

Aims

The Southeast Queensland Fire and Biodiversity Consortium (FaBCon) aims to bring together and disseminate information on fire management practices that will support conservation of southeast Queensland's biodiversity. The Consortium includes representatives from local authorities throughout south-east Queensland, the Queensland Rural Fire Service, Queensland Parks and Wildlife Service, DPI-Forestry, Department of Main Roads, Powerlink and Universities. In partnership with Griffith University, we aim to conduct and present research that will increase our knowledge of the effects of fire on the landscape that will better protect people and property while safeguarding SEQ's unique biodiversity.

Update

It has been over a year since our last update. We are well underway for Phase 3 of the fire and biodiversity project. We have an ambitious work-plan and remain confident of making more advances in fire management for the conservation of biodiversity in southeast Queensland. Indeed much has happened since the last update which we need to think about.

Firstly, the announcement of the merging of some local governments to form new regional councils will have a dramatic effect on us all, from legislative changes to how fire agencies and land management agencies cope with fire management. For example, the existing local government boundaries help to define boundaries for many Rural Fire Brigades, and with the changes, there could be some confusion or misunderstanding of new Brigade boundaries. The amount of resources required to manage larger parcels of land managed by a Regional Council may need to increase to be equitable. All of this remains a challenge, but we are confident we can work as effectively with the new Regional Councils as we have with the previous local governments.

Secondly, the wider community is currently taking on the challenges of a changing climate. Climate change was one of our key themes for the *Bushfire2006* conference, so it is something we have been working on for some time. The lack of significant water resources, the impacts of prolonged drought, and the changes to fire regimes, especially, frequency and increases in risk are all tangible and real impacts of climate change for all of us. We will be working closely with a variety of researchers and government agencies who have the responsibility for addressing both the mitigation of, and adaptation to, climate change.

Recently, a Griffith University-led Consortium was awarded a significant grant (\$50 million) from the Commonwealth to establish a National Climate Change Adaptation Research Facility.

Their objective is to investigate how we can adapt to the environmental, social and economic impacts of climate change. For more information on this research facility please go to <http://www.griffith.edu.au/special-research-initiatives/climate-response>.

Follow-Up: Bushfire2006 Conference

After our very successful conference, the Royal Society of Queensland decided to publish some of the papers after they had undergone the rigorous process of reviewing and editing. An open invitation was issued to all presenters to submit their paper for publication. Because of the huge response to the call for papers two volumes of the *Proceedings of the Royal Society of Queensland: Bushfire2006 Special Editions* will be published in the first half of 2008. What a fantastic achievement for all involved in the conference. A warm and heartfelt thanks is given to all the reviewers, both here and abroad. Particular thanks go to Cate Melzer (Secretary for the Royal Society of Queensland) and Jan Gilroy for their efforts in contacting reviewers and liaising with the authors, and to Francis Wild (from White Tiger Imaging) for typesetting the accepted papers.

Fire Monitoring Manual Training, Gympie March 2007

Last year, we organised another training module focussed on our document, the *Fire Monitoring Manual*. This was highly successful, with a number of participants from the Department of Sustainability and Environment (Victoria) coming up to attend, as well as many representatives from Queensland Parks and Wildlife Service, a number of local government authorities, as well as a few local community members.

The wonderful facilities at the Training Centre at Gympie allowed for a lot of interaction and discussion of the methods and techniques; the experimental plots at Bauple State Forest provided the ideal field-site to practice our techniques. Special thanks to Ernie Rider (QPWS) for his expert assistance in the field with his exceptional field-botany skills and to Drs Valerie Debusse and Tom Lewis for their help in the experimental fire plots.

For those of you who missed out on this training, we will be doing this again, hopefully later this year, so please email Carmel Wild (carmel.wild@griffith.edu.au) to register your interest.

Full Consortium Meeting, 14th March 2008

This year's full consortium meeting, held on the 16th floor of the Brisbane City Council's building, treating us to a fantastic view of South Bank and the western suburbs (thanks Michael Griffin), was packed full of interesting speakers.

Special guest, Tim Low, spoke to the Consortium about 'Climate change; impacts for bushfires and biodiversity', which followed on from his report on climate change to Brisbane City Council in August 2007. Bruno Greimel from the Queensland Fire and Rescue Service looked into his crystal ball for the Bushfire outlook for this season. Diana Virkki, a Griffith University Honours student, under Cuong Tran's supervision, spoke about her research, at the

Australian Wildlife Conservancy's Curramore Sanctuary (Maleny), on 'Lantana management by fire; fauna response'. The Consortium's new research assistant, Lucy Halliday, also gave us an insight into her personal research area with an introduction to 'Complementarity in biodiversity conservation on private land'.

Full Consortium Meeting, July 2007

Well, what a day! The setting for our full consortium meeting was at Ipswich City Council, followed by a field trip to Flinders Peak Conservation Area, to discuss the tricky situation of managing this area for biodiversity, as well as for weeds (and a lot of them), along with the bushfire risk that this area is exposed to.

We had a diverse group of speakers for this forum and my thanks to: Anthony Power (Maroochy, now Brisbane City Council) for his in-depth and very analytical work on fuel modelling using satellite data; Dr Michael Ngugi (EPA-QPWS) on the development of his Ecosystems Dynamics Simulator which can, over many generations, provide an ecosystem view following disturbances, such as grazing, logging and fire impacts; Ferg Adrian (QFRS) for his presentation of the bushfire outlook for the coming season, using work from the CSIRO, Bureau of Meteorology and the Bushfire CRC (to find out your current Fire Danger Rating, please visit (<http://www.ruralfire.qld.gov.au/FDRG.html>)), and to Alistair Hill (Pine Rivers Shire Council) who started to formulate standards and specifications for fire-line construction.

Property Planning Workshops

The following successful Property Planning Workshops were held throughout 2007: Gatton (February), Ipswich (June), Brisbane (June), Caboolture (October) and Stanthorpe (June and July).

If you live in the following areas, we have a workshop **coming up** very soon...

Cooloola – 10 May, 2008

Maroochy – 17 May, 2008

If you wish to attend a future workshop please contact the environment department representative at your council. The workshops have an excellent reputation for their usefulness in the field!

Fire workshops

There are also a number of Fire Workshops coming up around the region:

Kilcoy – 24 May 2008

Bernarkin/Blackbutt – 31 May 2008

Kilcoy (follow up) – 14 June 2008

Research on fire and lantana with the Australian Wildlife Conservancy – Curramore Sanctuary

Recently, we negotiated a collaborative research project with the AWC working on their Curramore Sanctuary located outside of Maleny in the Sunshine Coast Hinterland. This is a diverse landscape, with a number of ecosystems, from grassy eucalypt ridges, to wet-sclerophyll and sub-tropical rainforests. Lantana, our favourite weed, is there in abundance and we are working with the AWC to see if fire has a role in reducing the invasiveness of this weed and along with other strategies we can use to reduce lantana. With the help of numerous volunteers in October 2007, we have compiled an exhaustive and extensive vegetation list across a number of transects in replicated sites across Curramore.

Various treatments, from herbicide and burning, were used and we will monitor the outcomes. We have one student working on monitoring fauna (reptiles and small mammals) following this treatment. We have taken soil samples from many sites and treated them with smoke and heat to determine the soil seedbank viability – our preliminary results are very interesting... it looks like smoke/heat does trigger germination of a number of sub-tropical rainforest species, from *Acacia melanoxylon* (Blackwood) to *Homalanthus populifoliosus* (Bleeding Heart). As the plants get bigger we will be able to identify them more, we are have already started writing a paper on this work. This will be one very interesting project.



Polyscias elegans (Celerywood) (top photo) has also done very well. These two photos show the amount of growth we've seen in one year... its hard to believe that this area, before spraying and prescribed burning, was covered in 10-15m tall lantana!

Conferences

Jan was very lucky to be able to attend the International Association of Landscape Ecology (IALE) World Congress, held in Wageningen in the Netherlands between 8th-12th July 2007. This is an update from Jan... (Many thanks to the Consortium for your support for me to attend this conference.)

The conference was rather large with over 750 delegates participating in the conference. This meant 10 concurrent sessions, over 200 posters and a day excursion to get through in only 5 days! Anyone who went to (or helped organise) the *Bushfire2006* conference will be well aware of how hard it is to get to 3 concurrent sessions let alone a mighty 10! It was alleviated somewhat by, quite cleverly, being held at a cinema complex, so each room was relatively close to one another.

Each session had an overriding theme and there were 25 Symposia and

IALE International Association of Landscape Ecology Conference

24 Open Sessions to choose from. I managed to get to all the fire-related talks and posters. Below I have provided a summary of some of the presentations that I attended.

Cuong Tran also attended three conferences in 2007...

the Rainforest Recovery Forum here in Brisbane in June, the joint Bushfire-CRC-AFAC (Australian Fire Authority Council) Conference in beautiful Hobart in September and, the Ecological Society of Australia (ESA) in Perth in late November. Cuong reports on the two at which he spoke:

Rainforest Recovery Forum

Using the work we are undertaking at Curramore, we are working with SEQ-Catchments on a 3-year fire ecology research study investigating how we can continue to conserve rainforest ecosystems by managing the fire risks at the edge of these remnants, reducing the fire risk and

encouraging the expansion of these remnants.

Ecological Society of Australia Annual Conference

I provide a Queensland perspective on the roles and effectiveness of prescribed burning for a special Prescribed Burning Symposium, organised. Dr Paul Williams (and my co-author). The ensuing fascinating discussion contrasted and compared the use/role of fire in the states and territories. Following on from this the authors will present an abstract at this years *International Fire Congress* in Adelaide in September. A review paper, to be submitted to an international journal, will bring together the uses and usefulness of prescribed burning for ecosystem management. The logistics of coordinating approximately 10 authors from around Australia will be a challenge, but well worth it.

Papers

Author and Title of Paper/Poster	Information
<p>S Vallecillo & L Brotons</p> <p><i>Assessing the potential role of fire on threatened open-habitat birds' distribution</i></p>	<p>The availability of shrub-like habitats favoured by fire increases the occurrence patterns of the studied species (<i>Alectoris rufa</i>, <i>Galerida theklae</i>, <i>Oenanthe hispanica</i>, <i>Carchelis camahina</i>, <i>Lullula arborea</i>, <i>Emberiza calandra</i> and <i>Anthus campestris</i>).</p> <p>Habitat mosaics created by fire increases the range of suitable habitat at a landscape scale. It may potentially enhance the resilience of threatened open-habitat species.</p>
<p>G Cary, RJ Keane, MD Flannigan, RA Bradstock & KJ King</p> <p><i>Climatic shifts in fire regimes</i></p>	<p>Using modelling, changes in climate, variability in weather and variation in the likelihood of ignition are the main determinants of area burned in fire prone landscapes. Of these, fire management can affect ignition likelihood which can be modified via rapid suppression of fires, education on fire protection and use, and management of access to fire-prone landscapes.</p> <p>The effect of fuel; management on area burned in model systems is measurable but relatively unimportant in comparison. Achieving the same levels of protection from unplanned fires may mean doubling the area treated by prescribed burning and this may prove untenable from the perspective of biodiversity in many systems.</p>
<p>AH Perera & TK Rimmel</p> <p><i>Post-fire tree residual aggregates in boreal forest landscapes: an assessment of spatial patterns using IKONOS imager</i></p>	<p>Preliminary results show that the 'edge' of forest fires is not definitive – the burned interior:non-burned exterior boundary is not a linear continuum, and depends on the pixel resolution.</p> <p>The fire edge is best defined as an interphase or a transition zone, and the linearity and complexity of the 'edge' is scale and context dependent. The clustering of residuals in the fire interior is also not definitive – the cluster size and number of cluster in each size class changes with the degree of contiguity.</p> <p>With increasingly coarser representations, the core fire areas become more clearly defined (by measuring cluster presence variability) and the patchiness along the perimeter (or regions with more residuals) is more evident.</p>

Author and Title of Paper/Poster	Information
<p>L Ghermandi, S Gonzalez, J Franzese M de Torres Curth & P Parodi</p> <p><i>Fire impact on northwestern Patagonia grasslands</i></p>	<p>Fire favours shrub encroachment in NW Patagonia. <i>Fabiana imbricata</i> (Solanaceae) (seeder) shows a clear pattern of even-aged patches distribution related to fire and the topography and recruits only post-disturbance. <i>Mulinium spinosum</i> (Asteraceae) grows higher and faster than <i>Senecio bracteolactus</i> (Asteraceae) (both resprouter species). <i>Acaena splendens</i> (Rosaceae) (seeder) reached pre-fire cover after 7 years post-fire. The shrubs were little represented in the seed bank with exception of <i>Fimbricate</i> of which seed were low. The perennial species form superficial and transient seed banks that suffer in high temperatures.</p> <p>Climate change suggests an increase in frequency of ENSO phenomena, which in NW Patagonia signifies more fires coupled with rainy springs. The matrix model indicates that this scenario would produce the <i>Fimbricata</i> shrub encroachment.</p>
<p>M Moretti, B Pezzatti, F Zanini, S Potts, F de Bello</p> <p><i>Using functional traits to assess bee responses to fire at multiple scales</i></p>	<p>Fire regimes significantly influenced species and trait composition of bees in the study area, spatial scale being an important factor. Species assemblage was mostly affected by the proportion of freshly burnt areas. The functional traits composition was influenced by the same factor but also by the proportion of repeatedly burnt areas in the past 30 years.</p> <p>Partial decoupling of species and trait composition response suggest that repeated fires do not change species composition markedly but determine changes in dominant traits (i.e. the traits were weighted by species abundance). Species, on the other hand, react quickly to sudden changes (i.e. fires) and particularly those which display great mobility. The combination of freshly and repeatedly burnt areas positively affected small solitary bees, while the large social bees were associated with mature and unburnt areas. Overall the differences between species and trait response to fire regime seem to reflect a functional adaptation to disturbance, which might act as an environmental filter on the distribution and assemblage of trait values within communities.</p> <p>The combined analysis of species and trait composition at different spatial scales is an example of a way to monitor communities and generalise results behind localities and disturbance types. Such indicators would provide powerful and promising tools for validating management procedures and controlling ecosystem function.</p>
<p>MC Cobo HH Wagner JA Carriera & MW Palmer</p> <p><i>Do soil or vegetation processes control spatial pattern during succession following recurrent wildfires in Mediterranean shrublands?</i></p>	<p>Soil-driven processes are more important in early succession after a higher frequency of burning, while under lower frequency and older fires, the vegetation dominates in creating spatial structure.</p> <p>Nitrogen and phosphorus were more associated with vegetation patterns at finer scales under the highest burning frequency, but at larger scales under the lowest frequency. These two extremes in burning frequency can be related respectively to an early colonisation of more favourable soil spots in the heterogeneous post-fire substratum, especially for limiting nutrients and moisture, also to the late structure of patches of mature vegetation. Spatial pattern in the recently burned extreme responds to shared soil-vegetation processes controlled by soil conditions for plant growth (fine scale: nutrients; large scale: nutrients, moisture) and in the long unburned extreme to shared soil-vegetation processes controlled by the development of vegetation structure at medium/large scales. The authors found that intermediate successional stages showed fewer shared soil-vegetation patterns.</p>
<p>YC Yuman Hu, R Bu, Y Li & H Chen</p> <p><i>Historic and current fire regimes in the Great Xing'an Mountains, northeastern China: Implications for long-term forest management</i></p>	<p>The current fire regimes in the Great Xing'an Mountains are low in frequency and high intensity with a high risk of catastrophic fires compared to historic fire regimes with high frequency and low fire intensity. It was suggested that the large areas severely damaged by fire be replanted with prescribed burning an option for other areas (not burnt) to reduce fuels.</p>

Fieldwork

Taravale

Jan went up to the AWC Taravale Sanctuary near Townsville in July 2007 to help with wet sclerophyll research and monitoring. Jan helped assist Paul Williams from QPWS with some vegetation monitoring. It was a great experience and a chance for Jan to participate in the extensive research being carried out by Paul and his team on the effects of fire in the Wet Sclerophyll forests of Northern Queensland. Jan revisited the site again in January 2008. It is great to see such collaborations taking place.

Other Collaborations

Staff at FaBCon are also undertaking research activities with AWC, SEQ Water, SEQ Catchments and Brisbane City Council.

Website

Jan has updated the website (www.fireandbiodiversity.org.au). It has been a long slog trying to make sure that we stick to Griffith University standards whilst maintaining our interesting and vibrant site.

The Fire Association and Ecosystem Guidelines are currently being reviewed and will be available soon.

Other news...

Many births and marriages!

Marriages

Our very first Project Co-ordinator, Dr Penny Watson, and her partner David (photo below) were married in October 2007. Cuong his wife and young son, attended Penny's intimate wedding ceremony set amongst Eucalyptus oreades forest in the Blue Mountains. Congratulations to Penny and David!

Babies

The SEQ Fire and Biodiversity Consortium welcomed some new arrivals to our very large family! Talk about a baby boom... Such happy little ones too, although a learning curve for the new parents!

To Cuong and Anne-Marie Nathanael (born 08/03/07)



To Michael and Stephanie Reif Ellen (born 30/07/07)



Staff

Our wonderful and hardworking, long standing Research Assistant, Jan Gilroy

Unfortunately, this month we farewelled Jan as she moves on to a new position with the Department of Local Government Sport and Recreation as a Project Officer. We have already heard that the skills she developed and displayed so well with us are being used in her new job. Jan will be working on the 'Eat Well, Be Active' campaign so expect to see her jogging past your front door any day now.

On behalf of all members of the SEQ Fire and Biodiversity Consortium, I wish Jan all the very best for her future.

The staff and all those who are involved in our activities will miss Jan. She has been a great team member who has contributed a wealth of time, energy and knowledge to the Consortium's activities. Her work has been very much appreciated and I sincerely wish her all the best in the future. (Cuong)

Our new research assistant, Lucy Halliday

Lucy has spent a week with Jan doing a crash course in being the research assistant for Cuong and the Consortium. Lucy is a graduate from the Griffith School of Environment on the Gold Coast. She is also a keen and committed private protected area researcher. Please introduce yourself to Lucy and make her welcome. She asks if you can be a little patient with her as she learns the ropes and sends you SOS emails. We have great confidence that Lucy will be an asset to the work and activities of FaBCon.



Working Group Updates

Education Working Group

Michael Reif

New products

Fire weather

This product outlines the weather factors that contribute to fire behaviour and how to identify weather conditions that will result in elevated fire danger.

Fire management for urban reserves

This product focuses on the issues that arise when managing fire in urban reserves and is being rewritten for a reserve neighbour audience. A version for land managers may be produced for download on the website.

Products to be completed in 2008

FaBCon Case Studies

The EWG is currently preparing some case studies based on areas where fire management strategies consistent with those supported by the consortium have been implemented. These will provide some 'real world' examples of the outcomes that land managers can expect when implementing fire management strategies on their properties.

Burning Operations Pocketbook

This is a handy field guide for land managers and includes information on fuel load assessment, fire behaviour and burning procedures. This pocketbook has been designed for use by staff from agencies that have not produced their own operational guidelines/pocketbooks.

Review of EWG products

The EWG is currently undertaking a review of all the educational materials that have been produced by the consortium. This review will allow the findings of recent research to be included and will also incorporate changes in language identified in the consortiums recent communications activities ('A Conversation about Fire' Forum).

Research Working Group

Lucy Halliday

In terms of the research projects currently under way, work on the Rainforest Recovery Project has been slow since its approval and subsequent funding in late 2006.

Good news though, the first site visits are scheduled for April and we have booked Bill McDonald in to provide much needed help and expertise with field work in the coming months!

Lantana/Rainforest work at AWC Curramore Sanctuary is continuing with our smoke and heat treated seedlings growing up big and strong. Dianna Virkki, current Griffith honours student, has also been using our veg plots to look at the faunal response to fire. It is expected these results will together make for interesting reading.

SEQ Water field work is under way on lands surrounding Wivenhoe, Somerset and North Pine dams, looking at fuel management, ecologically appropriate fire intervals and the effects of low intensity planned fires on plant diversity. Currently we have lots of data to enter and lots more to collect.

Urban bushland monitoring at Mt Coot-tha with BCC is due to commence mid-2008. The work will follow on from the vegetation communities study done by Rob Friend in 1999. The research will involve resurveying the plots established in 1999 and combining fire history data to identify any significant changes in these vegetation communities.

Policy Working Group

Lucy Halliday

After the 'Conversation about bush fire' community engagement forum, held at Griffith University on the Gold Coast, and attended by 30 interested and active participants, the policy working group is updating and reviewing FaBCon's 'position statement'. Special attention is being given to the language used to ensure both clarity and meaningfulness. Comment will also be submitted to the Ecological Society of Australia in relation to their policy statement.

'A Conversation about Fire' Forum, 22 February, 2008

Several issues have brought the subject of communication to the Consortium's attention in recent months, culminating in this forum. The forum, held at Griffith University Gold Coast, and attended by 33 consortium members and guests, was enormously productive. The conversation discussed the difficulties that can sometimes arise with the community consultation process

and the best methods to avoid negative social and management outcomes. The guest speakers were Alan Andersen, Fiachra Kearney and Melanie Bradley from CSIRO Northern Territory. They provided thoughtful examples of their experiences with community engagement. Many issues were discussed on the day from open clear and honest communication to the different types of ways people deal with conflict, including the issue to self reflection. A checklist for community engagement has also been developed as a result of the forum. It outlines the main issues discussed and ways to deal with them. If anyone is interested in finding out more about the outcomes of the forum please contact Cuong Tran (c.tran@griffith.edu.au) or Lucy Halliday (l.halliday@griffith.edu.au).

A Note of Thanks

Our thanks go to the many FaBCon sponsors, committee members, research collaborators, and workshop, forum and conference participants. Without your support, investment of time and money, and commitment our research, products and activities would be much less than they are.

We look forward to continuing our work with you over the next year. Our tasks will be both challenging and worthwhile as we consolidate and enhance our contribution to fire and biodiversity research and understanding within Southeast Queensland.