



## Striking Jacksonia

by Karen Walker  
 Seed Bank Coordinator

What is that splendid flowering shrub or small tree of weeping habit, with pea flowers in yellow to orange shades that blossom at this time each year? Spring is the season of *Jacksonia scoparia*, a prolifically flowering indicator species of our Lowland Grassy Woodland Endangered Ecological Community.

*Jacksonia's* spring flowering makes up for being almost inconspicuous at other times of the year, with thin, broom-like, grey-green foliage lacking in apparent leaves, with plants growing 4-6m high. Most plants I see are centred around Buckajo, Candelo and Tantawangalo areas, often on road verges.

The genus *Jacksonia* comprises 40 species Australia wide (except South Australia). It is named after botanical librarian George Jackson and with *scoparia* meaning broom or brush-like, which refers to the foliage. *Jacksonia* can sometimes be confused with the weed Scotch broom (*Cytisus scoparius*).

Our local *Jacksonia* could be considered "locally rare" and prefers to grow in low nutrient, gravelly soil (shales & clays). Every year I attempt to collect seed, which involves "bagging" the racemes with a form of

breathable cloth bag which will capture the seed when it pops from the small pods. The timing of this is unpredictable and sudden. There are usually 1 or 2 seeds per pod, but they are very susceptible to insect attack.

As a member of the pea family, the seed requires heat treatment prior to sowing (boiling water poured over seed and left to soak overnight) and supposedly germinates well. Cuttings are said to strike readily.

Consider planting *Jacksonia* on drier sites in revegetation projects, in windbreaks and in seed production areas. It looks great, as a legume it will presumably fix nitrogen and insects, birds and butterflies will love it too!



Photos: Alison Rodway

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## Next Workshop



### Seed Collection with Karen Walker

Why, where, when, how?

Sat 9 February 2013

Contact Ali (details below)

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## Coordinator's column

Bill Gammage's latest book, *The Biggest Estate on Earth* has sparked many new conversations about fire and reignited interest in fire as a tool for managing landscapes. Most of the articles in this edition deal with fire in some way, particularly in relation to managing our lowland grassy woodlands. These stories along with our workshop on fire with Jackie Miles earlier this month are just the start of our CMN conversation on this topic.

There was a remarkable response to the recent CMN survey. The information is heartening and will be useful for planning what happens with the network over the next two years.

I'm excited to print our first poem from CMN member Averil



Fink. If you also write poetry that could inspire other members then I'd love to read it.

I hope you enjoy these photos of one of my favourite trees, the Blueberry ash, which is flowering right now in our coastal forests. Their delicate fringed flowers, the leaves that turn red as they get older and their lovely purple blue berries are worth making pilgrimages for each November.

Ali



Blueberry Ash *Elaeocarpus reticulatus* at Gillards Beach

Photos: Alison Rodway

## What is the CMN?

The Far South Coast Conservation Management Network (CMN) supports landholders in the Bega Valley Shire to manage native vegetation on their property and caters to all land holders and vegetation types.

The CMN is funded and supported in various ways by the Southern Rivers Catchment Management Authority, Department of Environment and Climate Change and Bega Valley Shire Council.

These agencies are working with landholders to protect native vegetation on private as well as public land.

The CMN's role is to provide motivation, knowledge and skills support to landholders to ensure ongoing management and care is worthwhile for the landholder and the environment.



Catchment Management  
Authority  
Southern Rivers



# History, Fire, Global CO<sub>2</sub> and the management of endangered grassy woodlands



Photo: Oliver Frank

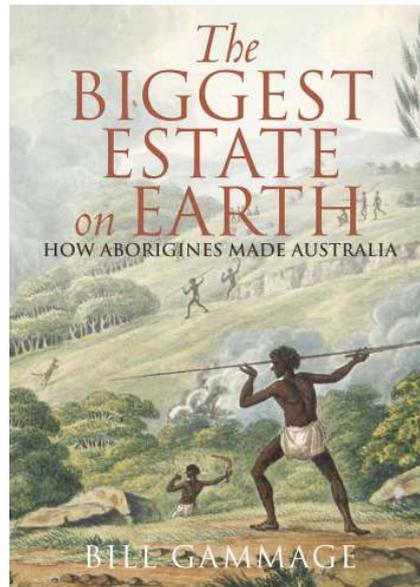
We often focus on the temperature aspects of climate change but rising atmospheric CO<sub>2</sub> is with us here and now and is already changing vegetation and impacting on how we can manage it. Conditions are rapidly shifting in favour of trees over grasses and this has big implications for how we manage landscapes with fire.

There are two recent publications that have had a huge impact on how I view the Australian landscape. Bill Gammage's wonderfully rich book *The Biggest Estate on Earth* has challenged my ideas about current and historical land management and vegetation patterns. The second is a research paper by William Bond and Guy Midgley which details the impact of changes in our global atmosphere on vegetation, in particular the influence of atmospheric CO<sub>2</sub> levels on tree densities in grasslands and grassy woodland ecosystems (savannah).

Despite the considerable differences in the two publications, there is a strong theme current to both. Both see fire as central to determining many vegetation patterns, something most ecologists and land managers would agree with. Gammage strongly argues that in 1788 vast

(but specific) areas of Australia were open and grassy owing to intentional, planned fire undertaken by indigenous Australians. With the removal of planned fire following European settlement many of these areas rapidly thickened, promoting large destructive fires and requiring clearing of regrowth.

More recently, land retirement (or removal of livestock) in open grassy woodlands often leads to rapid regeneration, and loss of the open woodland characteristics, presenting a significant challenge for conservation management of



these ecosystems. Gammage would argue these landscapes lack the fire regimes necessary to keep country open. Previous work by Bond and Midgley has also demonstrated the role of fire in

by Josh Dorrough,  
Ecological research consultant  
Visiting Scientist at CSIRO

maintaining open grassy ecosystems across the globe.

The work of Bond and Midgley adds an additional element to the historical story told in *The Biggest Estate on Earth*. Their central argument is that while fires are crucial to determining the relative dominance of trees in higher rainfall savannah landscapes, atmospheric CO<sub>2</sub> concentrations influence how **effective** fire is.

Under current CO<sub>2</sub> levels, tree and shrub seedling growth rates are possibly **several times faster** than they were at the time of European arrival. This is important because the size of many tree and shrub seedlings is closely related to their ability to survive grass fires – the bigger the seedling, the more likely they can survive a fire and go on to become a large adult tree. In higher rainfall areas, some trees and shrubs that might have reached a size where they can survive fire in 3 to 4 years could do so in 12 to 18 months.

While increasing rates of tree and shrub growth due to increased CO<sub>2</sub> might be good in some respects, making it increasingly possible to restore tree cover

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rapidly to agricultural landscapes with appropriate soils and management, it does have serious implications for how successfully we can use fire to keep country open and grassy, which is essential for maintaining much of the ground layer diversity of grasslands, grassy woodlands and grassy forests. While trees in woodlands are good for biodiversity, dense thickets may not be.

During the last glacial period (which peaked ~20,000 years ago) atmospheric CO<sub>2</sub> levels were less than half what they are today, approximately 180ppm (it is now 392 ppm and rising). In southern Australia not only was it much colder and drier, but lower CO<sub>2</sub> levels were strongly limiting for plant growth. Under these circumstances grasses dominated many landscapes, in particular drought tolerant C<sub>4</sub> summer active grasses, such as Kangaroo Grass (*Themeda triandra*). This is despite the colder summer temperatures as C<sub>4</sub> grasses compete more effectively against cool-season (C<sub>3</sub>) grasses (such as

native *Poa* tussocks), at low CO<sub>2</sub> concentrations. Tree and shrub seedling growth in contrast was much slower and relatively few fires were necessary to tip the balance in favour of open grassy ecosystems.

By the time of European arrival in Australia CO<sub>2</sub> levels had risen to about 280 ppm and the climate was warmer and wetter. Trees and shrubs would have been growing faster and fires would need to have been more frequent to keep country open. Since then CO<sub>2</sub> has risen dramatically and throughout the world tree densities in savannah woodlands have been found to be increasing, even where historic fire frequencies have been maintained.

It is almost certain that returning to pre-1788 fire regimes will not have the same effect that it did then or several thousand years before. There is little doubt that more frequent fires will be required to maintain open grassy woodlands. These more frequent fires would then need to be weighed up against the possible

impacts on biodiversity and current land use. Other management strategies may need to be employed if we want to keep our woodlands and forests open and grassy, including physical removal, stem injection with herbicide and strategic use of livestock.

Regardless of the rate at which our climate is changing due to human actions, the effects of rising atmospheric CO<sub>2</sub> are already here. Navigating the interactions between CO<sub>2</sub>, vegetation change and fire is a challenge for how we manage our land now and into the future.

Footnotes:

- 1 Bill Gammage 2011 *The Biggest Estate on Earth* Allen & Unwin
- 2 William Bond and Guy Midgley 2012 "Carbon dioxide and the uneasy interactions of trees and savannah grasses" *Philosophical Transactions of the Royal Society B* 367: 601-612
- 3 William Bond, Ian Woodward and Guy Midgley 2005 "The global distribution of ecosystems in a world without fire" *New Phytologist* 165: 525-538



## Birdsong

by Averil Fink

(with thanks to *The Slater Field Guide to Australian Birds*)



Knock at the door Jack, Olly Oh!  
 Walk to work, Rigby Dick, four o'clock.  
 Rackety Crookshank, guinea a week,  
 Cheque, pick it up, chock-a-lock.  
 Did you walk? Yeah Cook. Chick-up Georgy,  
 Pippy wheat, goolagoo goolagah;  
 We are, we are, we are the champions:  
 Joey Joey, Egypt, Wirriga!  
 Peter, Peter, Peter, sweet pretty creature,  
 You may come if you wish to the sea,  
 Full of birds having a good time,  
 Giggle pip pip pip hoo-ey!

*Eastern shrike-tit, Olive backed oriole!*  
*Noisy pitta, Striated pardalote, Noisy honeyeater.*  
*Little friarbird, Pilot bird,*  
*Dusky woodswallow, Striated pardalote, Red wattlebird.*  
*Brown cuckoo dove? Brown falcon. Yellow faced honeyeater,*  
*Stubble quail, Diamond dove; Painted honeyeater,*  
*Rose robin:*  
*Rufus whistler, Crescent honeyeater, Topknot pigeon!*  
*Jacky winter, Willy wagtail,*  
*Flame robin,*  
*Yellow thornbill, Brown gerygone*  
*Silvereye, Grey shrike thrush!*

# The Pittosporum 'Problem'

by Stuart Cameron



**I am often asked about the 'weediness' of sweet pittosporum (*Pittosporum undulatum*) due to its increasing predominance in many places along the Far South Coast, the apparent uniformity of the dense forests it can form and an awareness that in some places beyond its natural range, it is regarded and treated as an invasive weed.**

Sweet pittosporum would always have been a common species along the Far South Coast, present in many communities from dune forests to rainforests to dry eucalypt forests. However, prior to settlement, this fire sensitive species would have been largely confined to fire-protected sites or at least periodically driven back to them.

Sweet pittosporum is one of a handful of local native species which are very well equipped to take advantage of coastal sites that have been cleared of native vegetation for agriculture but subsequently abandoned.

Few natural events would have had such a drastic impact upon vegetation as this wholesale clearing, particularly since the cleared areas were often maintained free of native species for decades. Those species whose seeds persist for very long periods in the soil (wattles) or which are very dispersible (pittosporum) enjoy a distinct advantage in the competition to reclaim these sites.

Only observation over very lengthy periods will establish the extent to which and the rate at which pioneer species such as pittosporum eventually give place to more complex and diverse native vegetation. It is highly probable that much greater diversity will be reestablished eventually. Birds are more likely to visit and drop seeds in a stand of pittosporum or wattle than in an expanse of kikuyu pasture. As the pioneer species age they will eventually break down, creating sheltered gaps enriched by nutrients that will provide opportunities for species that would not have been able to establish while the site was fully exposed. In the meantime the dense shade cast by the pittosporums excludes virtually all invasive weeds.

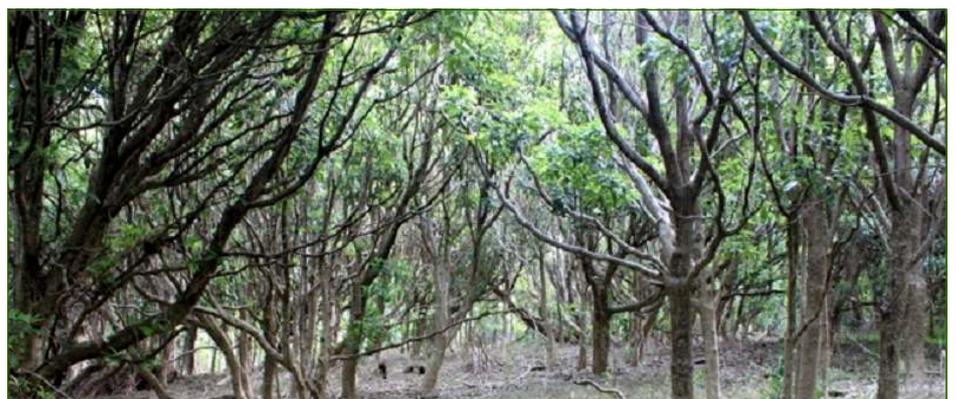
I recently examined the 'Pittosporum forest' (pictured below) at the northern end of Baragoot beach. While the pittosporum is overwhelmingly predominant there, other rainforest species such as muttonwood (*Myrsine howitteana*) and native grape (*Cissus hypoglauca*) are also well established so the diversification

process is definitely under way.

Many coastal headlands are now effectively 'islands' protected from fire by roads and other cleared areas. It is on such fire-protected sites that Littoral Rainforest is able to develop. Our pittosporum forests are probably best interpreted as the first stage of Littoral Rainforest establishment, albeit sometimes on sites that prior to settlement were more vulnerable to fire and would not have supported this community.

Given that Littoral Rainforest only ever occupied small pockets of the landscape and has suffered severely from clearance it is arguably no bad thing for it to establish on some 'new' sites. It offers resources - foodstuffs, shelter, nest sites - which are much valued by local fauna.

Of course sweet pittosporum is also taking off elsewhere in the landscape than the once-cleared coastal headlands, including in many gardens. If it cannot be curbed by fire it may be necessary to cull the seedlings before they become too predominant and transform open eucalypt forest into rainforest.



# Fire Management in Grassy Woodlands Workshop

by Alison Rodway

The best thing about the Fire Workshop held at Jackie Miles' and Max Campbell's place in Brogo on Saturday 10th November was that it gave participants greater confidence to start or to expand their use of fire as a management tool on their properties.

The message Jackie gave was that you don't have to burn large areas. Starting with small areas, burning slowly down a hillside, keeping burns 'cool' and monitoring to see what effect this has on the vegetation will give you a good understanding of how the grassy areas on your property could benefit from fire. Small experiments teach you a lot and help you stay in control of the fire. Jackie said "we'd prefer to have trouble keeping a fire burning than to risk losing control of a hotter, faster fire". Burning when the weather is cooler (early spring and towards evening) helps ensure this. Slow, cool burns from one edge also give lizards, frogs, snakes, small marsupials, spiders and other insects a chance to escape the smoke and flames.

Jackie has been burning the Kangaroo grass in her orchard for several years now and has a good diversity of plants in between the tussocks which weren't there before. At the workshop we saw flowering Zornia (*Zornia dyctiocarpa*),

*Vanilla glycine* (*Glycine tabacina*) and swathes of Tufted bluebells (*Wahlenbergia communis*). Kidney weed (*Dichondra repens*), Rock or Mulga fern (*Cheilanthes sieberi*) and Small-leaved bramble (*Rubus parvifolius*) were also easy to identify. Apart from creating inter-tussock spaces to promote biodiversity, Jackie uses fire to control wattle seedlings and other shrubs which could grow to shade out the grassy understorey and reduce its diversity.

Jackie and Max burn towards the end of winter or in early spring when there is enough soil moisture to ensure good groundcover in time for the hot, dry summer months. Bare ground during this time would open the area up to weed invasion. Sometimes choosing to burn at a time in the season when weeds are about to flower can help control their spread. Burning grassy areas instead of mowing them also reduces the



Jackie Miles

risk of weed seeds being spread on mowing equipment and doesn't leave windrows of grassy mulch that can promote weed growth.

As a result of being at the workshop, participants said they would try out some things on their properties including getting more experience with the Rural Fire Service, burning grassy areas closer to the house, carrying out experimental burns in Kangaroo grass, burning in small blocks, staggering burns, making sure burns are cool, lighting one side at time and carrying out a vegetation survey before and after burning.



Jackie shows effects of burning in *Themeda* grassland

# A new face at Council

## Andrew Morrison

**Andrew Morrison is the Natural Assets Officer for Bega Valley Shire Council. The new position, which started in July this year, highlights Council's increasing focus on natural area and native vegetation management and is good news for the Shire's Council managed reserves.**

Andrew grew up with parents who loved the outdoors, spending lots of his childhood in natural places in the ACT, the Snowy Mountains and on the South Coast. This led to a passion for the environment which he followed through University, completing a Resource and Environment Management degree. Andrew's scientific design skills were developed whilst working with the CSIRO for seven years in their wheat breeding program. He then spent time in New Zealand translocating threatened species to islands and as a volunteer possum trapper, a challenge for someone who spent his life appreciating Australian native animals.

Back in Australia, Andrew worked for ACT Parks as a ranger in Namadgi National Park until his longstanding dream of living on the South Coast led him to work in Bega as an ecologist, specialising in fauna assessments. His understanding of local flora and vegetation communities was then developed by a year as a bush regenerator, leading up to his current position with Council.

In his current role, Andrew manages Council's foreshore,



Andrew with a friendly Fairy Prion on the Chatham Islands

bushland and coastal reserves as well as Council's bushfire hazard reduction program. He also develops strategies, policies and management plans for the shire's natural areas.

Over the last couple of months Andrew has enjoyed working with Bemboka Landcare Group to organise an ecological burn in the Bemboka Reserve. He hopes this

### ***Council now has a greater capacity to undertake environmental work***

will pave the way for utilising ecological burns as a management tool in other areas where fire has been excluded. He also likes finding ways Council can support what other agencies and community groups are doing to look after natural areas in the shire. He has a healthy 'cross-tenure' focus in the work he does.

Examples are his support for the *Atlas of Life in the Coastal Wilderness* project and promotion of the SRCMA/Far South Coast Bird watchers' Indian Myna eradication program.

One of his priorities over the next few months will be raising community awareness of the fantastic natural environment we live in on the south coast and fostering community custodianship of Council's reserves. He plans to run a media campaign on the problems of unauthorised clearing of reserves and promotion of the values that these areas provide. In the meantime, he encourages people to contact him if they witness illegal clearing or dumping in reserves.

Andrew believes that Council now has a greater capacity to undertake environmental work through the use of Envirolevy funds along with new staff in the Council's Environmental Services area (including his own position and Dan Murphy's Environmental Officer position). These new appointments follow the recent redefinition of the council weeds team into a holistic vegetation management team that now carries out targeted revegetation works and provides support for local community environmental groups as well as the traditional weed control role. Andrew and Dan will also be able to apply for grants to support more environmental works in the Shire.

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