SEQ Fire & Biodiversity CONSORTIUM

SEQ Fire & Biodiversity consortium

ISSUE 2 2012

Translating science into practice for improved fire management and biodiversity conservation in South East Queensland

Fire and Biodiversity Monitoring in Brisbane

Fire is used as a management tool for both biodiversity conservation and property protection within Brisbane City Council's (BCC) network of Conservation Reserves. Since 2008, staff from BCC, SEQFBC and Vegetation Science began a program to monitor the response of vegetation to the application of fire and other disturbances across Brisbane City Council reserve networks.

Twenty-eight vegetation monitoring transects across nine Brisbane City Council Reserves were established in 2008 and 2009, and re-surveyed in April 2010, March 2011 and April 2012. These transects provide a basis for evaluating changes in the condition of the vegetation in bushland reserves, including the response of the vegetation to management actions, including fire and weed management.

The 28 transects document eight different regional ecosystems of South-East Queensland (including several with an "Endangered" or "Of Concern" status).

While the 2012 assessment represents only the third or fourth re-survey of the various transects, several issues can be evaluated, including whether there had been any detectable change since the previous surveys in: vegetation structure, species diversity, ground cover abundance, regeneration after recent fires and weed recruitment.

BCC Natural Reserve Staff see the monitoring as key to providing feedback for using adaptive management principles in their decision making in reserve management. Summaries of the changes to the reserves can be found on page 4.

BCC Officers and Dr Paul Williams of Vegetation Science gathering data even in the rain.

Contents

Dr Samantha Lloyd and Craig Welden

Dr Tim Robson Chairing the SEQFBC Full consortium meeting in June last year. Tim has stepped down as Chair of the SEQFBC Steering Committee and handed over the role to Chandra Wood.

Who are we?

Established in 1998, the South East Queensland Fire and Biodiversity Consortium (SEQFBC) is a network of land managers and stakeholders devoted to providing a coordinated response and best-practice recommendations for fire management, fire ecology and the conservation of biodiversity in the South East Queensland (SEQ) region through education, community engagement and applied research.

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Please note:
Samantha works Monday, Wednesday and Thursday.
Craig currently works Tuesday through to Friday.

Editorial

Welcome to the second edition for the year. We have had a busy time since out last edition and are now looking forward to next year's program of education, extension, engagement and advocacy.

Samantha and I would like to again acknowledge the support that has been given to us by SEQ Catchments, the SEQFBC Steering Committee, the working groups and the agency staff that assisted Samantha in developing the guidelines for Roadside Burning.

Dr Tim Robson this year passed on the reigns of Chairing the SEQFBC Steering Committee after over 7 years in the role to Chandra Wood. Tim has put in an enormous effort in providing support to Samantha and I over the past couple of years and previously to Cuong Tran. We are thankful that Tim will remain on the Steering Committee. Chandra brings to the role a great depth of experience in Natural Area Management holding a senior role within Brisbane City Councils Natural Areas team. Chandra has been actively involved with SEQFBC working groups and the Steering Committee for many years. We look forward to working with Chandra in Her new role.

We would also like to thank Dr Mark Schuster for his contribution to the consortium. Mark has moved on from his Senior role within Logan City Council and we wish him all the best.

This year saw our host SEQ Catchments awarded the National Landcare Award for an NRM group and one of its Staff Suzie Chapman from Sunshine Coast awarded the Australian Government Local Landcare Facilitator Award. SEQ Catchments also where the recipient of the Australian Business Awards under the category – Environmental Sustainability. We are pleased to be associated and hosted by a national award winning NRM group.

In this edition we highlight the work that one Council is doing in the field of fire monitoring. This is but one example of one of our partners who conduct monitoring as part of their business of land management. Monitoring provides a way to learn about what we have done, the responses from both flora and fauna and how to use this information to better manage the land. As reviewed in the last newsletter Penman* (Penman et al.), stressed the importance of using adaptive management frameworks for prescribed burning and called it "learning by doing".

We also highlight the work that we have being doing since our last edition, updates from our colleagues across the border in NSW, a précis of the 12th International Wildland Fire Safety Summit 2012 held in Sydney, highlights from our Forum held in June this year, three reviews, and much more.

I hope that you enjoy reading this edition of the SEQ Fire and Biodiversity Consortium newsletter and I welcome any feedback.

Kind Regards

Craig Welden

SEQ Fire and Biodiversity Consortium Coordinator

*PENMAN, T. D., CHRISTIE, F. J., ANDERSEN, A. N., BRADSTOCK, R. A., CARY, G. J., HENDERSON, M. K., PRICE, O., TRAN, C., WARDLE, G. M., WILLIAMS, R. J. & YORK, A. 2011. Prescribed burning: how can it work to conserve the things we value? International Journal of Wildland Fire, 20, 721-733.

Runs on the Board

Snapshot of what we have achieved since February 2012

By Craig Welden

Since February Sam and I have been very busy providing the following while Sam works two days per week for SEQFBC and I work four days per week. We are grateful to our supporting organisations and appreciate the support of our steering group, working groups and Chair.

The workshops and talks have attracted over 213 participants since February. We have been presenting the topic "fire in the landscape –implications for biodiversity conservation" within extension programs such as the Queensland Farmers Federation regrowth workshops in Lockyer Valley Region to Brisbane City Council and Ipswich City Council Officers, and the SEQ Land for Wildlife Officers training workshop in fire management planning (pictured).

Our individual fire management planning workshops have been well received to a combined Logan City Council, Redland City Council and SEQ Catchments run workshop, Redland City Council Land for Wildlife members, and Logan City Council Land for Wildlife members.

Samantha has been working with SEQ local Councils and other land managers to provide a process to better manage the complex issue of roadside burning. The process can be used across all the State not only within SEQ and could also be modified for use in like managed linear land such as power and rail corridors.

SEQFBC was highlighted in the Queensland Government's State of the Environment Report 2011 on the response to managing fire. We also provided a responsive letter to the Key Threatening Process Nomination of Noisy miners - the full letter will be made available on our website shortly.

New information is posted on our website on a regular basis about fire and biodiversity related workshops, forums and conferences both here in SEQ, interstate and internationally.

An opportunity was provided for SEQFBC contributors to attend both Fire Weather 1 and Fire Weather Two courses. Kevin Parkyn from BOM Severe Weather Team in Melbourne led the training. Participants couldn't speak high enough about the training and I have received numerous emails from participants who have put the training to good use already in the field. SEQFBC in association with QFRS and QPWS are looking at providing this training again in 2013.

Work is continuing on our publications with final production of the fire and protected vegetation fact sheet and our promotional flier released in October. Final edits to the Fire Ecology Fact sheet are occurring with the support of the Education Working Group. A funding application has been submitted for the re-design, printing, with updates and supporting pilot workshop for the Individual Property Fire Management Planning Kit. Let's hope we get it!

Our Forum in June this year was attended by over 90 people with 10 speakers including SEQFBC's original Coordinator Dr Penny Watson, full details are on page 5.

SEQ Land for Wildlife (LFW) Officers looking at the effects of the use of fire within the Maroochy Botanical Gardens during the SEQFBC and LFW coordinated Fire Management planning workshop. The workshop was such a success that we have been invited to hold it again next year for those that couldn't attend this year's workshop.

This year we were successful with a joint application to the Australian Government's Caring for our Country program. It will be delivered in partnership with the NSW Nature Conservation Council, SEQFBC and SEQ Catchments. The project will see the use of targeted fire and weed management to restore habitat for endangered species, such as the Eastern Bristlebird, Hastings River Mouse and Eastern Chestnut Mouse, in the Border Ranges region of New South Wales and Queensland. We will be reporting on this project in the next newsletter.

At the Winter Forum this year we launched our first SEQFBC Student Research Grant. The grant was awarded to Griffith University PhD student, Diana Virkki, for her project on the "responses of small vertebrates to repeated management burns and heterogeneous fire regimes at the patch and local scales in dry eucalypt forests of southeast Queensland". We look forward to the results. Diana will be keeping us informed of new information as it comes to hand (read more on page 5 and 6).

Samantha and I attended a prescribed burn at Clear Mountain this year and we grateful for Staff at the Samford QPWS Office for providing us with the opportunity to attend this burn (see photo on page 4).

We are continuing our collaboration with our neighbours across the border in NSW through the newly established Northern Rivers Fire and Biodiversity Consortium and the NSW Hotspots program. More about these programs on page 5 and 7.

Our regular informative emails to our general email distribution list have received very positive feedback. As topical information and public commentary relating to fire and biodiversity comes to hand it is either sent immediately or sent as a bundle as more information arrives (so as not to clog participants email accounts).

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Snapshot of what we have achieved since February 2012

The Australasian Fire and Emergency Service Authorities Council (AFAC) Rural and Land Management Group and the Forest Fire Management Group (FFMG) as part of the multiple projects of the 'National Burning Project,' engaged GHD to provide a "Prescribed Burning Best Practice Review, seeking to identify agency best practice prescribed burning practices at all planning and operational phases of prescribed burning, to identifying innovative and lead practice across the country. Originally the workshops where only to cover Darwin, Melbourne and Perth, but due to persistent lobbying SEQFBC was able to secure a workshop here in Brisbane for its members. Attendees included representatives from Agforce Queensland, Queensland Farmers Federation, Queensland Fire and Rescue Service, Queensland Parks and Wildlife Service, Department of Transport and Main Roads, several Local Governments, Powerlink Queensland, Ergon Energy. Representatives just across the border also attended from NCC/NSWRFS Hotspots program, NSW Parks and Wildlife, NSW Forests and NSW RFS.

As titled, this is only a snapshot of what we have achieved since our last newsletter. If you would like to know more please contact us.

| Article continued from page 1

Fire and Biodiversity Monitoring in Brisbane

The average size of trees and shrubs across all transects grew, with an estimated overall average growth of 1.54m2 /ha/year of tree trunk biomass across the bushland reserves. This equates to a very approximate figure of 17.2 tonnes of CO2 equivalents /ha/year of carbon sequestration. While this sequestration figure may be inaccurate because it is based on average circumference growth, the forests have clearly sequestered considerable carbon and the bushland reserves provide a great environmental service.

Species diversity has remained consistent between years of survey for most transects. The four most diverse transects held the bulk of plant diversity in the grass and herb layer. These transects also cover an endangered regional ecosystem and were threatened by either possible expansion of dense *Allocasuarina littoralis* saplings or smothering from *Lantana montevidensis* and *L. camara*. Fire management targeting those sites would be of value in maintaining a diverse grass layer along with continued herbicide control of Lantana.

The development of large areas of dense *Allocasuarina littoralis* saplings and trees is a significant issue for flora diversity in some of the Brisbane bushland reserves. A recent trial to manage dense *Allocasuarina littoralis* stands in the Brisbane Koala Bushland Reserves compares three management strategies: Unmanaged, flail mowing and burning. The unmanaged dense casuarina stands had very little grass layer diversity. The flail mown treatment removed large proportions of casuarina, converting them to wood chip. Primarily a few sedges, especially *Lepidosperma laterale*, regenerated after this treatment. The adjacent block that was burnt had quite obvious grass and forb diversity increases, with *Themeda triandra* and many native legumes quite common.

This comparison shows the value of fire in restoring a balance to forests with very dense casuarinas, by regenerating abundant native grasses and sedges, thereby providing a greater diversity of species.

Transects with the lowest plant diversity had very dense wattles or were dominated by the weeds Molassas grass (*Melinis minutiflora*) and Signal grass (*Brachiaria decumbens*) highlighting the significant problem in diversity loss from exotic grasses in BCC reserves.

Transect photos and survey data indicate the cover of grasses, forbs and vines increased over the last few years, presumably helped by the recent good wet seasons. A transect on the western slopes of Mt Coot-tha, burnt in 2009 also showed an increase in ground cover.

Fire-promoted seedlings of the native shrubs *Daviesia squarrosa* and *Hovea acutifolia* in a transect burnt in 2009. Prior to the planned burn, this transect had only 5% live ground cover, being mostly bare ground and leaf litter. By 2012, the third year after fire, it had 36% grass and herb cover, dominated by the native perennial grass *Entolasia stricta*. Inspections of other recently burnt areas all show abundant regeneration of native plants. Even though some areas inspected were burnt by arson-ignited wildfires, the canopies were not damaged from scorching and the grass layer regeneration included abundant native herbs and grasses.

The germination of the woody weeds Chinese elm (*Ulmus parvifolia*), Camphor laurel (*Cinnamomum camphora*) and Ochna (*Ochna serrulata*) occurred in some transects in the 2010/11 wet season. One Ochna sapling was observed to survive a fire at another location by coppicing from the base, while fire did kill off seedlings thereby suggesting that fire can play an important role in controlling this invasive species.

The fuel load composition varies between a dominance of tree leaf litter and live grasses, depending on the location. The fuel loads are fairly stable between years, allowing for variations from sampling and fuel moisture.

The BCC transect monitoring surveys indicate that recent burning on council reserves has been beneficial to the health of bushland habitats. On-going fire programs are expected to provide further benefits, especially by regenerating native grasses and herbs and managing weeds.

Prescribed burn that Samantha and Craig attended this year at Clear Mountain.

Fire and Biodiversity Winter Forum 2012

The Winter Forum held at the Mt Coot-tha Botanical Gardens was well attended by over 90 people from various land management agencies, fire management agencies and interest groups.

Dr Penny Watson (former SEQFBC Coordinator) and now researcher with the University of Wollongong provided an update on the findings from the NSW Bushfire Fuels Modelling Project. Penny provided their recent findings on how fuels vary between vegetation types, and how they vary with time.

Dr Patrick Moss presented on part of his research that is part of the broader plan of examining how past environmental change (i.e. climate alterations and/or human impacts) have influenced the eastern Australian landscape over the last +50,000 years. Patrick's research has focused on a number of key management and/or conservation issues, including water security, fire ecology and ecological/anthropogenic response to climate change. Patrick spoke of long-term alterations in vegetation and burning for the Great Sandy Region of South East Queensland.

Other talks included Mark Schuster from Logan City Council on the balance between managing biodiversity and asset protection within a local government area and the legal frameworks; Dominic Adshead from GHD on the AFAC's National Burning Program; Matthew Bass from the Bureau of Meteorology with a Fire Season Outlook and Greg Banks on the newly established Northern Rivers Fire and Biodiversity Consortium.

Diana Virkki of Griffith University was presented with the SEQFBC Student Research Grant for Her work on "Responses of small vertebrates to repeated management burns and heterogeneous fire regimes at the patch and local scales in dry eucalypt forests of southeast Queensland." Diana is featured in the article featured below.

Cuong Tran spoke of long term research into the mechanisms of rain forest persistence and recruitment in frequently burnt wet tropical eucalypt forests.

Some feedback on the success of the forum included:

- The best part of the forum was meeting professionals from a wide range of backgrounds and the presentations of a diverse number of topics, very relevant topics– well-done.
- Holding the forum next the planetarium to get a great view of the "Transit of venus".
- Take home reference material and range of speakers discussing their research.

SEQFBC 2012 Winter Forum was well attended by over 90 people.

SEQ Fire and Biodiversity Student Research Grant Launched

By Dr Samantha Lloyd

On Wednesday June 6, the South East Queensland Fire and Biodiversity Consortium (SEQFBC) launched the first SEQFBC Student Research Grant. The grant was awarded to Griffith University PhD student, Diana Virkki, for her project on the "Responses of small vertebrates to repeated management burns and heterogeneous fire regimes at the patch and local scales in dry eucalypt forests of southeast Queensland".

"This research project is an important step towards determining appropriate and ecologically sustainable fire management regimes. My hope is that it will allow land managers to better conserve species diversity, whilst still fulfilling their land management objectives. We are grateful to SEQFBC for their generous support of this project and look forward to sharing the results" Diana said of her project.

Diana is part of the Griffith School of Environment, Environmental Futures Centre. For further information on her project please contact: d.virkki@griffith.edu.au. Read more about Diana's work on page six.

Northern Rivers Fire and Biodiversity Consortium

By Greg Banks Northern Rivers Fire and Biodiversity Consortium Coordinator

In operation for over a year, the Northern Rivers Fire & Biodiversity Consortium was created in NSW to progress the management of fire for biodiversity conservation.

Supported by part-time coordinator Greg Banks, four working groups are addressing the following specific projects. Resources have been sourced and actions initiated for the much needed fire management of the critically endangered Eastern Bristle-bird. Planning and monitoring is underway to investigate the use of fire as a management tool for the mitigation of Bell Miner Associated Dieback in 'at risk' forests. Associations within the Consortium are providing opportunities for the impact of fire on isolated Koala populations in the Tweed to be addressed in a multi-organisation way. These on-ground projects address existing shortcomings in progressing activities that are now being enthusiastically tackled.

From a policy perspective the Consortium has played an active role in raising the recognition of ecological fire management as an important tool that will have significant on-going implications for biodiversity conservation in the long term.

Greg is also the project manager for the Caring for our Country project 'Restoring habitat for nationally threatened species in the Border Ranges region'. Aimed at implementing targeted fire management strategies to restore critical habitat of three threatened species including the Eastern Bristle-bird, SEQFBC and SEQ Catchments is coordinating this project on the Queensland side.

For the first time in NSW the Northern Rivers Fire & Biodiversity Consortium provides a collaborative framework that raises the role of fire as an important restoration tool. Its emergence is an exciting step and we look forward to continuing to work with SEQFBC and SEQC.

The effects of contemporary fire regimes on small vertebrate communities in southeast Queensland eucalypt forests

By Diana Virkki

Australian landscapes have a long and enduring association with fire, yet our understanding of the potential impacts of such disturbance regimes is incomplete, particularly when we consider how fauna respond to fires. Small vertebrates are likely to be affected by fires due to the direct impact on microhabitat structure including; leaf litter, fallen dead wood and shrub cover. Unfortunately fire management guidelines designed to conserve faunal diversity are poorly supported by research, and this is particularly true in southeast Queensland. Consequently, I initiated my PhD studies to fill this research gap by exploring the mechanisms driving faunal responses to fires in SEQ. As part of this research I aimed to assess how reptiles respond to spatio-temporal fire mosaics across the landscape and this work has been funded by the SEQ Fire and Biodiversity Consortium. One of the objectives behind this research is to empower ecologists and forest managers to adapt existing burning regimes to conserve and enhance wildlife within fire managed landscapes.

Fieldwork for this research began in November 2011 at 75 plots across three sites (St Mary, Tiaro and Bauple State Forests) in the Wide Bay region of SEQ. To date, two reptile surveys (Summer and Spring), as well as BioCondition vegetation/habitat surveys have been completed at each of the plots and data analysis is underway.

Initial results from analyses combining both fire and vegetation variables reveal a number of correlations among reptiles and primarily fire variables. The total number of fires, fire type (planned, wildfire or top disposal), and area of block burned stand out as key variables in models describing reptile community composition (including all species) during both Spring and Summer. Reptile abundance and species richness was also best explained by the total number of fires and fire type. Correlations of reptile parameters with fire variables were much stronger than with vegetation structure. Nonetheless, two structural variables; tree canopy cover and logs (length), were included in the best models explaining reptile abundance, species richness and composition. However this was only in combination with fire variables in the models. While unexpected, this may be explained by the limited variation in habitat structure among sites. These findings form the basis of a presentation I will be delivering at the Ecological Society of Australia conference in Melbourne later this year.

Relationships between reptiles and fire parameters across mosaic units did not hold at the experimental site, where very frequent and infrequent fire had little influence on reptile abundance and richness. This potentially contradicts the Intermediate Disturbance Hypothesis but requires further investigation to assess patterns in reptile community structure and other environmental parameters that may also be driving reptile responses. Further analyses will be able to pinpoint finer correlations with fire variables, including the addition of Fire Danger Index on the day of each fire as a surrogate for fire severity. I am also in the process of undertaking a spatio-temporal analysis of landscape fire heterogeneity to quantify the response, if any, of reptile communities to heterogeneous fire mosaics. Analyses will be finalised later this year and I aim to complete this component of my PhD thesis early in 2013.

Diana in the early hours of the morning checking traps, and seen here with a possum.

NSW Hotspots Program

By Waminda Parker Project Manager Hotspots Fire Project

Under the guidance of the nine project partners in the Advisory Committee, the Hotspots Fire Project (Hotspots) is delivered through the coordinated efforts of the NSW Rural Fire Service (RFS) and the Nature Conservation Council of NSW (NCC). As part of a training program, Hotspots equips landholders and land managers with the skills needed to collectively promote appropriate use of fire in the landscape.

Nearly 8 years of community based training, Hotspots is making important in-roads to sustainable fire management practices throughout NSW. Last year alone Hotspots held 17 workshop series (two day workshop program) to over 460 participants covering approximately 22,300 hectares. In addition to this, Hotspots is continuing to build and strengthen its collaborations with other fire related initiatives.

Working with SEQFBC and NCC, Hotspots was part of a successful application to the Australian Government Caring for our Country funding for on ground action for improved fire management practices to improve the habitat requirements of the Eastern Bristle Bird. The project was developed under the guidance of the Northern Rivers and the South East Queensland Fire and Biodiversity Consortiums and is now being rolled out across the Border Ranges (for both NSW and QLD). Greg Banks, the coordinator of the Northern Rivers Fire and Biodiversity Consortium is overseeing deliverables in NSW and SEQFBC and SEQ Catchments is coordinating activities on the Queensland side.

Hotspots are also working with NCC's Firesticks Project recently funded under the Federal Government's Biodiversity Fund. The Firesticks project will use appropriate fire to enhance ecosystem resilience within culturally connected landscapes by improving habitat condition and connectivity through natural regeneration for Northern NSW.

SEQFBC is a partner organisation to the Hotspots program.

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Responses to Lantana Management in a Wet Sclerophyll Forest, Australia.

The authors tested two hypotheses: (1) "that lantana-invaded habitats support depauperate reptile communities" and (2) "that lantana management, which reduces the structural integrity of habitat would reduce reptile diversity". Reptile assemblages were compared across four treatments: (1) manual clearing and herbicide application; (2) herbicide application followed by 3-6mths dieback period and prescribed burn; (3) untreated lantana thickets; and (4) wet sclerophyll forest. The authors found that species richness was significantly greater in plots treated with herbicide and then burned (low intensity patchy burn) and untreated plots than in manually cleared plots. Plots treated with herbicide and then burned were also structurally more diverse than manually cleared sites. However, reptile abundance (captures per hour) were significantly greater in manually cleared sites. Interestingly, the untreated lantana plots had greater species richness compared with manually cleared and wet sclerophyll forest and supported a relatively high abundance of rare species, particularly Challenger Skinks (*Saproscinus rosei*), listed under the Queensland Nature Conservation Act 1992. The authors suggest this association may be due to lantana utilising canopy gaps with increased sunlight, which may allow for greater available sunlight for basking by reptiles. The habitat attributes that best explained reptile composition were the combination of palm frond litter and soil silt content, explaining 57% of the variation in the data. The authors suggest that this result is in line with previous studies indicating the importance of complex ground substrates for reptiles. These results highlight the relative importance of lantana as fauna habitat and the need to consider the potential impacts on fauna prior to implementing management treatments. The authors recognise the limited ability of reptiles to escape fire, compared with other vertebrates, such as birds. However, the use of herbicide, followed by low intensity patchy prescribed fire (with a six month break prior to fire use) may be considered as a management option that helps to reduce lantana whilst still supporting diverse reptile communities.

Twelfth International Wildland Fire Safety Summit 2012 - Sydney

By Adrian Hansen, Ecological Natural Area Management.

The International Association of Wildland Fire held their 12th Fire Safety Summit in Sydney in October and was sponsored by the Bushfire CRC, the Fire Protection Association of Australia and Travers bushfire & ecology.

The summit was well attended with delegates from fire management agencies from the USA, France and Australia.

The focus of the summit was fire fighter safety with major themes including organisational change to support safety and good decision making (HRO – High Reliability Organisations), more effective leadership and better management of incidents by incident management teams, safer on-ground decision making and ways to empower fire fighters on the fire ground to contribute to safe fire ground actions, psychological support of fire fighters following traumatic events and more accurate bushfire behaviour analysis in relation to determining adequate defendable fire fighting spaces around buildings.

Speakers from the Bushfire CRC and the Victorian Department of Sustainability and Environment gave excellent presentations on their respective researches into IMT leadership and dynamics. The Victorian DSE also outlined their new integrated training methodology for leadership development pathways for incident management team roles for use by CFA and DSE for incident leadership at all incident levels.

Speakers from the US Forestry Service and Tasmanian Parks and Wildlife outlined the use of "staff rides", a follow up on-site incident review; especially of escaped ecological burns. The "staff ride" includes talks given by the original incident managers who are empowered to say what went right and what went wrong so that prescribed burns can be used as a tool for learning.

Other speakers expanded on these concepts by focussing on concepts such as effective decision making and prioritisation in high stress extreme bushfire behaviour situations, bushfire behaviour analysis in relation to terrain and changing weather, efficiency vs. thoroughness, fire fighter fitness and other themes.

Overall, the summit showcased the latest ideas in fire fighter safety and human factors which are an essential component of any ecological and prescribed burn program as well as for wildfire management and demonstrated that Australia is in the forefront of this work.

Reviews

By Dr Samantha Lloyd

Impact of fire regimes, logging and topography on hollows in fallen logs in eucalypt forest of south eastern Australia

Published by Biological Conservation 2012. 149 (1) 23 – 31.
Authors: COLLINS, L., BRADSTOCK, R., TASKER, E., AND WHELAN, R.

http://dx.doi.org/10.1016/j.biocon.2012.01.065

Luke is a recent PhD graduate from the Centre for Environmental Risk Management of Bushfire at the University of Wollongong. He is one of the few people studying fire and hollows and he spoke at the SEQFBC 2011 Winter Forum on the role topography plays in creating spatial heterogeneity in fire impacts on fauna and their habitat. This paper examines the effect that variation in fire frequency and topography have on (1) the number of hollow bearing logs and (2) the presence and size of hollows within logs. The authors also looked at wildfire severity and logging intensity. The authors found that the density of hollow bearing logs and hollow presence within logs was greatest at sites burnt at low frequency (i.e. two of fewer fires or a greater than 18 year interval between the two most recent fires between 1975/76 and the end of 2001/02). The density of hollow logs was greater in gullies, although the effect of fire frequency was not found to vary with topography (classified as either 'ridge' or 'gully'). The authors propose that fire plays an important role in creating large hollows since they found that hollows with evidence of internal charring generally had greater entrance widths than unburnt hollows. It was also found that the number of hollow bearing logs increased with logging intensity, due to unwanted felled trees and branches being left on the ground. Interestingly, they found that the density of hollow bearing logs was significantly lower in 'moderate' (i.e. three fires between 1975/76 and the end of 2001/02), than 'low' or 'high' (four or more fires between 1975/76 and the end of 2001/02) fire frequency treatments. However, analysis of hollow presence within logs suggests that logs at 'moderate' and 'high' fire frequency sites had a significantly lower probability of containing a hollow than logs at 'low' fire frequency sites. The authors suggest that logging may be responsible for these confounding results, with a higher number of 'high' fire frequency sites falling within more recently logged areas, thus elevating the density of logs and somewhat "masking" the impact of fire frequency. Overall, the authors concluded that frequent burning may reduce hollow availability, though gullies would likely still retain a greater density of hollow bearing logs, regardless of burning.

Resilience of a eucalypt forest woody understorey to long term (34-55yrs) repeated burning in subtropical Australia.

Published by International Journal of Wildland Fire, 2012. Published online 30 July 2012.

Authors: LEWIS, T. AND DEBUSE, V.

http://dx.doi.org/10.1071/WF11003

Tom Lewis and Valarie Debuse are based at the University of the Sunshine Coast and employed by the Department of Agriculture, Fisheries and Forestry. Tom will be speaking at a future Forum on "Frequent and infrequent fire effects on vegetation structure and composition in wet and dry sclerophyll eucalypt forest: lessons from long-term fire experiments in SEQ". This paper is one of a series of papers looking at the long term, repeated burning undertaken at Bauple State Forest, near Gympie. This paper investigates the effect of four fire treatments: (1) annual burning since 1952; (2) triennial burning since 1973; (3) fire exclusion since 1946 and (4) infrequent fire (one fire in 61 years) on woody understorey vegetation density, richness and composition, in a dry sclerophyll eucalypt forest. Site variables such as rainfall, topsoil carbon to nitrogen ratio, tree basal area, distance to watercourse and burn coverage were also measured. Overall, the findings suggest that annual burning reduced the total density of woody understorey plants, thus simplifying the understorey vegetation structure. Specifically, the authors found that the richness of woody understorey plants, 0-1m height, was not affected by burning treatments, but richness of woody plants, 1-7.5m height, was lower in the annual burn treatment than the triennial burn treatment (1989 - 2007). Moreover, eucalypt regeneration (<1m) persisted across all three treatments and density was greater in the triennial burning treatment. With respect to environmental variables, the authors found that variables accounted for more of the variation in plant composition than fire treatment alone (46% and 33% respectively). These findings support previous studies on similar forest types and illustrate the importance of including environmental variables in the research. Interestingly, the authors found that frequent fire reduced the density of the weed, *Lantana camara* and this will be reported in a further paper. Importantly, the presence of most woody understorey plant species, whilst often suppressed, indicates that the removal of frequent (i.e. annual) fire would allow at least some of these species to reach flowering maturity and thereby better sustain populations. Therefore, from a management perspective, whilst frequent burning over the study period (<55yrs) does not prevent woody understorey regeneration in this vegetation type, it does alter species composition and less frequent burning (i.e. triennial) would likely allow greater species recovery and maturity.

Responses to Lantana Management in a Wet Sclerophyll Forest, Australia.

Published by Journal of Herpetology, 46(2): 177-185. 2012

Authors- VIRKKI D, TRAN C, and CASTLEY, G.

http://dx.doi.org/10.1670/11-225

Diana Virkki was the recent recipient of the first SEQFBC Student Research Grant and this paper makes up a component of her honours research, which was supported by the Australian Wildlife Conservancy. Diana will be presenting on part of her PhD research in Melbourne, at the annual conference for the Ecological Society of Australia and has given a brief update on her work in this newsletter. This study examines the effect of the invasive weed, Lantana (*Lantana camara*) and its management on reptile assemblages in a wet sclerophyll forest in southeast Queensland.

Continued on page 7.

The South East Queensland Fire and Biodiversity Consortium gratefully acknowledges financial support or significant in kind support from the following organisations: