



ARC-NZ Research Network for Vegetation Function



Annual Report 2005



ARC-NZ Research Network for Vegetation Function

Website and web reporting

This report is also available in web format...

www.vegfunction.net/activity/annual.html

The Network's website (www.vegfunction.net/) provides practical information for participants in working groups and other Network activities, and ongoing details of working group meetings. Links to particular pages within the website are shown in the margins of this hardcopy report.

What is the Network?

The Network for Vegetation Function spans from functional genomics through ecophysiology and functional ecology to global change and evolutionary history. Participants are leading researchers from nearly 50 universities and research organizations in Australasia, Europe and the Americas.

The network is convened by Mark Westoby and Ian Wright at Macquarie University with administrator Robyn Delves. The network is jointly funded by the Australian Research Council, Landcare Research New Zealand (Manaaki Whenua), Macquarie University, Australian Centre for Plant Functional Genomics, University of Minnesota and University of Queensland.

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ARC-NZ Research Network for Vegetation Function



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SUMMARY 1

Aims, Scope and Priorities

1. The Vegetation Function Network's main aim is to generate high-impact research, directed at National Research Priority 1 "An Environmentally Sustainable Australia". Other national benefits will arise also, but research output is our key criterion for success.
2. The Network's core activity is working groups: multi-discipline teams usually of 10-12, that work together for bursts of 4-5 days.
3. Supplementary aims are to nurture early-career investigators and research students and help them to embark on new research directions; and to encourage sharing of software tools and datasets.
4. The Vegetation Function Network's scope (Box 1) reaches from genes to geoscience. We focus especially on research issues of wide scope and that cross boundaries of geography and of discipline.

BOX 1 Topics spanned by Vegetation Function Network

| | |
|------------------------------------|------------------------|
| functional genomics | evolutionary radiation |
| ecophysiology | root symbioses |
| development and architecture | ecosystem processes |
| functional and comparative ecology | global change |
| vegetation history | carbon budgets |
| herbivory | pollination |
| vegetation dynamics | soil processes |
| nutrient cycles | plant diseases |
| molecular genetics | palaeoecology |
| phylogeny | ecoinformatics |
| evolutionary theory | landscape ecology |
| rangelands | water budgets |
| proteomics | salinity management |

*...research output
is our key criterion
for success.*





SUMMARY 2

Achievements in Relation to Aims

Timeframe

The Network offer was accepted in January 2005. There followed a period while facilities were fitted out at Macquarie University, staff were hired, and initial working groups were organized. Working groups began from mid-2005, and have been running for 8 months at end February 2006, the date of this report. Accordingly the emphasis of the present report is on the processes that have been established. We anticipate that output will begin to appear in journals from 2007 onwards.

Working groups

Nine working groups have held their first meeting. Second meetings have been held for one and are still in the future for the other eight. A further 11 working groups are scheduled or planned. An open call has been circulated widely for the research community to bring forward their own fresh ideas for working groups. Arising from that, further working groups will be developed to the limits of what we can support.

575 person-days have been spent in working groups, of which 187 (33%) were postgrads and early-career researchers, and 215 (37%) were from countries other than Australia and New Zealand.

Other

Outside working groups, a further 450 person-days have been spent at Network headquarters by a range of visitors, ranging from long stays on sabbatical through to single-day visits.

A 1-day postgraduate course held in Brisbane attracted 98 research students.

Below

Working Group 2
Vascular Design: Comparison
of Theory Strands, 29 August-
2 September 2005





Processes established

Organization

The Network's formal organization is simple (Fig 1). Authority is vested in the Convenors, allowing quick decisions and rapid action on new opportunities.

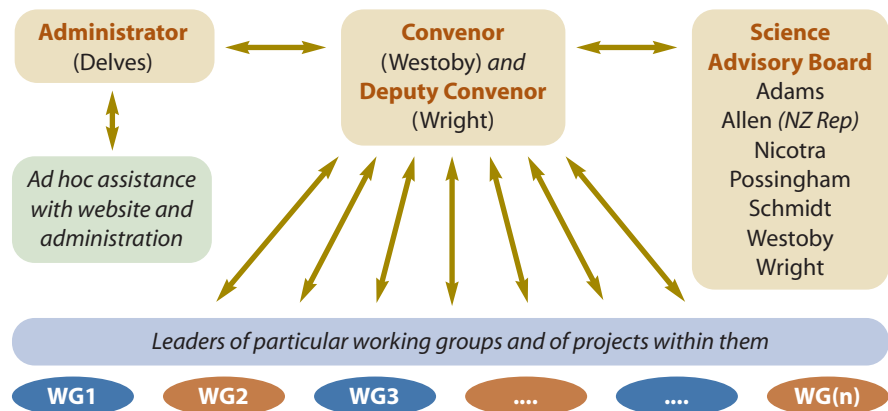
Partnership with New Zealand is informal. The NZ part of the Network takes responsibility for its own funding and its own working groups. Arrangements are made to regularly include New Zealanders in Australia-based working groups, and vice versa. This is ensured through frequent conversations, and through a New Zealander on the Science Advisory Board.

The Science Advisory Board meets twice yearly. Through personal knowledge and wide contacts, they ensure the Network is aware of the most promising ideas, people and datasets in the research community. The Convenors act on the Board's advice.

The Administrator is responsible for travel, accommodation, catering, web access and supervising the website. Assistance is employed ad hoc.

The key to the Network's organization is continuing close contact between the Convenors and the many individuals in different working groups who have taken de facto leadership for particular research projects. Sometimes these coordinators emerge from discussions at the working group, other times they have been instrumental in establishing the working group. A major part of the Convenor's role is to track these projects, and to encourage links where they might be productive.

Figure 1
Organization chart for the
ARC-NZ Research Network
for Vegetation Function,
as of March 2006.



Functioning of working groups

The Administrator has established standard routines for booking and reimbursing travel and accommodation. For this purpose we first drew on advice from the US/NSF National Centre for Ecological Analysis and Synthesis which has been running similar working groups for several years, modifying their procedures in light of our circumstances. Feedback obtained through questionnaires confirms these procedures are very economical with the time of people attending working groups, and are perceived as providing an appropriate balance between comfort and economy. We continue to refine the procedures and to spot-check their reception by participants.

The working group mechanism is designed to achieve the principal objectives of ARC Research Networks, which include enhancing scale and focus of research by participants, sharing information and resources, and encouraging multi-disciplinary collaboration and innovation in developing fresh research plans.





Participation of researchers with carer responsibilities

Research Network working groups require staying away from home for many participants. Even for researchers based in the meeting city, working groups may call for long meeting days. Some researchers are primary carers for small children or other dependents.

A small committee of researchers with carer responsibilities (Leishman, Nicotra, Schmidt) was established to advise what practical steps might help carers participate fully in working groups despite their responsibility.

Arising from this advice, a scheme for carer support has been established. From August to December 2005, a total of 8 researcher-days at meetings was supported through this scheme. In practice all applications for support were from women with young children, though the scheme is open for others with carer responsibilities. The scheme was warmly endorsed by the EEO Office at Macquarie University, and contributed to Macquarie receiving the Equal Opportunity for Women in the Workplace Agency (EOWA) Employer of Choice for Women citation for 2005.

The Network's experience is that the prime reason why researchers with carer responsibilities find it difficult to participate in working groups is the general time-pressure on their lives. Financial support and friendly encouragement can be of some assistance, but there is no perfect solution.

Meetings of Working Groups

Working groups in progress (Box 2) span a wide range of topics. The participation within each working group is markedly multi-disciplinary. There is sometimes mutual incomprehension within a working group, but satisfyingly, there is also a strong sense that new problems can be formulated and solved by the synergy of different disciplines.

Each working group that has held its first meeting has given rise to between 1 and 4 projects. Projects may be concept reviews, new theory developments, or synthetic data analyses. Progress between meetings is naturally variable, but we believe that a reasonable percentage of projects will move forward to high-impact publication. The convenors stay in touch about progress with the leaders of particular projects.

The opening day of the first meeting of each working group has been committed to talks from each of the invited participants. This opening day has been made available to local postgrads, postdocs and academics. This gives them the opportunity to get a concentrated introduction to a research field, to listen to wide-ranging discussion, and to meet international leaders one-on-one. A total of 53 person-days have taken up this opening-day opportunity at different working groups.

Working groups initiated from the research community

An open call for fresh ideas for working groups was circulated widely through the research community in early 2006. Applications will be assessed by the Science Advisory Board within 3 weeks after the closing date, during the second half of March 2006.

We are ensuring rapid response with decisions less than one month after submission deadline, less than three months after circulating the open call. To encourage applications only brief information was requested, no more than two pages.

Criteria are simple:

- Is the research question interesting? Does it bring together people in unfamiliar combinations? Can good progress be made through the working group mechanism?
- Is there a credible plan to generate high-impact research outputs? (Typically publications in strong journals or multi-institution research proposals, but the Board will be open to suggestions about other outcomes.)
- Do the people involved have the talent, energy and time to ensure that outputs emerge from the working group?

◀◀ Weblink

www.vegfunction.net/wg/info.html

◀◀ Weblink

www.vegfunction.net/workinggroups.html

*"...concept reviews,
new theory
developments,
or synthetic data
analyses ..."*

◀◀ Weblink

www.vegfunction.net/research/opencall.htm





Processes established *(continued)*

BOX 2 Working Groups in progress as of February 2006

Foreshadowed in proposal or initiated from the leadership of the Network

- WG1:** Leaves: size, shape, economics, palaeobiology and evolutionary radiations
- WG2:** Vascular design: comparison of theory strands
- WG3:** Nitrogen and phosphorus in ecosystems
- WG4:** Vegetation schemes in earth system models
- WG5:** Linking species-level scale with whole-vegetation scale
- WG6:** Third-generation models of carbon assimilation and water expenditure
- WG7:** Towards consistent site descriptions worldwide
- WG8:** Plant population dynamics along physical-geography gradients
- WG9:** Chronosequences, old soils and the properties of species on them
- WG11:** Ecology and history of NZ biotic radiations
- WG12:** Dialogue between plant functional genomics and comparative ecology
- WG15:** Influential publications about vegetation in Australia

Arising out of other working groups or discussions

- WG13:** Stomata
- WG14:** Australian evolutionary radiations
- WG16:** What can be learned from herbivory on islands?
- WG17:** Species-specific decomposition
- WG18:** Assembly of southern-continent floras
- WG19:** Decomposition of mixed leaf litter
- WG20:** Decomposition processes in earth system models

*"Science
Advisory Board
meets twice
yearly"*

Science Advisory Board

The Advisory Board meets twice yearly (during 2005, in June and December). Membership includes ex officio the Convenors, and a leader of the New Zealand program from Landcare Research. Other members span a spread of discipline interests and of Australian research organizations, and membership will begin to be rotated from the end of 2006.

Meetings include brief review of activities and finances, but are focused towards discussing potential research opportunities and directions.

Yearly survey

The Network's participants (like all active researchers) are very pressed for time and receive many circular emails. Accordingly the Network makes a point of minimizing circulars. Instead we target most communications specifically to the researchers involved.

Nevertheless, we have decided it is appropriate to circulate the entire membership once a year. This survey accomplishes two purposes:

1. Gathering information about how the Network is influencing the research of individual participants, in their own words. (This material is summarized under "Achievements and Outputs", below.) The survey also helps us identify and respond to people who are uncertain about their relationship with the Network.
2. Giving participants the opportunity to suggest further ways in which the Network might support them.

Software tools

At the website we have established the nucleus of a collection of software tools that have wide potential use for analysis of comparative datasets. This should grow over time, through particular working groups adding links to software they have developed or found useful. At this stage, we prefer this resource should develop organically, in response to specific needs that working groups feel they have, rather than through guessing what software might be useful and investing in that directly.

Weblink ▶▶
www.vegfunction.net/evidence/software.html





Achievements and Outputs

Publications

It is too soon for publications to have begun to emerge from working groups directly (with the exception of a published talk). However, publications have been influenced by discussion during the 2003-2005 formative period of the Network, and the Network has contributed to data analysis and interpretation by people spending time at network headquarters. Box 3 lists publications that have been nominated by their authors as influenced by the Network.

BOX 3 Publications

(Nominated by authors as influenced by their participation in the Network)

Edwards, W., Dunlop, M. & Rodgerson, L. (2006) *The evolution of rewards: Seed dispersal, seed size and elaiosome size. Journal of Ecology, in press.*

Edwards, W. (2006). *Plants reward seed dispersers in proportion to their effort: The relationship between pulp mass and seed mass in vertebrate dispersed plants. Evolutionary Ecology, in press.*

Kariuki, M. and Kooyman, R.M. (2005) *Floristic changes and regeneration patterns for a 12-year period during the 3rd and 4th decades following selection logging in a subtropical rainforest. Austral Ecology 30, 844-855.*

Kooyman, R.M. and Rossetto, M. (2005) *The impact of dispersal on genetic structure and species distributions: experimental studies from northern New South Wales, Australia. In: Proceedings of the Fourth International Symposium / Workshop on Frugivores and Seed Dispersal (theory and its application in a changing world).*

McGill B., Enquist B.J., Weiher E., Westoby M. (2006) *Rebuilding community ecology from functional traits. Trends in Ecology & Evolution, in press.*

Niklas KJ. (2006) *Plant allometry, leaf nitrogen and phosphorus stoichiometry, and interspecific trends in annual growth rates. Annals of Botany 97, 155-163.*

Niklas KJ. (2006) *Scaling the paths of resistance. New Phytologist 169, 219-222.*

Niklas KJ, Cobb, E.D. and Marler, T. (2006) *A comparison between the record height-to-stem diameter allometries of pachycaulis and leptocaulis species. Annals of Botany 97, 79 - 85.*

Rossetto, M. and Kooyman, R.M. (2005) *The tension between dispersal and persistence regulates the current distribution of rare palaeo-endemic rain forest flora: a case study. Journal of Ecology 93, 906-917.*

Smith, S.E., Ryan, P.R. and Smith, F.A. (2005) *The soil-plant interface: rhizosphere and mycorrhizosphere. In: Plant nutrition for food security, human health and environmental protection. Ed by C.J. Li et al. Tsingua University Press, pp 10-11.*

Tausz M., Warren C. R., Adams M. A. (2005) *Dynamic light use and protection from excess light in upper canopy and coppice leaves of Nothofagus cunninghamii in an old growth, cool temperate rainforest in Victoria, Australia. New Phytologist 165, 143-156.*

Tausz M., Warren C. R., Adams M. A. (2005) *Is the bark of shining gum (Eucalyptus nitens) a sun or a shade leaf? Trees – Structure and Function 19, 415-421.*

Traiser, C., Klotz, S., Uhl, D. & Mosbrugger, V. (2005) *Environmental signals from leaves – A physiognomic analysis of European vegetation. New Phytologist 166, 465-484.*

Warren C. R., Tausz M., Adams M. A. (2005) *Does rainfall explain variation in leaf morphology and physiology among populations of red ironbark (Eucalyptus sideroxylon subsp. tricarpa) grown in a common garden? Tree Physiology 25, 1369-1378.*

Westoby, M. and Burgman M. (2006) *Climate change as a threatening process. Austral Ecology, in press.*

Westoby M. and Wright I.J. (2006) *Land-plant ecology on the basis of functional traits. Trends in Ecology & Evolution, in press.*

Westoby M. (2006) *Phylogenetic ecology at world scale, a new fusion between ecology and evolution. Ecology, in press.*

Wright I.J., Ackerly D.D., Bongers F., Ibarra-Manriquez G., Harms K.E., Martinez-Ramos M., Mazer S.J., Muller-Landau H.C., Paz H., Pitman N.C.A., Poorter L., Silman M.R., Vriesendorp C.F., Webb C.O., Westoby M., Wright S.J. (2006) *Relationships among major dimensions of plant trait variation in 7 Neotropical forests. Annals of Botany, in press.*

Wright, I.J., Falster, D.S., Pickup, M. & Westoby, M. (2006) *Cross-species patterns in the coordination between leaf and stem traits, and their implications for plant hydraulics. Physiologia Plantarum, in press.*

Wright, I.J., Leishman, M.R., Read, C. & Westoby, M. (2006) *Gradients of light availability and leaf traits with leaf age and canopy position in 28 Australian shrubs and trees. Functional Plant Biology, in press.*



Achievements and outputs *(continued)*

Role of the network

The following quotes from individual participants express the range of ways in which the Network is stimulating research:

"The meeting on functional types and models has contributed considerably to our research programme that is developing global vegetation models to include greater plant functional diversity"

"... [my] final plenary talk at the International Plant Nutrition Colloquium, Beijing (an Annals of Botany lecture and [written] review for this journal) were clearly inspired by Network activities."

"My planned research on leaf physiognomy and climate in the next years involves several cooperations with network members, as well as active work on Australian plants in connection with the network."

"I am currently the project leader of a new 3-year programme, funded by the Dutch Science Foundation ... The way this programme is now developing has been influenced greatly by recent discussions with partners in the Network. Also, within this programme we have agreed to implement many of the protocols that resulted from the Network's WG7."

"... has had an important influence on how I am framing up the next generation of water-flux modules... This work for us is important because of two issues: one predicting wood properties and secondly predicting water use and the potential for selecting or breeding for water use efficiency."

"... I felt I was talking to people who could actually help with the issues I was dealing with..."

"I felt I was talking to people who could actually help with the issues I was dealing with ... This spring I hope we can actually put numbers on the ideas I've been examining with [the simulation model] MEL."

"Being restricted ... by the shackles of a young family, I gained interesting insights into US and NZ Ecology research relevant to my research. The working group that I am participating in is a good mix of high-profile and not so high-profile scientists, hands-on experimentalists and theoreticians."

"I have submitted three papers on the subject of scaling theory since the workshop in September, and all of them benefited greatly from discussions held at the meeting."

"A discussion during the only meeting I have attended has led me to an idea that will probably form the basis of part of my next research project."

"Interactions with Network participants have resulted in new insights and perspectives on plant life history traits and trait dimensions as explanatory variables for interpreting species distributions and population structures. These have, in turn, provided renewed momentum in areas such as multi-species recovery plan development."

"My being part of the Network was one of the strong attractions prompting a visit from Prof David Breshears (U of Arizona) to do a study here in Australia on how tree canopy structure affects a number of functional attributes in ecosystems (compared to systems he has studied in the USA)."

"I have started to use the elegant "SMATR" package in R to analyse bivariate datasets. This package became known to me as a result of attending the meeting."

"We had good ideas for two papers that demonstrate extensions of the [WBE model], misinterpretations of ways in which that model has been applied to data, and a list of what we believe to be genuine criticisms/ways to improve the model."

"... a relevant discussion forum to identify opportunities for collaboration in the field of environmental genomics."

"The network has a really wide remit and I particularly liked the way that very diverse meetings have been established allowing contributing scientists to form new, creative networks."

"Howard Taylor Award lecture at the American Soil Science Society, Salt Lake City, USA ... inspired, to some extent by Network activities."





Visitors

As anticipated, the Network has encouraged an increased flow of academic visitors to Macquarie University (Box 4). Visits have ranged from single days, up to sabbaticals of several months and postdoc visits lasting a year or more. These visits benefit the research community at large, because international visitors usually travel and discuss more widely around Australia, and because visitors engage with working groups while they are meeting.

◀ Weblink

www.vegfunction.net/activity/visitors.html

BOX 4 Visitors to the Vegetation Function Network other than for organized meetings (Aug 2005 – Feb 2006)

- Prof Göran Ågren** – Swedish University of Agricultural Sciences
- Dr Hans Cornelissen** – Vrije Universiteit Amsterdam, The Netherlands
- Will Cornwell** – Stanford University, USA
- Kristine Crous** – University of Michigan, USA
- Dr Will Edwards** – James Cook University, Australia
- Dr David Ellsworth** – University of Michigan, USA
- Lucas Enrico** – Universidad Nacional de Córdoba, Argentina
- Professor Jaime Kigel** – Hebrew University of Jerusalem, Israel
- Dr David King** – Centre for Tropical Forest Science, Harvard University, USA
- Prof Kaoru Kitajima** – University of Florida, USA
- Dr Lawren Sack** – University of Hawaii, USA
- Ms Angela Saldano** – Universidad Nacional Autonoma Mexico
- Dr Amy Zanne** – US National Science Foundation Research Fellow
- Olivier Zemb** – Laboratoire de Biotechnologie de l'Environnement, Narbonne, France

National benefit

The benefit we aim to produce is high-impact science with Australia-NZ leadership. The science is directed at National Research Priority 1: An Environmentally Sustainable Australia.

Vegetation functioning underpins carbon sequestration, transpiration credits and salinity mitigation. Vegetation structure and geography is the habitat for biodiversity conservation. The evolutionary radiation of plant clades is the history of Australia as a distinctive continent. Australia's deep history is the development of sclerophylly and fire-adaptation, the loss of megafauna, the impact of aboriginal land use. The future of vegetation is climate zones moving polewards, shift from pastoralism to ecotourism, repricing of water, spread of cosmopolitan species, and emergence of new plant strategies that take advantage of elevated CO₂.

The benefit we aim to produce is high-impact science with Australia-NZ leadership.

Proposals

The Network envisaged that working groups might sometimes generate research proposals that bring together several universities or several countries to tackle a large-scale problem. However, it is emerging that Australian researchers with highly competitive track records mostly are already committed to the maximum two ARC Discovery Projects that they are permitted, and are not in a position to subscribe to more proposals. The flow of new proposals from the Network into the Discovery program may turn out to be quite modest.

Meanwhile the Network has been influential in three proposals submitted in Germany, two fully funded and one still under consideration.

Postgrads and early career researchers

Participation in working groups

Postgrads and early career researchers accounted for 187 of the 575 person-days (33%) spent in working groups during 2005. This is already satisfactory, but we anticipate the proportion of postgrads and postdocs will increase slightly over time, as they are drawn into working groups where the initial participants were senior recognized researchers.





Achievements and outputs *(continued)*

Weblink ▶▶

www.vegfunction.net/activity/postgrad.html

Postgraduate training

An intensive 1-day postgraduate course in "Current Ecology and Evolution" was run at Brisbane 28th November 2005. Ninety-eight postgraduates attended, and anonymous questionnaires confirmed they found it very useful. Nine academics from six universities volunteered their efforts for teaching.

Working Group 15 "Influential publications about vegetation in Australia" has the aim of identifying 200-300 pages of key classic papers for understanding vegetation science in an Australian context. It is intended that these papers with explanatory text and annotations will be assembled at a website, and would be used for postgraduate and advanced-undergraduate teaching.

Weblink ▶▶

www.vegfunction.net/research/exploration.html

Research Exploration Opportunities

We have established an experimental program called "Research Exploration Opportunities". Under the program, promising researchers are supported at the equivalent of APA-level for 10 months. They spread their time among three distinctly different research groups. Programs for the year are individually tailored for each appointee. The aim is for potential PhD students to experience the excitement and companionship of high-impact international research, try out some alternative disciplines and research styles, learn skills, and think purposefully about possible projects, especially where their skills might be applied innovatively or across disciplines.

One individual has been appointed to a research exploration opportunity for 2006. The effectiveness of the program will be under continuing review.

We have informal but productive links with three major overseas networks.

International links

Aside from the New Zealand link, the Vegetation Function Network has been notably international from the outset in the membership of its working groups. Of the person-days committed to working groups so far, 215 of 575 (37%) have been from participants beyond Australia and New Zealand, and we anticipate that a similar percentage will continue into the future. This reflects the Network's modus operandi, which is to bring together the world's best researchers in order to tackle high-impact problems.

Papers stimulated by Network activity [link to Table 3] very often include authors from both Australia and overseas.

International participants are frequently staying in Australia for longer than the scheduled working group, carrying forward research in collaboration with Australians.

We have informal but productive links with three major overseas networks.

Weblink ▶▶
www.nceas.ucsb.edu/

Weblink ▶▶
www.nescent.org/

Weblink ▶▶
<http://quest.bris.ac.uk/>

- With NCEAS (US National Center for Ecological Analysis and Synthesis, Santa Barbara; we are working towards joint-running of certain working groups.
- With NESCent (US National Evolution Synthesis Center; we already have an overlapping project on the evolution of functional wood anatomy. A postdoc currently with the Network under NSF funding will move during 2006 to a postdoc with NESCent, and Australian Network participants will continue to be involved in the project.
- With QUEST (Quantifying and Understanding the Earth System. Quest is the new coordinated UK program for global change research. Our working group 4 includes participants from QUEST's vegetation modeling program, and advances developed in WG4 will be experimentally incorporated in QUEST's models during 2006. The overall director of QUEST and the leader of their vegetation modeling program are active participants in our Network.





Directions for 2006

Our principal aims for 2006 will be purposeful expansion of the same kinds of activities as initiated during the second half of 2005.

Most new working groups will be initiated and led from the wider research community, rather than being jump-started by the convenors.

Increasingly, outputs from projects will be shepherded towards publication.



Main features of finances

Detailed audited financial reports are provided from Macquarie University Finance Office to ARC. The main features of revenue and expenditure are as follows.

The cash funding of (currently) \$520K per year from ARC plus \$110K from other sources is expended in three main directions (Fig 2). Nearly 85% of funding is devoted to meetings, principally to travel and accommodation for participants.

Funding notionally began from mid-2004. However the decision was not made to accept the Network at Macquarie University until January 2005. Following an establishment period, activity effectively began from mid-2005. Accordingly funding is running approximately one full year ahead of expenditure. A carryover of approximately one full year's funding is planned to continue through the duration of the Network's life.

- Meetings: Admin and Organization
- Meetings: Travel and Accommodation
- Time of Convenor (0.6 fractional)

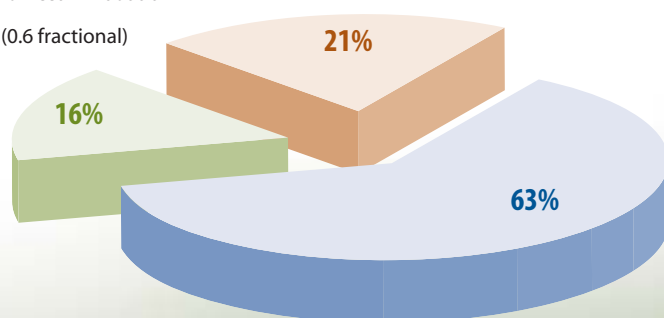


Figure 2
Main directions of expenditure in the Vegetation Function Network.



Register of participants

Weblink ▶▶
www.vegfunction.net/extra/participants.html

Researchers participate in the Network as individuals, rather than representing research institutions. Participation has already increased by 45 people beyond those listed in the original proposal. We anticipate continuing growth of the numbers of people involved, though some individuals will become detached from the Network.

The alphabetical participant listing at the Network's website provides links onwards to personal websites of participants. Among those listed, all but 12 have either participated in some Network activity already, or have responded constructively to our survey.

Dr Ackerly DD

Stanford University, USA

Prof Adam P

University of New South Wales

Prof Adams MA

University of New South Wales

Dr Allen RB

Landcare Research, NZ

Dr Arndt SK

Forest Science Centre

Dr Ball MC

Australian National University, Canberra

Dr Battaglia M

CSIRO Forestry, Hobart

Dr Bellingham PJ

Landcare Research, New Zealand

Dr Beringer J

Monash University, Clayton, Victoria

Dr Bond BJ

Oregon State University, USA

Prof Bowman D

Charles Darwin University

Mr Bragg J

University of New Mexico

Dr Breitweiser I

Landcare Research, NZ

Dr Brodribb T

University of Tasmania

Dr Brovkin V

Potsdam Institute for Climate Impact Research, Germany

Dr Buckley T

Landcare Research, NZ

Dr Buckley TN

Utah State University, USA

Dr Buckley Y

University of Queensland

Dr Burgess SS

University of Western Australia

Prof Burgman MA

Melbourne University, Victoria

Dr Carpenter R

University of Adelaide, South Australia

Dr Clarke PJ

University of New England, NSW

Dr Coomes D

Cambridge University, England

Dr Cornelissen JHC

Vrije Universiteit, The Netherlands

Mr Cornwell W

Stanford University, USA

Prof Dr Cramer W

Potsdam Institute for Climate Impact Research, Germany

Dr Crayn D

Royal Botanic Gardens, Sydney

Prof Crisp MD

Australian National University, Canberra

Dr Crous K

University of Michigan

Prof Díaz SM

Universidad Nacional de Cordoba, Argentina

Prof Dreyer E

Institut Nationale Recherche Agricole (INRA), France

Prof Eamus D

University of Technology, Sydney

Dr Edwards W

James Cook University, Cairns

Dr Ellsworth D

University of Michigan

Dr Enquist BJ

University Arizona, USA

Dr Entwisle T

Royal Botanic Gardens, Sydney

Dr Facelli J

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