Total					**$1,539,114**

Non-University of Adelaide financed grants

ACEBB member	Project Title	Funding Type	Primary Funding Body	Amount
Bradshaw, Corey	Identifying cost-effective reforestation approaches for biodiversity conservation and carbon sequestration in the Australian wet tropics	Category 1	Australian Research Council, Linkage	$59,289
Brook, Barry & Lowe, Andrew	Terrestrial Biodiversity - Adaptation Research Network - National Climate Change Adaptation Research Facility	Category 2	Department of Climate Change	$320,000

Austin, Andrew	PBI: Diversity and the parasitoid life history strategy – the superfamily Platygastroidea (Hymenoptera)	International	National Science Foundation - USA	$51,000
Lee, Michael	Unravelling the last great Gondwanan mystery: the first land vertebrate fauna from the Tertiary of New Zealand	Category 1	Australian Research Council, Discovery	$70,500
Lowe, Andrew	NCCARF Terrestrial Biodiversity Network - regional node support	Category 2	Department of Climate Change	$6,000
Stevens, Mark	Molecular studies of the origins and dispersal patterns of invertebrates in the Antarctic and subantarctic	Category 1	Australian Antarctic Division	$567,660
Total				**$1,074,449**