

## Native Olive and fire

### The rarest of the rare – Fire and the Cooneana Olive

Australia is blessed with an extremely high diversity of both unique plants and animals, many of them are amazingly restricted in both distribution and population size. Perhaps the rarest of Australia's native plants is found almost in our backyard – the now mine-scarred and clay pit area of Dinmore, straddling the suburban growth area between Brisbane and Ipswich. The extremely restricted native plant the Cooneana Olive (*Notelaea ipsviciensis*) which is today represented by less than 20 living specimens in three small populations in the Dinmore, Ebbw Vale and Bundamba area. This critically endangered shrub, of the family Oleaceae, was only recently discovered by the late local naturalist, enthusiastic botanist and much-loved character Lloyd Bird. Incidentally, Lloyd also discovered another restricted and endemic native olive species – Lloyd's Olive (*Notelaea lloydii*). The biggest population of this 'rarest of the rare' plant species contains approximately 12 individuals in a small area of remnant bushland in the road corridor of the Cunningham Highway. The plants are contained in a north-east facing sandstone gully, set amongst large Spotted Gum and Ironbark trees in a patch of good condition regrowth forest. How these plants have survived the ravages of time in this location is anyone's guess, but the recent conservation management guidelines for the species suggest that inappropriate fire regimes represent one of the major threats (apart from further clearing, habitat disruption) to their continued survival. The species has a lignotuber root system – suggesting that it can recover from fire. In addition, anecdotal information is that an intense bushfire in 2006 swept through the habitat and that the Cooneana Olive specimens were some of the first plants to recover post-fire.

In July 2014 an arson attack in the road corridor resulted in a small sector of habitat being burned by a moderate intensity blaze and a single plant was affected. Monthly monitoring will provide good data on the fire ecology of this species and will assist with developing a specific fire management plan for both the species and the habitat locality – leading to the continued, and hopefully enhanced, chance of this remarkable species surviving the many threats – both man-made and natural – that can potentially impact upon a green 'jewel in the crown' of Queensland's floral diversity.

The message for us is clear – both plants and animals can have specific and varying responses to fire regimes and it can be an exacting process to get it right for both asset protection and conservation of our unique biodiversity.

By Dr Mark Schuster,  
Department of  
Transport and Main  
Roads and SEQFBC.



Dr Mark Schuster in the field studying the effect fire has on the rare Cooneana Olive.

## Contents

- 1 Native Olive and fire:  
The rarest of the rare – Fire and the Cooneana Olive
- 2 Editorial  
Upcoming Events
- 3 Runs on the Board  
2013 and 2014 Forums – our best attended yet!  
New fact sheet highlights the concept of fire regimes
- 4 Students awarded scholarship to undertake cutting edge research  
Managing fire for nature conservation in sub-tropical woodlands  
Changing Fire Regimes of the Great Sandy Region, Queensland
- 5 Comparing the impacts of wildfire and prescribed burning on woody understorey composition and the reaction of eucalypt regeneration in a dry open forest  
Spatiotemporal characterisation of fire severity over a 23 year period in South-East Queensland using data collected with Landsat sensors
- 6 SEQ Catchments planning for the future  
Overall fuel hazard training again proves very popular  
Fire Weather training and fire mapping workshop
- 7 Redland City Council Fire Team get fit – RCC work conditioning program  
Building the Fire Behaviour Analysis (FBAN) capability in the Queensland Fire and Emergency Services (QFES)  
Queensland's fire weather series
- 8 Reviews

# Editorial

Welcome to the first edition for the year.

Sam went on one year's maternity leave from January this year and her family has been blessed with a healthy little girl. Sam is to return in February 2015.

Dr Mark Schuster and Dianna Virkki joined the team early this year and have made significant contributions. Dianna was engaged to work on a small project building our data base of references. Dianna was able to double the size of this very valuable resource. Mark has taken on the role of compiling the E-news and is also writing a chapter for the Rural Fire Service Queensland (RFSQ) fire warden manual on the use of fire in the landscape.

The newsletter highlights the work that we have been involved with throughout this year including a new fact sheet on recommended fire regimes written by Sam, our scholarship program, our very popular forums and the training we have coordinated. Dr Mark Schuster reveals his work with the very rare Cooneana Olive, Andrew Sturgess of RFSQ details the



Dr Samantha Lloyd and Craig Welden

## 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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Craig currently works Tuesday through to Friday.

opportunities given to the RFSQ predictive Services team this year, an innovative work conditioning program at Redland City Council and our scholarship recipients provide an update on their projects.

I hope you enjoy reading the newsletter as much as we have in compiling it. We welcome any feedback.

Kind Regards

*Craig Welden*

SEQ Fire and Biodiversity Consortium Coordinator

## Upcoming Events

By Craig Welden

### SEQFBC Bushfire Planning Forum 2014 – protecting the things we value

**Date:** 20th November

**Location:** Abel Smith Building, the University of Queensland Australia.

Our 2nd forum for the year will be featuring speakers on the topic bushfire planning and protecting the things we value. We have a great range of speakers including Sandra Whight of the Tasmania Fire Service on using innovative approaches to bushfire risk management planning in Tasmania, Laura Gannon Bushfire Planning Specialist of Jensen Bowers Queensland talking about bringing bushfire planning to the forefront of planning for better conservation, and life and property outcomes, Dr Darryl Low Choy Griffith University on fire management planning in the peri urban zone, Bushfire Responsive Architecture: Reconciling Biodiversity Conservation and Bushfire safety with daily life from Dr Ian Weir, Planning for Biodiversity by Dr Mark Schuster. There are many other topics and speakers. Our program will be loaded onto our event web page shortly.

### Ecological Society of Australia 2014 Annual Conference

**Date:** 28 September – 3 October 2014

**Location:** Alice Springs Convention Centre, NT

The conference will feature symposia on regionally relevant issues such as arid ecology, the ecology of northern development, and Indigenous ecological knowledge. More information is available at: <http://www.esa2014.org.au/>

### Climate Adaptation 2014 - Future Challenges

**Date:** 30 September - 2 October 2014

**Location:** Gold Coast, Queensland

Climate Adaptation 2014 conference will bring together end users and researchers from across Australia to share experience in adaptation and showcase activities, strategies and research. More information is available at: <http://www.nccarf.edu.au/conference2014>

### Australasian Associations of Fire Investigators Conference

**Date:** 8-10 October 2014

**Location:** Gold Coast

Conference speakers will examine the challenges facing those involved in fire investigation and look at the best practices across the industry. Leading experts from different sectors will present information on the latest topics surrounding fire investigation. Read more: <http://www.qafi.com.au/aafi2014/>



# Runs on the Board

Snapshot of what we have achieved since October 2013

By Craig Welden

As you read below and throughout this newsletter you will see that we have had a very busy year. We could not have achieved this work without the support by the SEQFCB's working groups in helping to spread the message of improved fire management and biodiversity conservation throughout SEQ.

Workshops and talks delivered to over 1180 people, including people living in the Interface zone (I-Zone) and the more rural properties within SEQ. Positive feedback from these workshops includes: "What was most enjoyed about this activity? How to plan against fire damage and management; Environmental knowledge of SEQFCB Staff; Mapping/understanding own property risk; Enacting action; The information of how and what to burn; Discussion of difference perspectives and links to extra information."

We would not of course receive such positive feedback like this without the invaluable support we get from Local Government Officers, QFES and Rural Fire Service Queensland (RFSQ).

Sam drafted some fact sheets before her leave, including the now completed "fire regime fact sheet". See below for more detail. Mark has drafted a chapter in fire and land management for the RFSQ Fire Warden Manual, and I am nearing completion of the revised Individual Fire Management Planning Manual and worksheets.

Sam, along with contributions from SEQFCB's research working group, created Queensland's only fire related research newsletter, highlighting recent leading fire ecology and management research within Australia.

Training - Overall hazard fuel training, fire weather and fire mapping - attendance 355 people (see page 6); Forums - November 2013 and April 2014 - attendance 207 people (see below); and our weekly E-newsletter distribution to over 600 people.

This is but a snapshot of what have been up to please check out the full picture in our annual reports available on our website - [www.fireandbiodiversity.org.au/steering.html](http://www.fireandbiodiversity.org.au/steering.html)



SEQFCB 2014 April forum site visit in the hinterlands of the Gold Coast. photo Craig Welden

## 2013 and 2014 Forums – our best attended yet!

By Craig Welden

Our forums continue to be well attended and supported by the willingness of a great range of speakers.

Last year we opened the forums up to the public and introduced a fee for non-members and are pleased to say that we have had good attendances as a result. We are continuing to use an online booking system for our Forums and major workshops called Eventbrite which continues to save time.

We have been praised for the range of topics covered for our forums. See some of the positive responses below:

*"Great to see so many parties working together. Inspirational."* (relating to the CAM presentation.), *"Fascinating perspective. Really enjoyed this"*, *"Great variety of presentations"*, *"Made new contacts and strengthened existing ones"*, *"Congratulations on a great seminar and will look forward to more"*, *"great mix of stakeholders bringing in many aspects of fire ecology and management"*, *"This is the most important event in my year for making new contacts"*, *"I travel from Central QLD for this event. Best forum around fire in QLD."*, *"Fabulous all around thank you very much."*, *"I liked the site visit after"*, *"Great field trip!!"*

We are excited about our upcoming forum 20th November 2014 titled "SEQFCB Bushfire Planning Forum 2014 – protecting the things we value".



SEQFCB Forum November 2013, Mt Coot Tha Botanical Gardens. networking with fire researchers, fire practitioners, land managers. Photo Nadine Anderson

## New fact sheet highlights the concept of fire regimes

### SEQFCB "Living with Fire" Fact Sheet 3 – Recommended Fire Regimes

By Craig Welden

Dr Sam Lloyd in producing fact sheet 3 in our "Living with Fire" fact sheet series, has done a stellar job in summarising the fire regime concept, how many of our Australian landscapes are shaped by differing fire regimes, what the recommended fire regimes are for SE Queensland's broad vegetation groups and the importance of landscape fire management planning for both biodiversity conservation and for protection of life and property. It is our hope that this four page fact sheet will be a useful tool for community education into the appropriate use of fire in the landscape. Hard copies will be distributed in September 2014 to our partners and as with all of our resources will be freely available to download from our website.



## Managing fire for nature conservation in sub-tropical woodlands

By Ms Emma Burgess, University of Queensland

Wildfires and altered fire regimes continue to threaten global biodiversity. This has stimulated much research into the ecological impacts of fire and effective means of burning to maintain biodiversity focused on the broadly accepted paradigm that 'pyrodiversity begets biodiversity'. Much work has been carried out at the alpha diversity level in relation to the fire event. Uncertainty, however, remains about the ecological significance of a heterogeneous fire regime at the beta and gamma diversity level. Controlled burning for biodiversity conservation thus remains a controversial topic.

The main aim of my PhD project is to gain a better understanding of the particular spatial and temporal patterns of fire that maintain or threaten biodiversity by focusing beyond the patch-scale and using birds as a biodiversity surrogate. The study is located in Bush Heritages Carnarvon station reserve, in the Brigalow Belt South Bioregion, Queensland.

Preliminary results suggest conserving some long unburnt areas may be important to conserve maximum biodiversity, but controlled burns still have an important role in reducing destructive wildfire risk. It's just a question of how they're best used. The next steps in this research will involve examining the spatial scale at which bird species are responding to burns so we can start to identify the operational minimum level of spatial diversity, at appropriate spatial resolution for effective ecological fire management.

## Changing Fire Regimes of the Great Sandy Region, Queensland

By Philip Stewart PhD Candidate, University of Queensland

The focus of the study is to identify past, present and future changes in fire regimes on Fraser Island. The impacts of these changes on vegetation population dynamics including changes in temperature and precipitation regimes spatially and temporally. Fire is an important driver in the development of ecosystem evolution, composition, structure and distribution. With carbon dating records of fires dating back 40 thousand years ago, changes in vegetation composition, distribution and abundance in conjunction with changes in precipitation and temperature regimes may be identified. Fires have modified the islands ecosystems creating fire dependency and creating fire disturbance-adapted ecosystems. It is suggested that due to the importance of fire as an ecosystem modifier, plants developed traits to survive fire, such as resprouting post-fire and serotiny of cones and fruit. However such traits are not necessarily only developed through fire as a process of natural selection, other factors may play a role in such trait development within plants. Paleo-records and modern observations show a definitive link between fire and climate (temperature and precipitation), with an increase in fire with increasing temperatures. This has serious implications as in a warmer world there will be an increase in wildfire risk. Of importance is the understanding of the interactions between multiple drivers of fire regimes from the past and present. This is critical for developing fire regime management protocols for Fraser Island and the Great Sandy Region in the future.

## Students awarded scholarship to undertake cutting edge research

By Dr Samantha Lloyd

Students from the University of the Sunshine Coast (USC) have now embarked on cutting-edge fire related research projects thanks a scholarship awarded in November 2013 by SEQFBC. On November 7th, at the SEQFBC Spring forum, the recipients of the 2013/2014 SEQFBC Research Student Scholarship Program were announced. The Student Scholarship Program, funded and administered by the SEQFBC, aims to provide financial assistance and research support to an honours, masters or PhD student undertaking research into applied fire ecology or fire management in the South East Queensland (SEQ) bioregion. The SEQFBC also acknowledges the kind philanthropic donation from Fireland Consultancy towards the scholarship this year.

The applications were judged on merit by three members of the SEQFBC steering committee. The scholarship assessment team noted that two applications were of a particularly high standard and therefore proposed that two scholarships be awarded this year, rather than just one. Two Honours students will undertake research in fire ecology and management in SEQ, which will help build our understanding of fire ecology and best practice fire management.

Honours student, Ross Waldron, began his research in January 2014 and is being supervised by Associate Professor Dr Neil Tindale of the USC and Dr Valerie Debus, research scientist with the Department of Agriculture, Fisheries and Forestry (DAFF). The project is entitled "Comparing impacts of wildfire and prescribed burning on woody understorey composition in a dry open forest" and will make use of the valuable long term data set associated with the DAFF long term experimental sites in Bauple State Forest (see page 5). The second student, Brett Parker, also began his

Honours research in 2014 and is being supervised by Dr Sanjeev Srivastava of the USC and Dr Tom Lewis, research scientist with DAFF. His project is entitled "Remotely sensed burnt area analysis and validation: A procedure to effectively map spatiotemporal patchiness and severity of fire to guide appropriate ecological management" and will use remote sensing techniques, geographic information systems and field validation methods to map the patchiness of fuel load and the extent and severity of fire on the Sunshine Coast (see page 5).

The Manager and Coordinator are thrilled with the two successful projects, with both students demonstrating the academic ability and determination required to successfully complete Honours. We are confident the outcomes will be of interest to fire ecologists and fire managers in South East Queensland.



Dr Sam Llyod presenting Brett Parker and Ross Waldron of University of the Sunshine Coast with their Scholarship awards. photo Nadine Anderson



## Comparing the impacts of wildfire and prescribed burning on woody understorey composition and the reaction of eucalypt regeneration in a dry open forest

By Ross Waldron, University of the Sunshine Coast

Determining how often to carry out management burns to reduce fuel loads within forests is a balance between managing fire risk while optimising the health, diversity and resilience of forest ecosystems. While frequent low intensity hazard-reduction burns are carried out to reduce fire risk in urban and peri-urban areas in SE Queensland, longer inter-fire intervals are often recommended to maintain the ecological resilience of forests, but which also increase the risk of high intensity wildfires occurring. When wildfires do occur after long periods of fuel accumulation, the effects of single high intensity fires on plant community dynamics are likely to contrast from those caused by frequent lower intensity burns due to the combination of differing intensity and frequency of fire.

Understanding the comparative effects of prescribed burns and occasional wildfires on the resilience and health of forest ecosystems is vital to inform best-practice fire management strategies in SE Queensland. However, pertinent studies relevant to SE Queensland forests are rare, partly because previous fire history is often unknown or is a complex sequence of prescribed burning and wildfires, which can confound pre- and post-wildfire comparisons at a site. A long-term fire experiment in Bauple State Forest (with a known fire history since 1946) provides a unique and important opportunity to compare the ecological impacts of highly contrasting fire management strategies and comprises of a long unburnt area and two frequently burnt treatments (every 1-3 years). Part of the long unburnt treatment was burnt once by a wildfire in 2006 after a 60-yr absence of fire, creating a fourth treatment.

This study aims to quantify the impact of a single high intensity wildfire on woody understorey vegetation composition and compare it to compositional changes in two frequently burnt areas. The project will assess the changes in woody understorey vegetation composition from a pre-wildfire measure in 1993 to post-wildfire measures recorded in 2007 and 2014. The project also aims to compare the post-wildfire changes (2007-2014) in understorey composition in the wildfire treatment with compositional changes in the remaining long unburnt area over the same period. This study will also examine the response of eucalypt regeneration for the prescribed vs arson treatments. These studies are important in native forest research for determining how resilient a native forest is to repeated burning vs arson in terms of future wood production.



Rural Fire Service Queensland Bushfire Safety Officer, Liane Henderson of delivering the Prepare Act Survive message for residents in the Samsonvale District. Great example of the collaborative coordination from Local Government (MBRC) and SEQFBC. Photo C.Welden

## Spatiotemporal characterisation of fire severity over a 23 year period in South-East Queensland using data collected with Landsat sensors

By Brett Parker, University of the Sunshine Coast

The aim of my honours research was to assess the utility of the Landsat remote sensing data archive to estimate patterns of fire severity over a multi-decadal time period. The Landsat data archive is ideal for analysing burnt areas due to the sufficiently fine spatial and temporal resolution (30m cells, and in cloud free conditions 8 day revisit period), free availability, and coverage spanning back to 1972. Landsat data has been previously used to estimate the frequency, severity, seasonality and spatial extent of individual burnt areas. Similar outcomes have been achieved over multi-decadal periods, although interestingly, estimates of the severity component have not.

In December 2013 a large wildfire occurred in the Mooloolah River National Park, a sclerophyll woodland and heath dominated landscape on the Sunshine Coast floodplain. This provided the opportunity for extensive fieldwork to validate the utility of Landsat to estimate fire severity under increasing vegetative canopy cover over the full range of fire severity classes. Through this research I found that Landsat data provided high accuracy for estimating multi-decadal fire severity in sclerophyll woodland and heath ecosystems. Patterns of frequent high severity burning were observed in the heath vegetation and the homogenisation of fuel loads as attributed to the 2013 wildfire was observed.

This research will provide increased insight into the severity component of the fire regime, and will be of benefit to land managers with an interest in fuel load management, wildfire

mitigation and biodiversity enhancement. Future research is required to automate fire severity detection methods on a state and national scale so that land managers can directly and easily access relevant fire severity data.



Brett Parker of the University of Sunshine Coast in the field getting his hand dirty. Brett was the recipient of the SEQ Fire and Biodiversity Consortiums scholarship program for 2013/14.

# SEQ Catchments planning for the future

## Communities have their say

By Andrew Davidson, SEQ Catchments

Since the beginning of the year, the SEQ community has been coming together to share stories, experiences and ideas as feedback is collected for the update of the South East Queensland Natural Resource Management Plan.

SEQFBC coordinated an expert panel of fire researchers and fire management specialists in May so as to contribute to the plan on fire and its role in the landscape.

We are currently coordinating this update process in South East Queensland, busy pulling together the first draft of the plan. This will be available for comment in shortly (check the SEQ Catchments website for more information) with the final updated plan available at the end of this year

The Plan will be a great guide for community groups, councils, government and other natural resource management practitioners – if you have an opportunity we encourage you to review a draft of this plan to make sure we get the future we want.

The Plan is being aligned with the Queensland Plan, the new SEQ Regional Plan and Local Government Plans. This will make sure the community and landholders receive the support they need to manage natural assets for the benefits they provide now and into the future.

For more information please visit [http://www.naturalassetsseqyoursay.com.au/have-your-say-on-our-regions-future1?tool=story\\_telling\\_tool#tool\\_tab](http://www.naturalassetsseqyoursay.com.au/have-your-say-on-our-regions-future1?tool=story_telling_tool#tool_tab)

Or contact Andrew Davison on 3211 4404.

## Overall fuel hazard training again proves very popular

By Craig Welden

Training was provided for our partners on the application of the "Overall Fuel Hazard Assessment Guide" (4th edition) by Francis Hines of the Department of Sustainability and Environment Victoria and Tim Killen, State wide fire trainer from QPWS. Francis and Tim provided a very engaging one day training session repeated over 4 days for 113 participants. Some of the comments have included – *"I have used a visual type of assessment just from years of experience. This course has allowed me to quantify my assessments and to standardise the procedure." "I went in not knowing much and walked out feeling confident" "Dispelling the myth that "assessment of a fuel load is done by tonnes/hectare alone" was very well done. So much more to understanding fuel loads."*

This training is in line with national recommendations for nationwide consistency in assessing fuel loads. As the guide is subjective, providing consistency with trainers will go towards a consistent approach to assessing fuels across the state.

This year we also provided a tailored course specifically for power line vegetation specialists.

Due to popular demand we are running this course again in September 2014 that is tailored for RFSQ Volunteers and University Students.



Francis Hines co-author of the Overall Fuel Hazard Assessment Guide delivering training as part of a weeklong training event on Overall Fuel Hazard Assessment to over 113 participants. Francis was joined by Tim Killen of QPWS who co presented. Francis and Tim are again presenting to over 40 people the week of 15th September 2014.

## Fire Weather training and fire mapping workshop

By Craig Welden

In follow up from successful training in the 2012/13 a working group of stakeholders was formed to plan for the training for 2014.

SEQFBC would like to recognize the following people in this group that helped structure the 6 day training program. Fire weather and fire mapping training working group:

- David Grant, and Tony Wedd Bureau of Meteorology
- Peter Leeson and Tim Killen, Queensland Parks and Wildlife Service
- Andrew Sturgess, Queensland Fire and Emergency Services

SEQFBC was asked to coordinate the training on behalf of the agencies. The training was run at cost recovery.

What we provided:

- 2 X 2 day Fire Weather 2 courses. Trainers Kevin Parkyn BOM Melbourne and David Grant BOM Brisbane.
- 2 X 1 day Fire Weather 1 Awareness Training. Trainers – Andrew Sturgess and Graham Martin QFES, Peter Leeson and Tim Killen QPWS.
- 2 X BOM Next Generation Weather Forecasting training. Trainers David Grant and Tony Wedd BOM Brisbane.
- 2 X Fire Remote Sensing workshop – Presenters- Peter Leeson—QPWS, Shannon Mooney & Mik Petter - SEQ Catchments, Robert Preston & Marian Moffat—Public Safety Business Agency, Lisa Collett, Nick Goodwin and Dan Tindall — Department of Science, Information Technology, Innovation and the Arts, Brett Parker University of the Sunshine Coast.

A total of 242 multiagency staff and volunteers attended this training over 6 days.



## Building the Fire Behaviour Analysis (FBAN) capability in the Queensland Fire and Emergency Services (QFES)

By Inspector Andrew Sturgess, Manager of the Predictive Services Unit within RFSQ

This year I have had the opportunity to represent QFES in Victoria, Florida in the USA and most recently at the wildfires in British Columbia, Canada.

The demand for accurate and timely information, on how a fire is currently behaving and how it is expected to behave into the future, has never been greater. These increased expectations have been one of the key drivers for the development of the Fire Behaviour Analysis (FBAN) role. Qld has two qualified FBANs, the first in Australia. In January and February of this year I was part of a group of Queensland FBANs that were deployed to assist with the extreme bushfire conditions that were being experienced in Victoria.

In June I attended the National Prescribed Fire Training Centre in Florida and have just returned from Canada where I was part of a 75 strong Australian contingent that were requested to assist with their extreme fire season.

Each of these experiences have been incredible opportunities to experience firsthand how other fire agencies go about the business of managing fires, both planned and unplanned.

I've worked with the SEQ Fire and Biodiversity Consortium in developing and delivering fire weather training and it's my intention to share these new learnings with the broader fire community.

Each agency has a limited capacity and it is imperative that FBANs share their skills and knowledge as well as the latest technologies to optimise the value this specialist role delivers.

## Queensland's fire weather series

### Part 2 - Seasonal severity

(Excerpt – full article can be found on the SEQFBC website)

By Peter Leeson, Queensland Parks and Wildlife Service

Part 1 of this series looked at defining fire seasons in Queensland. Here I will discuss the relative severity of fire seasons, how this could be determined both for seasonal review and for forecasting, and what this means for improved fire management.

Firstly, what is a severe, normal or mild fire season? Logically a severe season has more and larger wildfires of greater severity and impact, compared to average fire activity. This usually results from dryer conditions extending longer than normal, and more frequent severe weather days. However there is a random nature to fire occurrences, and a few short sharp fire weather periods can result in major damaging fires, whereas good community awareness, suspension of burning permits, and drought conditions with limited pasture may result in relatively few fires, even in a long and difficult fire season. While seasonal conditions can be predicted to some extent, although this too is just probabilities which may vary markedly to what transpires, fire ignitions cannot be predicted. Therefore predicting fire seasonal severity is more complex and difficult than what it would seem, and seasonal severity for the purposes of this discussion is defined in terms of weather and climatic conditions, not fire activity.

(Topics covered include - measures for fire season severity, predicting seasonal severity, and seasonal severity analysis)

## Redland City Council Fire Team get fit – RCC work conditioning program

In 2011 Redland City Council Conservation fire fighters underwent a series of tests that included medicals, physicals, functional capacity assessments and the beep test. These assessments determined the overall physical capability of each person to undertake planned burns and wildfire response safely and effectively. The results of the original assessment indicated that approximately 90% of the trained fire fighters had limitations to perform fire duties, which put them at a higher risk of incurring injury.

Under the supervision of a combination of University Queensland Human Movements students and a personal trainer, conservation fire fighter staff attended a ½ hour session twice a week, including a combination of strengthening and cardiovascular exercises to improve and maintain overall fitness and conditioning.

Since the program started, the benefits to each participant have been very positive including an overall team loss of over 100kg improved muscle strength and cardiovascular fitness. The team confessed to enjoying unhealthy eating habits, and the work conditioning program has converted to a team that eats clean and feeling positive.

It has been a journey for each team member involved and as a team, we have grown together and learnt to support each other. This has reflected in a positive work environment and made the team perform more efficiently, effectively and most importantly,

SAFER not only on the fire ground but in all aspects of their conservation work.

Another added benefit has been no reported injuries whilst on the fireline, whether it be planned burn or wildfire response. This included the recent wildfire on North Stradbroke Island where some staff worked extraordinary hours in very stressful environment and physically demanding roles.



Redland City Council conservation Staff participating in an innovative work conditioning program that saw no reported injuries on the fire ground since its inception.

# Reviews

## Modelling the potential for prescribed burning to mitigate carbon emissions from wildfires in fire-prone forests of Australia

By Dr Samantha Lloyd

(Excerpt from Summary from Dr Sam Lloyd. Full summary can be found in the SEQFBC Fire Research Newsletter on the SEQFBC website)

Bradstock, R.A., Boer, M.M., Cary, G.J., Price, O.F., Williams, R.J., Barrett, D., Cook, G., Gill, A.M., Hutley, L.B.W., Keith, H., Maier, S.W., Meyer, M., Roxburgh and Russell-Smith, J. (2012). Modelling the potential for prescribed burning to mitigate carbon emissions from wildfires in fire-prone forests of Australia. *International Journal of Wildland Fire* 21, 629 - 639.

Professor Ross Bradstock from the Centre for Environmental Risk Management of Bushfires at the University of Wollongong heads another stellar list of fire ecologists in this paper examining the potential for prescribed burning to mitigate carbon emissions from wildfire using modelling. The authors recognise that the contribution of carbon and greenhouse gases from vegetation fires is substantial and has the potential to rise in the future. Therefore, management strategies that reduce emissions from wildfire may play an important role in mitigating climate change via reduced vegetation burning. One of the most favourable strategies is that fuel is reduced via prescribed burning, which in itself increases carbon emissions, but overtime decreases overall carbon emissions due to the prevention or reduction in the severity of large, intense unplanned wildfire.

## Fire management for biodiversity conservation: Key research questions and our capacity to answer them Summary by Sam Lloyd

By Dr Samantha Lloyd

(Excerpt from Summary from Dr Sam Lloyd. Full summary can be found in the SEQFBC Fire Research Newsletter on the SEQFBC website)

Driscoll, D. A., Lindenmayer, D. B., Bennett, A. F., Bode, M., Bradstock, R. A., Cary, G. J., Clarke, M. F., Dexter, N., Fensham, R., Gordon, F., Gill, M., James, S., Kay, G., Keith, D. A., MacGregor, C., Russell-Smith, J., Salt, D., Watson, J. E.M., Williams, R.J. and York, A. (2010). Fire management for biodiversity conservation: Key research questions and our capacity to answer them. *Biological Conservation* 143, 1928 - 1939.

This paper has been authored by some of Australia's most prominent ecologists and fire ecologists and despite being three years old, I believe it is a paper we need to examine when considering the need and capacity for fire research in South East Queensland. Inappropriate fire regimes can substantially

alter ecosystem structure and function and increase the risk of localised extinction. Climate change is predicted to increase the likelihood of wildfire and alter fire regimes and therefore poses both a serious threat and highlights the increased importance of sustainable fire management for biodiversity conservation and sustainable land management. .... The authors identified three areas of knowledge needed to achieve a goal of sustainable ecological fire management: (1) "a mechanistic understanding of species' responses to fire regimes"; (2) "knowledge of how the spatial and temporal arrangement of fire regimes into fire mosaics influences the biota"; and (3) "an understanding interactions of fire regimes with other processes that can either modify the response of species to particular fire regimes, or modify the regimes directly". In this paper the authors review available research with respect to addressing these knowledge requirements and identify several limitations.

## Fire and the Story of Burning Country (book review)

By Dr Mark Schuster

(Text by Cape York Elders and Community Leaders, Photographed and recorded by Peter McConchie), Cyclops Press, Sydney

Fire and the Story of Burning Country celebrates, in both words and outstanding photographs, the timeless wisdom of Australia's Traditional Custodians. This unique book tells the story of how fire is used by Indigenous people in the Musgrave Lakefield region, Cape York Peninsula, to prevent intense wildfires through the practice of "cool burning", a technique that has been applied to the Australian landscape for tens of thousands of years to cleanse and rejuvenate the land.

This book provides a number of very personal perspectives from the traditional landholders on the concept of fire regimes that are suitable for their land and how this knowledge is applied to country, in both words and photos, how cool burns are applied to their country. I have seen very few other books that document the process in such a manner.

Although not designed as a technical manual on fire regimes and burning guidelines (which are available elsewhere), this book offers a very unique perspective on the indigenous philosophy and the "story of burning country". To these amazing people, fire is a friend. Buy a copy and read the story and enjoy the amazing photography of Cape York Peninsula.

To purchase your copy go to: <http://www.cyclopspress.com.au/collections/frontpage/products/fire-and-the-story-of-burning-country> (Cyclops Press) or <http://shop.capeyorknrm.com.au/> (Cape York NRM Shop)

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