

# SUPPLEMENT TO THE RAINFOREST RESTORATION MANUAL FOR SOUTH-EASTERN AUSTRALIA



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NEW SOUTH WALES NATIONAL PARKS AND WILDLIFE SERVICE  
2010



**Cover:** Rainforest restoration requires human partnerships; sadly the need to restore rainforest also arises because of human partnerships with weeds (in this case Tathra Wharf), feral animals, land clearing, and so on. Fortunately for rainforest, the beneficial partnerships of those such as: Department of Sustainability and Environment, East Gippsland CMA, Parks Victoria's Dave Preece, Moogji Aboriginal Council, Snowy River Riparian's Pty Ltd. Chris Coulton and Ned Rickard are putting it back together on Second Island, (Marlo Estuary Victoria) and repairing the damage.

**ACKNOWLEDGMENTS**

This publication would not have been possible without the considerable help and support of the following people:

**Editing of the Manual and its Supplement:**

- Early versions: **Todd Chaudhry** (CFA), **Max James** (TfN), **Claire McInnis** (TfN); and **Chris Coulton** and **Ned Rickard**, **Tien McDonald**, **Richard Owen**, and **Sue Reagan**.

**Educational editing of the manuscript:**

- **John Pearson**: the final product was significantly improved for students and general readers.

**Germination trials, propagation advice:**

- **Jurg Hepp** of Kanooka Eastern Native Flora Nursery (also frost days at Orbost)
- **Richard and Vicki Vuat** of Wildseed Nursery.

**IT and GIS support:**

- **Richard Owen** and **Forestech** (East Gippsland) for saving the day at the end of the day
- **Geoff Claffey**: for GIS support and mapping
- **Max Beukers**: for GIS support, mapping, computer data analysis and floristic analysis of Littoral Rainforest quadrats
- **Vicki Brauner of CBL Data Recovery Technologies Pty. Ltd.**: for her help in recovering an early version of the book from a crashed hard drive for the poultry sum of \$199.

**The steady supply of field observations on rainforest restoration sites:**

- **Bruce Robinson** a Snowy River man (self-effacing but spot on); **Chris Coulton** and **Ned Rickard** (Snowy River Riparian P/L) all of whom have been my eyes and ears on the Snowy River for many years; likewise:
- **Richard Vuat** of Wildseed Nursery across a number of sites in East Gippsland.

**The mentorship, advice, criticism and good humour of fellow botanical and restoration ecologists:**

- **Jurg Hepp**, **Jacki Miles**; and especially: **David Cameron**, **Stuart Cameron**, **Chris Coulton**, **Estelle Gough**, **Richard Owen**, **Sue Reagan** and **Ned Rickard**.

**Additional photography: an essential element in any manual:**

- **Rohan Bilney**, **Graeme Dear**, **Tim East**, **Les Goldsmith** and **Sean Phillipson**.

**Library support:**

- **Ruth Downs** (Forestech Librarian) for her invaluable help with online journals.

**HEART-FELT THANKS**

You will notice that the Manual relates to you (the reader) as “we” rather than “I”. This is for good reason: it is because this Manual and its Supplement represent the collective wisdom of what is now a growing, diverse and vibrant community of rainforest restoration practitioners in south-eastern Australia. It could not have been produced without the cooperation of this diverse range of people who, to varying degrees and in a myriad of ways: contribute to the evolving ethos that is rainforest restoration in our region. Without exception, these wonderful friends, colleagues and their respective organisations have all been very generous with their time, patience and information. All of which bodes well for the future of rainforest restoration in south-eastern Australia.

The research that underpins the information contained in the Manual has been largely funded by two levels of government: the Federal Government's Natural Heritage Trust and the more recently by the Victorian State Government. This money has financed a range of pilot restoration sites throughout East Gippsland. These and other trials have been patiently conducted on these sites over the last 20 years ensuring the development of locally specific and well-tried techniques that will underpin exciting rainforest restoration projects across south-eastern Australia, both now and in the future.

The projects that are now burgeoning as a result of this work (and here presented in this Manual) would simply not have happened without the generous (and ongoing support and faith) of the Federal and Victorian Governments and the East Gippsland Catchment Management Authority.

This support is a clear demonstration of the role and value of governmental and community partnerships that are able to tackle apparently intractable problems with a great enthusiasm and commitment that, in the end, can produce outstanding results!

**STANDING ON THE SHOULDERS OF OTHERS****The Koori community**

Careful burning of adjacent ecosystems has protected many rainforest stands in the region, ensuring their survival to the present day. This practice produced green pick in areas adjacent to rainforest for animals that would later be hunted for food. This process also protected their rainforest totems and sites of enormous cultural significance as well as their valuable cargo of medicines, materials, food and shelter.

**The earlier settlers: their heirs and successors**

Those of our forebears whose love for the bush in their new land caused them to stand alone among their peers and leave rainforest on private land until the present day. A view eloquently put at the time:

**Rainforest restoration pioneers**

- **Mary McKeown**: the first to fence off a section of the Snowy River's bank and to plant local species.
- **The Snowy River Improvement Trust (SRIT)** and their advisors who took the bold step of fencing off large sections of the river's banks and planting local indigenous plants:
  - **Bruce and Elaine Robertson** whose gargantuan efforts on the lower Snowy on behalf of SRIT saw more than 70ha revegetated with rainforest species.
- **Bill Peel** who in the 1980s restored and monitored the progress of a Littoral Rainforest site at Lakes Entrance.
- **Richard Owen** who approached many landholders in East Gippsland and began the task of indigenous species revegetation on past rainforest sites (Framework Method), many sites of which are now ready for supplementary enrichment planting with rainforest species.
- **Ian McKeown**: whose experimental weed control on the lower Snowy was the first act that set in train this Restoration Manual.

**Supporters of this endeavour:**

- **The East Gippsland Catchment Management Authority**:
  - **Chris Barry** (former East Gippsland Catchment Management Authority CEO) and the various boards that followed: for their support of rainforest restoration efforts in the past
  - **Graeme Dear** (current CEO EGCMA) for material and personal support of this project
- **Department of Natural Resources and Environment**
  - **Paul Wilson** for both material and personal support
  - **East Gippsland Landcare** (workers and volunteers) for their support.
- **Trust for Nature**
  - **Robyn Edwards** (East Gippsland Manager), for her unstinting support.

**The rainforest restorers themselves:**

- **Margaret Brazalle** at Kalimna Gully for holding the line with environmental weeds at this valuable site.
- **John Burns** for his work at Kalimna Gully and on the Mitchell River.
- **Matt Kennedy** for significantly improving rainforest restoration techniques and establishing the basic logistics of modern rainforest restoration in the region, allowing the author to spend more time on research.
- **Friends of Mallacoota** for their restoration work in that town.
- **Methodist Ladies College** students and staff who work on Harrisons and Dowell Creek.
- **Countless numbers** of students, volunteers, Green Corps groups, the Community Jobs Program (CJP), Moogji Aboriginal Council, who have, over the years, provided much of the grunt for doing the work.
- **Chris Coulten and Ned Rickard of Snowy River Riparian P/L and Richard and Vicki Vuat of Wildseed Nursery and their employees**: who are among the current generation of rainforest regenerators.

**The educators:**

Forestech and its teachers for their development of the minds who'll carry the baton on.

**John Hunter (NSWNPS)**: whose fearless review of all of the NSW rainforest restoration projects recorded what worked, what didn't and why, so we could look at their sites and understand.

**The Big Scrub team**: who gave us confidence that it really could be done including:

- **Ralph Woodford**: ecologist and quiet practitioner for priceless advice and inspiration.
- **Rob Kooyman** for his time and viewing of his own excellent home rainforest restoration site.
- **Tony Parks** of the Big Scrub Landcare Group for showing us the organisational mechanisms needed to achieve sustainable rainforest restoration at a regional level and in social context.
- **Rosemary Josephs**: regenerator and teacher.
- **Hugh and Nan Nicholson**: <[www.rainforestpublishing.com.au](http://www.rainforestpublishing.com.au)> for their wise council, wonderful hospitality and general support of rainforest conservation and appreciation.

- **Dan and Vicki Williamson** Far South Coast Conservation Management Network Facilitators: for their dedication and assistance with workshops and information for the Manual, their welcoming attitude to their region and whose network is just starting out along the rainforest restoration road.

Those that carry our hopes for rainforest restoration into the future:

- **The East Gippsland Rainforest Conservation Management Network:** <[www.egrainforest.org.au](http://www.egrainforest.org.au)> who will carry forward, in one region, the rainforest restoration process into the future and hopefully provide both the model and inspiration for other groups to form in near the future
- **Far South Coast Conservation Management Network:** <[www.fsccmn.com.au](http://www.fsccmn.com.au)> whose incorporation of rainforest into their lexicon of good works will see rainforest restoration flourish in their region
- **All of those landholders and land managers** that we as a community charge with the responsibility to see our rainforests through the coming centuries of rapid and uncharted climate change.

To my publisher, editor at CSIRO and my peers:

- **It is one thing to have an idea, it is quite another to realise it in its final form.** Thankyou to Ted Hamilton (my publisher) and Peter Storer (my editor) and my many peers who at various stages assisted, discussed ideas, undertook experiments and greatly inspired the author's efforts: Max Beukers (NPWS), David Cameron (DSE), Stuart Cameron, Chris Coulton and Ned Rickard (Snowy River Riparian P/L), Estelle Gough (Port Macquarie Landcare Nursery), Jurg Hepp (Kanooka Eastern Native Flora Nursery), Max James (Trust for Nature), Andrea Lindsay (formerly EGCMA), Richard Owen (Forestech), Tein McDonald, John Pearson (EGCMA), Sue Reagan (Wild Things Gardens), and Richard and Vicki Vuat (Wildseed Nursery).

Support of the author, belief in the undertaking and their patience in helping the Manual come to fruition:

- **A publication of this breadth and detail comes at a price.** The reality that it has taken 7 years to write is testament to the fact that it is not something that can be achieved without the explicit understanding and support of many people. These include professional colleagues (David Cameron in particular), friends whom you see less and then seemingly to only speak in monotones about 'the book' and to my family in particular. All of these good people provide a fundamental point of reference to the absorbed author: firstly trust and understanding that a task of such duration is worthwhile and can be done; and secondly that there is more to life than writing.
- **Particular thanks to Andrea Lindsay (ex EGCMA):** who first suggested that we make a start.
- **Chris Coulton and Ned Rickard** whose great humour, rainforest restoration skill and single-minded dedication to the task of rainforest restoration and its continuous improvement and innovation are without parallel in the author's experience: this Manual could not have been produced without them. Its quality and comprehensiveness is in large part down to them. They have my deepest gratitude and respect for their humility, preparedness to share knowledge, and willingness to train others and inspire their community.
- **Because this publication was written largely in my own (that is my family's) time,** its genesis and completion was only possible with the understanding, patience and support of my dearest Tom Hoffman. His humour and basic goodness have been my sustenance through these long years of creation. Thankyou.



## BE HUMBLD BY WHAT YOU SEE: IT IS THE BEGINNING OF COMPREHENSION



**Figure P1. Natchanuka, New South Wales.** Come to nature with a humble heart and an open mind. Comprehension and the riches such discoveries can bring are one of the joys of rainforest restoration: this gap was created by just one branch from a Small-leaved Fig *Ficus obliqua* in Subtropical Rainforest. The fig is centuries, if not millennia old, so large in fact that the original trunk has long since gone and now the tree consists of a multitude of stilt-rooted individuals that are wandering across the landscape.



TALK WITH NATURE FIRST, THEN IF YOU UNDERSTAND: TALK TO THE PEOPLE

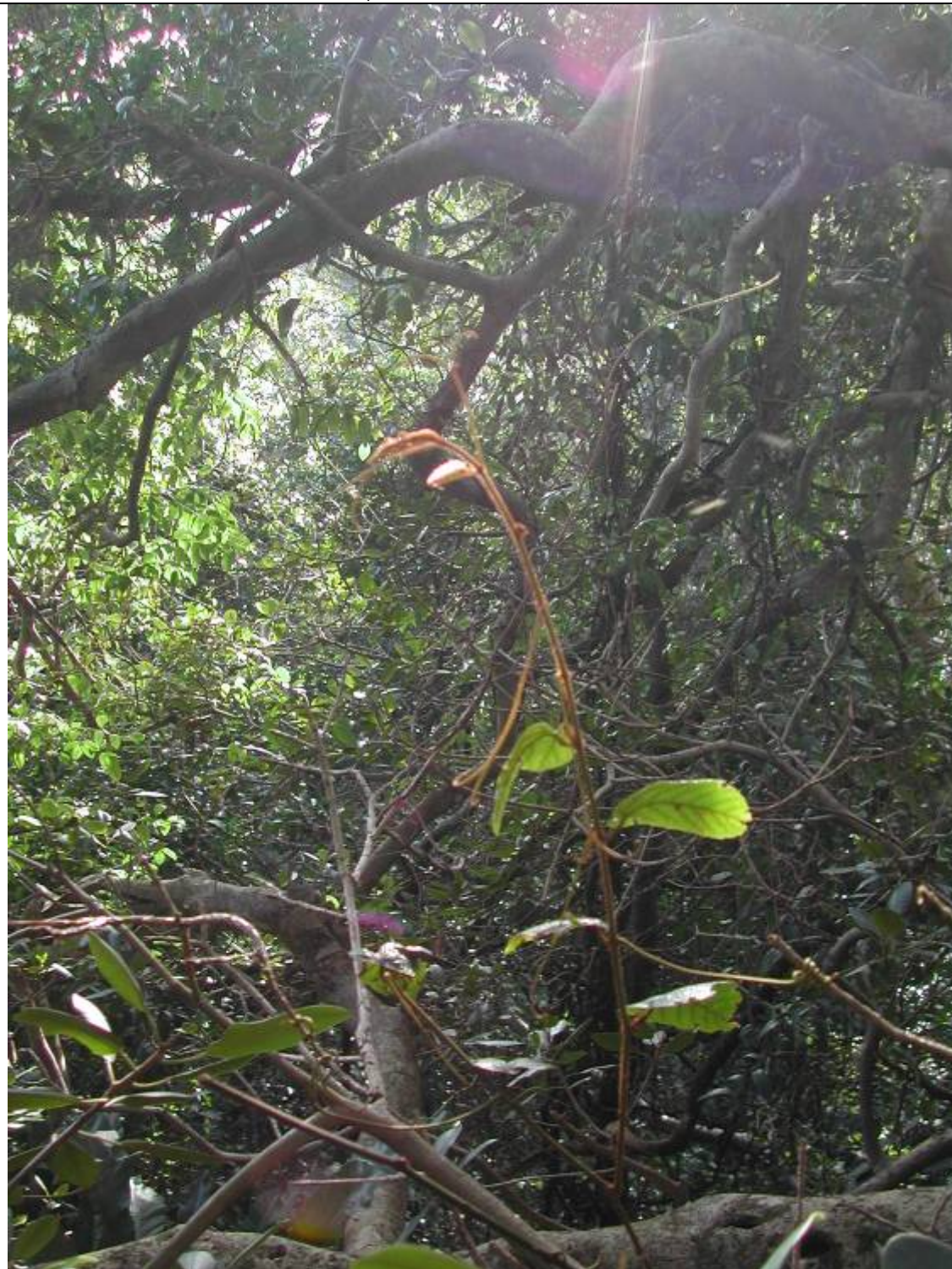


Figure P2. Natchanuka, New South Wales. Nature has many lessons: you just need to take the time to really see.







## THREE RESTORATION PRINCIPLES: COMPREHENSION, KNOWLEDGE AND ACTION



**Figure P3. Natchanuka, New South Wales.** The flash of comprehension, always leads to knowledge a little further off in the shadows. Trust that the discovery of the former will ultimately lead to the illumination and realisation that there is going to be an appropriate restoration action (even though it may lurk in the shadows and you cannot quite see it at the beginning).

## THE SUPPLEMENT TRAFFIC LIGHT SUMMARY SYSTEM

<b>COMPREHENSION</b>	<b>Figure P4. What is it: issue, problem or inspiration?</b> Callendula Nature Reserve, New South Wales: Littoral Rainforest habitat, but where is the rainforest?	
<b>KNOWLEDGE</b>	<b>Figure P5. The key knowledge points.</b> Closer inspection of the site uncovers rusting agricultural machinery. Using the Rainforest Divination Tool, it is obvious that rainforest was once present but it has been cleared (Table 3.4).	
<b>ACTION</b>	<b>Figure P6. Conversion of knowledge into action.</b> The site is recovering its rainforest naturally and the fact the site used to be Littoral Rainforest is passed onto the land manager so that the rainforest can recover, be managed and conserved. With its national <i>EPBC Act</i> listing, current management (eliminating weedy rushes) has potential to attract more dollars.	
<b>WHAT NEXT?</b>	<b>Figure P7. Where these lessons lead.</b> The realisation that there is a new Littoral Rainforest community, that is evolving before our very eyes. Knowing this, the land manager can be advised on appropriate fire regimes that will ensure the ongoing evolution of this precious site and a landcare group at Surfside gets the right advice.	



## WHEN YOU KNOW THE TRUTH: HOLD FAST AND TELL IT



Figure P8. Natchanuka, New South Wales. Holding fast to your ideals: helps to convince others that what you seek and what you know has value.

## TALK TO PEOPLE ABOUT WHAT YOU DO

**Snowy River Public Land**

**PUBLIC ACCESS WELCOME**

Come in and look around at an  
award winning riparian restoration project


This restored Warm Temperate Rainforest is fenced to protect it from stock  
Please close any gates you use  
Take your rubbish away with you

EAST GORILLAND CATCHMENT MANAGEMENT AUTHORITY  
Victoria  
The Place to Be

Figure P9. Good signage speaks to many people at many levels and speaks when you cannot be there.

## HOW TO MAKE INTUITIVE ECOLOGY WORK FOR YOU

**INITIAL OBSERVATION:** old Saw-tooth Banksia *B. serrata* falls into rainforest gap, but it does not regenerate.

**QUESTION:** why is this so? 



P10.

**OTHER SUPPORTIVE DATA:** the flowers persist on the cone so that it ignites easily; cones only open after fire; old plants have thick bark and survive fire by resprouting. Survey by author of Littoral Rainforests in the South East Corner Bioregion recorded only 8 examples from 251 sample or 3% of sites (all in young or burnt rainforest stands)!

**CONCLUSION:** This common and widespread species requires fire to regenerate, which explains why Saw-tooth Banksia is not a rainforest plant.

**OTHER SUPPORTIVE DATA:** It is also found regularly in Littoral Rainforest: 153 examples from 251 sample or 61% of sites (in rainforest stands of all ages).

**CONCLUSION:** its ecology is not fire-dependent for regeneration; its reproductive strategies make it a candidate for regeneration in rainforest. The presence of this keystone species in Littoral Rainforests confirms the observations and *intuitive ecology* that suggests it should be so.

**ACTION:** look around in the vicinity for possible answers.

**OBSERVATIONS:** even when the cones are dislodged from this fallen leviathan, its woody capsules stubbornly refuse to open in the damp rainforest gap. This adaptation to fire consigns this plant's genes to ecological oblivion in the rainforest dank and gloomy depths.



P11.

**BUT WHAT ABOUT?**

Coast Banksia *B. integrifolia* which is a common plant on the coast and along lowland river reaches. Should it occur in rainforest?

**OBSERVATIONS:** this species sheds its seed each summer, the cones have no fire adaptations, adult plants are killed by fire; seedlings come up in partial shade (a classic adaptation for plants that occupy rainforest niches).



P12.

**RAINFOREST RESTORATION LESSON:** where it is a characteristic species of the Littoral Rainforest stand that you intend to restore: the late secondary rainforest tree Coast Banksia, should be planted.



## PARADIGMS FOR SUCCESSFUL RAINFOREST RESTORATION

PARADIGM	SCALE	CONTEXT
<b>Look and learn:</b> the answers to most restoration problems are before your eyes or nearby.	Landscape to site	The process is made easier by the availability of information, but if you can't work it out: ask.
<b>Context and perspective:</b> make sure what you need to know is seen in the right light and applied appropriately.	Landscape to site	Always think about the context of the problem, before gaining a perspective and applying it in the right situation and at the right time and place.
<b>Communication:</b> ideas, intentions and actions: all need to be clearly spelt out.	Locally	Poor communication can produce unnecessary problems and delays for your work.
<b>Always test assumptions before jumping to conclusions:</b> caution is advised.	In your head	Intuitive ecology works well, provided you are rigorous about your evidence and your assumptions: never be too proud to change your mind!
<b>Never let the method rule the result:</b> be flexible and adaptive	On the site	So you have come up with a great method, but if it doesn't work at a particular site: adapt and use another tool from the kit. Don't become a slave to your favourite way of doing things.
<b>Seek your social licence to operate:</b> if you want to succeed in restoration, get permission from your community	Landscape to site	In both the short and long term, you will fail if you do not have the support of your community. Failure to get community ownership of your restoration project will ultimately see your work fail.
<b>Paradigms are meant to be flipped:</b> use a <i>paradigm</i> as a guide, only while it is of use.	Landscape to site	Flip paradigms every now and then, especially if they do not apply or are leading you astray. Blind faith in a concept or idea is sure to lead to failure.

## AND NOW BEFORE YOU BEGIN: MIXED BLESSINGS



**Figure P13. Bairnsdale, Victoria.** Although ecological processes are the foundation stone of rainforest restoration in fragmented landscapes, few of them will be entirely in your favour. Here a bird's dropping has brought in a mixed cargo: two seedlings are the native Sweet Pittosporum *P. undulatum*, which will help the recovery of the site; the other one (red circle) is a weed: a New Zealand cultivar from a garden. It is a taxon that is now established in Warm Temperate Rainforest around Bairnsdale, Lakes Entrance and on the Snowy River.