Save our Flora

AN ONLINE INDEPENDENT NATIONAL PROJECT

CONSERVATION THROUGH CULTIVATION

Contact: saveourflora@gmail.com
Website: https://saveourflora.weebly.com

Project launched on 14th November 2013

Maria Hitchcock Administrator
Bulletin Editor

Membership
Individuals: 189
Groups: 21
International 3

Membership is free.

Please encourage others to join.

Quarterly Bulletins are sent by email only. Feel free to pass them on.

New members will receive the latest e-Bulletin only. Earlier Bulletins can be accessed online. (See box)

This is an informal interactive sharing group. We welcome your emails, articles and offers of seed and cuttings at any time.

Your privacy is respected and assured with this group. You may **unsubscribe** at any time.

Blandfordia punicea - Tasmanian Christmas Bells

Happy Christmas everyone!

In this issue:

Unsure if you have any rare or endangered plants? Check them out on the EPBC list

http://www.environment.gov.au/cgi-bin/sprat/public/publicthreatenedlist.pl?wanted=flora

Save our Flora

Maria writes:

The year is winding down and it's a time of reflection in between silly parties, over eating and over drinking - all in the name of joyfulness. In our global world the season of Christmas has taken on a very commercial appearance with every corner beckoning one to spend up big on items that we don't really want to buy but feel obligated to do so.

I'm always mindful at this time of the dark corners where poverty, starvation and violence are commonplace. I thoroughly admire volunteers who give up time and often money to try to bring some hope to the unfortunates. Conserving threatened flora is the last thing that these people want to think about as they try to preserve their own threatened lives. We in Australia are more fortunate - we have a land of riches - but in achieving wealth we often sacrifice biodiversity and our rare flora. Thankfully we also have some wonderful professionals and passionate amateurs who give up a lot to preserve and conserve rare plants.

Summertime in Australia is often a dangerous time - spiders, snakes, mossies, bushfires, cyclones, hailstorms, drownings, etc. This year we are told that we can expect a La Nina event. That's great for the gardens in New England but too much rain on our Tablelands means flooding in the rivers on the coast. In recent years we have seen a number of extreme weather events which have impacted on insurance premiums. Homes and property can be fixed but a rare orchid in a flood may be lost forever.

We have to spread the message that Australians need to think about conserving their flora. Most people are totally ignorant of what might be a rare plant. The new NSW Biodiversity legislation regarding trading in whole plants will require growers to label all threatened plants as such. This might go a long way towards educating the general gardener.

It was pleasing to hear that Mt Tomah BG has now been able to propagate 300 seedlings of the very rare Wollemi Pine. These will be used in ex-situ plantings in specialised locations in the Blue Mountains as an insurance against the original site being destroyed by wildfire. Climate Change is making us think seriously about ex-situ plantings as a serious method of preserving species where the original habitat has been changed. To do that we need to have good propagation skills and fund research into growing difficult to propagate species. My work with Flannel Flower propagation tells me that we have a long way still to go. Till next time...

Maria Hitchcock

Native Plant Propagators

Are you an expert native plant propagator?
Would you be interested in propagating for ex-situ plantings of rare and threatened flora?
I am compiling a register of propagators with contact details to send to Botanic Gardens.

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Save our Flora

PowerPoint Presentation
Ready to go!
30 slides approx 30 mins. talk
If you are interested in obtaining this presentation please email me
I can send it in an email (4.3MB) or as a CD
Send me a C5 stamped addressed envelope
Attach 2 stamps

Do you have a contact at a local school? Why not ask them to join Save our Flora as a group member
More and more schools are establishing Endangered Species Gardens featuring rare plants from their local environment.

Save our Flora

From the members:

Just wanted to write in and tell you about my experiences with a couple of my natives. I started getting interested in gardening when I was 16 and living in a suburban quarter acre block in eastern Melbourne. My parents have no idea about nature, so it was all self taught. I started with fruits and veg and then got interested in Aussie plants.
I moved out of my family home when I was 20, and have since only ever lived in apartments in the inner suburbs (Prahran, Brunswick, Port Melbourne). I still love plants but the challenges of growing on balconies and indoors is a whole new adventure!

I planted a Grevillea Fireworks at my family house in clay soil in a sunny corner against a timber fence and it thrives. I'm talking 5ft tall bush with zero maintenance for 10 years. I took a couple of cuttings of this great specimen. I didn't think it would do anything but it seems to have sprouted some new growth this spring! It's alive!

The bottom photo is my finger lime. I've had it for 3+ years and sadly no sign of fruit. There are some flowers but they fall off. Sometimes a black and yellow thorny caterpillar eats the leaves at the branch tips.

Could you please post it in your next newsletter and ask the community if they have suggestions about making it fruit? I've also attached a photo (above) of me and my new bub, Layla, as it's always nice to put a face to a name.

Ed. Rebecca has posed a problem faced by many inner city residents. How do you get to successfully grow native plants on balconies? Perhaps some of you might have a few tips to share with her. Can we turn a balcony into a threatened plant sanctuary? Her second problem is how to get a Finger Lime to fruit. I suggested Sulphate of Potash when the plant starts to flower. Any other suggestions would be very welcome. Her plant certainly looks healthy and the photo gives you an idea of the environment.

From the members (cont.)

Mark Abell (NSW) sent these photos of *Eucalyptus pumila* and the wine which celebrates this rare tree. The Pokolbin Mallee is listed as Vulnerable on the EPBC list. It grows naturally in a frost free location at an altitude of 200 - 250m ont he northerly aspect of a very steep hillside at the foot of the Brokenback Range behind the Chateau Francois Winery. A special Flora reserve was created to protect the major stand of this unusual tree. The wine is a Semillon. All photos by Mark Abell.

Studying the critically endangered Purple Wattle

Published Bush Heritage Australia

Sep 2017 Paul Williams

Thanks to Victoria Tanner for the link.

Acacia purpureopetala is a small wattle with attractive pink/purple flowers – it's the only Australian wattle with purple flowers in fact! It has a restricted distribution in north Queensland, growing in the Atherton to Mt Garnet district. *Acacia purpureopetala* is listed as critically endangered and is one of the Australian Government's 30 priority threatened plant species. In association with CSIRO, NSW Herbarium and Vegetation Management Science, we're undertaking an evaluation of *Acacia purpureopetala* populations to better understand the management requirements of this unique wattle.

Funded through the Australian Government Threatened Species Recovery Plan, this project is documenting the current extent of *Acacia purpureopetala* populations and searching for undocumented, additional populations. So far our surveys have uncovered 200 new plants, which increases the total known population to 700!

We're also evaluating the plant's responses to disturbances and threats to long-term population stability. We'll use DNA analysis to understand the species genetic variation across its range and undertake a seed germination trial to assess the propagation requirements of this rare species.

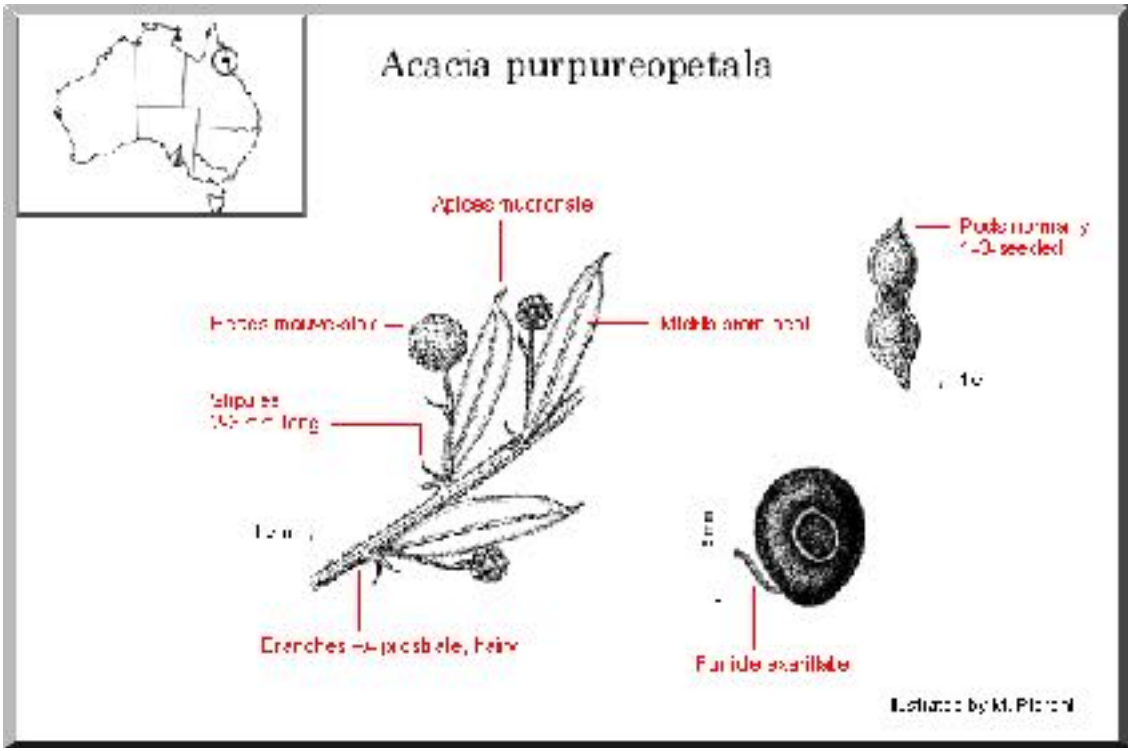
Acacia purpureopetala in flower

Image: http://worldwidewattle.com/imagegallery/image.php?p=0&l=p&id=20588&o=4

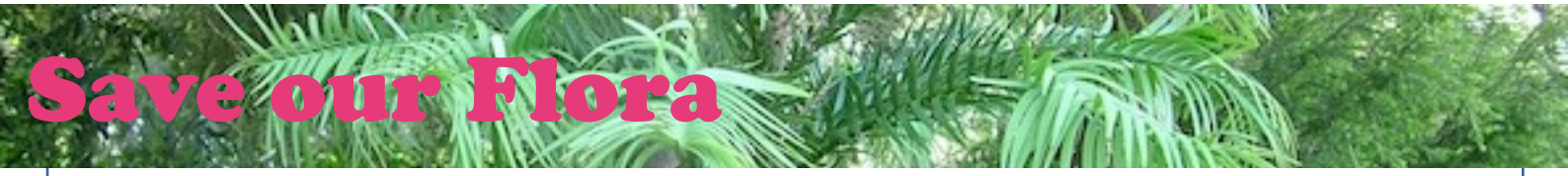
Acacia purpureopetala close-up

Image: M. Hitchcock

Ref: https://www.bushheritage.org.au/blog/studying-the-purple-wattle?utm_source=Connect&utm_medium=email&utm_campaign=blog-spr17



Acacia purpureopetala
Diagram
Image: http://worldwidewattle.com/speciesgallery/purpureopetala.php



Save our Flora

Botanic Gardens Conservation International (BCGI) News

https://www.bgci.org/news-and-events/news

20 November 2017

Islands are hotspots for threatened species. Mauritius has 24 trees reported on the IUCN Red List to have less than 50 remaining individuals in the wild, Madagascar has 24, and Fiji has 17. This is not surprising as islands often contain endemic species with limited opportunity to become established elsewhere. Red listing and conservation action for threatened trees on islands is therefore a priority for the Global Trees Campaign.

At the start of November 2017, BGCI ran a training course in Mauritius to build capacity for seed collection from Critically Endangered trees. Participants attended from botanic gardens, NGOs, private conservation initiatives and government institutions from Mauritius, Rodrigues, Reunion and the Seychelles.

Over four days, the participants learnt how to collect good quality seed from threatened species to establish conservation collections and prepare for species recovery programmes, through a combination of theory and practical sessions. Theory sessions used the seed conservation training modules developed as part of BGCI's Global Seed Conservation Challenge. Trainers included staff from BGCI, Missouri Botanical Garden, the Mauritius Wildlife Foundation and Ehsan Dulloo who has a long career working on tropical tree seed with Bioversity International and the World Agroforestry Centre.

As part of the course, the group visited Petrin, a site managed by the Mauritian National Parks and Conservation Service, where participants learnt what equipment they need for seed collection, how to assess whether a population is ready for collection and how to make a herbarium specimen.

The group also visited Ile aux Aigrettes Nature Reserve, an island with an area 26 hectares that is situated 800m off the South East coast of mainland Mauritius, managed by the Mauritian Wildlife Foundation. Ile aux Aigrettes provides habitat for the best remaining population of *Diospyros eggretarum*, a Critically Endangered tree that used to be a dominant coastal species on Mauritius, but was heavily harvested for timber and fuelwood. On Ile aux Aigrettes the participants made seed collections, performing a population count, taking herbarium vouchers, photographs and filling in data capture forms, and tracking individual mother plants – learning best practice for seed collection from Critically Endangered species.

A seed collection challenge fund has been launched following the training course, which participating institutions can apply to. Funding will be awarded to institutions who submit well-planned proposals to collect seed from Critically Endangered trees for conservation programmes, using the skills they learnt in the training course. The training course and challenge fund will help secure a future for Critically Endangered trees from the Indian Ocean Islands.

The training course also provided an excellent opportunity for staff from botanic gardens across the Indian Ocean Islands to meet each other and learn about their conservation and education programmes. BGCI aims to raise funds for future training courses and collaborative projects to build capacity for conservation in these botanic gardens.

Ed: Australia has many islands which will also submerge with rising sea levels. Does anyone know of threatened species on these islands and of any conservation work being carried out?

Fungi in Australia

This freely downloadable e-book (PDF format), which consists of 9 parts, is intended to serve as a resource to assist in the identification of some fungi that may be encountered in our native forests. It contains 340 species and over 1700 photographs of fungi, plus references for further study. All books have an interactive "Table of Contents" and "Index" for ease of navigation.

Part 1 "Introduction" introduces you to *Fungi In Australia* and also to the **Kingdom Fungi**.
Part 2 "Ascomycota: Pezizomycotina" contains the descriptions of ascomycetes.
Part 3 "Basidiomycota: Agaricomycotina : I" contains the order Agaricales, which includes most of the gilled fungi.
Part 4 "Basidiomycota: Agaricomycotina : II" contains the rest of the orders that make up Agaricomycotina, which are predominantly species of non-gilled fungi.
Parts 5, 6, 7, 8, and 9 comprise the "Photographic Guides", which can be used in the field to assist in the identification process.

These books are best read on a tablet or iPad, but any device or computer with an up to date PDF reader will also suffice. It is our intention to keep adding to the species list as more identifications become available.

Fungi In Australia may be freely downloaded. If you find it interesting or useful would you please make a donation of at least $10 to the **FNCV**.

Go to: http://www.fncv.org.au/fungi-in-australia/

Thanks to Pine Rivers Branch Native Plants Qheensland Newsletter Vol 21, No 8 for the contributions on this page.

New species of Eremophila (Scrophulariaceae): thirteen geographically restricted species from Western Australia

Nuytsia 27: 253–283
The journal of the Western Australian Herbarium
Published online 13 December 2016

'Commonly known as poverty bushes, emu bushes and native fuchsias, Eremophila R.Br. species are among the best known members of the tribe Myoporeae Rchb. (formerly the family Myoporaceae), a group of plants largely confined to Australia and the South Pacific islands but also found in South Africa, Asia, Hawaii and the West Indies…

We present here 13 new species, the majority of which appear to be highly geographically restricted. Most are found in very specific habitats and have a limited opportunity to migrate outside their current ranges.
Eremophila ballythunnensis Buirchell & A.P.Br., sp. nov
Eremophila capricornica Buirchell & A.P.Br., sp. nov.
Eremophila daddii Buirchell & A.P.Br., sp. nov
Eremophila ferricola Buirchell & A.P.Br., sp. nov
Eremophila hamulata Buirchell & A.P.Br., sp. nov.
Eremophila jamesiorum Buirchell & A.P. Br., sp. nov
Eremophila laccata Buirchell & A.P.Br., sp. nov.
Eremophila pusilliflora Buirchell & A.P.Br., sp. nov.
Eremophila regia Buirchell & A.P.Br., sp. nov.
Eremophila resiliens Buirchell & A.P.Br., sp. nov.
Eremophila scrobiculata Buirchell & A.P.Br., sp. nov
Eremophila victoriae Buirchell & A.P.Br., sp. nov.
Eremophila yinnetharrensis Buirchell & A.P.Br., sp. nov.

Descriptions, details, photos and maps can be viewed in the pdf. documents available on

https://florabase.dpaw.wa.gov.au/science/nuytsia/780.pdf

Two more new Eremeophilas

Eremophila buirchellii A.P.Br., sp. nov.
Eremophila calcicola R.W.Davis, sp. nov.

https://florabase.dpaw.wa.gov.au/nuytsia/article/782

Species under threat

Commercial Horticulture Australia July/August 2017

As myrtle rust starts to make a big impact on areas of native vegetation in eastern Australia, botanists are forecasting the extinction of some native Myrtaceae species in the wild.

Writing in the Botanic Gardener (issue 48) botanists Brett Summerell and Bob Makinson report that some adult plants are being killed at high rates while fruit production and seedling recruitment has either been severely reduced or effectively ceased due to the disease. Brett Summerell is Director Science and Conservation, Botanic Gardens & Bicentennial Parklands. Bob Makinson is Convenor, Myrtle Rust Environmental Impacts Working Group and Vice-President, Australian Network for Plant Conservation Inc (ANCP).

Since its arrival on the east coast of Australia in 2010, myrtle rust has proved capable of infecting more than 370 host species in the Myrtaceae. Some species originally thought to be resistant have also proved to be vulnerable after experiencing multiple infections. The status of two species of Rhodomyrtus (R. psidioides and R. rubescens) has gone from not threatened to drastic decline in just four years of exposure to myrtle rust.

Many of the high-risk species are not well represented in seed banks as they have seeds that are storage intolerant. Populations of native Myrtaceae species growing in botanic gardens where they can be protected from the deadly effects of the disease will become vital for future work to develop disease-resistant plants. Brett Summerell and Bob Makinson recommend that retention of cultivated species at high risk of infection in the wild should be a priority.

Plants, People, Planet (from BGCI News)

The vision of Plants, People, Planet is to promote and celebrate outstanding plant-based research in its broadest sense and become the 'go to' journal for everything new, innovative and exciting in plant sciences that is relevant to society and people's daily lives.

Plants, People, Planet aims to publish outstanding research across the plant sciences, placing it firmly within the context of its wider relevance to people, society and the planet. We therefore encourage scientists to consider carefully the impact or potential impact of their research on people's daily lives, on society, and on the world in which we live. We welcome submissions from all areas of plant sciences, from ecosystem studies to molecular genetics, and particularly encourage interdisciplinary studies, for instance within the social and medical sciences and chemistry and engineering.

Plant science is a rapidly-moving field, and as such, Plants, People, Planet offers a platform for new and emerging plant science subject areas that have the potential for societal impact. To highlight the impact or potential impact of the research to society all submissions should be accompanied by a 'societal impact statement'.

For more information on the journal please download the flyer,
visit www.newphytologist.org/plants-people-planet
or email PPP@lancaster.ac.uk.

Save our Flora

Another Rare Plant at WAMA

(Wildlife Art Museum of Australia)
Northern Grampians Victoria
Neil Marriott, Site Development Team Leader

At the August working bee at WAMA, we were thrilled to find seedlings of the nationally rare and endangered *Grevillea gariwerdensis* coming up close to plants we had propagated and planted near the creek in the bushland covenant area of the property. This grevillea is now only found in several very small areas in the Grampians; the major population occurs along the Halls Gap-Roses Gap Road just north of Plantation Picnic Ground, while another small population occurs along Serra Road in the Victoria Valley.

There used to be a local population occurring naturally not far from WAMA, down the Pomonal-Halls Gap Road, just opposite the old CFA shed. Sadly, this population was badly reduced by roadwork, and then it seems to have been completely wiped out by the 2006 bushfires that swept through this part of the Grampians. Because of this, I felt it would be good to establish a population of *Grevillea gariwerdensis* on the WAMA site as it is so close to where the species originally grew. It may have even occurred here naturally before white man came and cleared large tracts and introduced rabbits, deer and hares!!

These young grevilleas were grown from both cuttings and seedlings and were planted on the WAMA site in suitable, similar soils and communities in sandy swampy sites just like it used to grow in up the road. And as if to prove that we got it right, we have now discovered natural recruitment of seedlings around the original plants, which have thrived and flowered strongly for the last two years.

This is extremely exciting as the species is now so rare in the wild. If this recruitment continues at the same rate, we may soon have a large and healthy population occurring naturally on the property. There is funding available for conservation of endangered plants and animals and it may be that we become eligible for funding to protect and enhance this beautiful Grampians endemic species.

Grevillea gariwerdensis is a small shrub to around 1m high and around 1-1.5m wide, with simple narrow linear leaves and massed white, cream or pale to bright pink flowers from winter through to early summer. It attracts lots of native bees, wasps and other insects to its sweetly perfumed flowers, with many of these insects being parasitic on pests such as aphids and thryp. As a result of its showy flowering and lovely soft foliage it also makes a lovely garden plant, and is becoming more widely known in the nursery trade.

NSW Draft Legislation

Land management and biodiversity conservation reforms Biodiversity Conservation Investment Strategy

The draft Biodiversity Conservation Investment Strategy 2017-37 has been released for a four week exhibition period ending on 15 December 2017. When finalised, it will be made by the Minister for the Environment under the *Biodiversity Conservation Act 2016*.

You can view the draft strategy and supporting information on the Office of Environment & Heritage website and Have your Say.

The *Draft Biodiversity Conservation Investment Strategy 2017–2037* sets the government's priorities for investing in private land conservation over a 20-year period. It will guide the newly created Biodiversity Conservation Trust to deliver the government's investment in private land conservation – $240 million over 5 years and ongoing funding of $70 million each following year, subject to performance reviews.

Save our Flora

Australian Network for Plant Conservation News - Nov. 17

SAVING THE THREATENED AUDAS SPIDER-ORCHID (CALADENIA AUDASII) FROM EXTINCTION

Caladenia audasii has less than 8 plants remaining in the wild. It is endangered under the federal Environment Protection and Biodiversity Conservation Act (1999) and listed under the Victorian Flora and Fauna Guarantee Act (1988).

Three of these plants fall within the Grampians National Park and associated reserves (two of which were discovered in community surveys in 2016). These plants urgently need supplementation to remain as viable populations into the future. With such low numbers left in the wild, the populations are not sustainable and every plant has critical importance for the long term recovery and genetic resources for this species. Pollinator identification is also critical to manage the ecology of this species and reduce incidental harm to the pollinator through ignorance of its habitat requirements.

Under a previous grant, the ANPC worked with the Friends of Grampians Gariwerd (FOGG) and the Royal Botanic Gardens Victoria (RBGV) to fence the one remaining *Caladenia audasii* plant in a reserve near Stawell, an action which resulted in no grazing impacts and the first ever seed being collected for propagation. The RBGV then worked with the Department of Environment, Land, Water and Planning (DELWP) to propagate and re-introduce 50 plants back into another population near Bendigo.

This project, funded by DELWP through its Biodiversity On-ground Action grants from November 2017 until March 2020, will involve:

- Fencing of the newly discovered plants at one site in the Grampians to protect them from grazing kangaroos, wallabies and rabbits.

Caladenia audasii (Image: ANPC)

- Identification of the pollinator for this orchid and its distribution, through guided volunteer pollinator baiting work (assisted by RBGV and ANPC staff).
- Seed collection from the fenced sites.
- Propagation of *Caladenia audasii* seedlings by RBGV.
- Re-introduction of approximately 200 plants, with community volunteer assistance from FOGG and the Australasian Native Orchid Society (Victoria Group) Inc.
- Installation of cages around reintroduced plants.
- Guided community surveys (over 500 hectares) near the two newly discovered sites for any additional plants that may not have been seen previously.
- Using the data collected to update IUCN listings, the Atlas of Living Australia, the Australian Virtual Herbarium and the Victorian Biodiversity Atlas.
- Training of volunteers in survey techniques, plant reintroductions and pollinator baiting.
- Community participation and education in an endangered plant reintroduction - an important element of reintroduction success as it engenders local ownership and ongoing interest in the species and surrounding habitat.

Contact the ANPC for further information.

ANPC News (cont.)

Climate change threatens Australia's rock orchid, Wet Tropics could become 'critical refuge'

ABC Far North
By Brendan Mounter and Sharon Molloy
Updated 31 Oct 2017, 3:47pm

http://www.abc.net.au/news/2017-10-31/climate-change-threatens-australian-rock-orchid/9103394

PHOTO: The Wet Tropics in Far North Queensland could become a climate refuge for the Australian rock orchid. (Supplied: Tapio Linderhaus)

A native orchid species could be wiped out due to climate change in all but the Wet Tropics of Queensland, according to new research.

The Australian rock orchid (Dendrobium speciosum) grows prolifically along a 2,500-kilometre stretch of Australia's eastern coastline from Cape Melville in Far North Queensland to Genoa in Victoria. James Cook University PhD candidate Lalita Simpson was alarmed to find that the species was at risk, in research just published in the journal Molecular Phylogenetics and Evolution.

"We modelled the distribution of this orchid under future climate scenarios in 2040, 2060 and 2080," Ms Simpson said. "Even by 2040, we saw declines in suitable habitat and by 2080 we saw many of the populations in Queensland, except for the Wet Tropics, would be under a different climate."

The evidence was modelled on average global temperatures warming beyond a two-degree increase. Under that scenario, Queensland's world heritage-listed Wet Tropics, between Townsville and Cooktown would become a critical refuge for the flower due to the altitude and the climatic stability across the region's mountaintops. "It's been shown those mountaintops have maintained a stable climate even throughout quite significant climate shifts in the past," Ms Simpson said.

Ms Simpson's genetic study of Australian rock orchids also found that Dendrobium speciosum, which only occurs in Australia and previously was thought to consist of up to 11 species, was in fact a single species with two subspecies, one northern and one southern. The northern subspecies is the most at risk due to climate change.

Australian Tropical Herbarium director Professor Darren Crayn said the study proved how important climate change was for the evolution of biodiversity, both creating and extinguishing it. "Ancient climate change drove the evolution of the two subspecies of rock orchids from their common ancestor, and now it looks like future climate change will reduce one of them to a small fraction of its current distribution," he said.

Dr Mark Clements said samples were collected from across the entire species range along the east coast of Australia and took more than 30 years to accumulate.

"The results resolve recent controversies regarding the best classification for this grand orchid, which is one of Australia's truly iconic and recognisable indigenous orchids," he said.

The study was co-authored by Dr Darren Crayn and Katharina Nargar at the Australian Tropical Herbarium, and Mark Clements at the Australian National Herbarium.

ANPC News (cont.)

Flora of Australia now available online

Flora of Australia is available on a new digital platform that makes Australia's plant taxonomic information more accessible and user-friendly. It has information on the names, characteristics, distribution and habitat of Australian plants—14,000 profiles are already available online, with more on the way. While the main audience is botanists, Flora of Australia will also be useful for conservation and land managers, government/policy makers, researchers and members of the community with an interest in Australian plants. The new digital Flora of Australia was a joint project of the Australian Biological Resources Study, the Council of Heads of Australasian Herbaria and the Atlas of Living Australia. A huge thank you to taxonomists in Australia and New Zealand for a monumental collaborative effort. Flora of Australia is available here.

Research to support Myrtle Rust management

Myrtle Rust (*Puccinia psidii*) is a serious pathogen that impacts plants in the Myrtaceae family which includes eucalypts, bottlebrushes and paperbarks to name just a few. The National Environmental Science Program and the Plant Biosecurity Cooperative Research Centre are co-funding a project led by Mr Bob Makinson – the National Review and Proposed Action Plan for Myrtle Rust. The project is delivering a comprehensive review of Myrtle Rust distribution and biology in Australia that will outline the currently known impacts on native species and ecological communities. It will identify knowledge and management gaps, primarily focussing on native biodiversity but with consideration for the potential impacts on production systems, genetic resources, social amenity and cultural values. The review will help to guide the development of a draft National Myrtle Rust Action Plan that presents options and recommendations for practical actions to secure seed and plant tissue from highly threatened species, monitoring activity implementation, research needs, and long-range actions to minimise species decline or extinction. A recent article in the Saturday Paper highlights the threat that Myrtle Rust poses to our unique native plants.

Protecting paradise – restoring the flora and fauna of World Heritage listed Lord Howe Island - RegenTV

Hank and Sue Bower, from the Lord Howe Island Board describe a unique assisted regeneration project that is aiming for complete eradication of vertebrate and weed species due to the isolation of Lord Howe Island. The World Heritage status and legal framework provides for unhindered access to all terrain across the island, enabling all pest populations to be targeted thanks to a strong community engagement, effective communication and whole of island monitoring.
Download video here.

Watching Macquarie Island transform after a massive intervention

http://www.nespthreatenedspecies.edu.au/news/watching-an-island-transform-monitoring-macquarie-island-after-a-massive-intervention Sat, 21 Oct 2017

In a time of rampant biodiversity decline, it's heartening to consider that sometimes, when we set our minds to it, grand things can be achieved. For that is exactly what happened on sub-Antarctic Macquarie Island where a multi-million dollar eradication program saw the removal of rabbits, rats and mice in 2013. In the aftermath of this effort, beautiful things are emerging. **Dr Justine Shaw** from the University of Queensland is leading a TSR Hub project seeking to learn from this experience and monitor how ecosystems respond. Here she explains what has happened.

Grey Petrel Image: TSRH

Far to the south of the Australian mainland lies a large chunk of rock and soil known as Macquarie Island; it's about 1500km from Hobart. So special is this place that it is on the World Heritage register as a geologically unique island with incredible aesthetic values. It is also a treasure trove of endemic and threatened species. But the natural values of this World-Heritage island have been steadily eroding over the past century as the island's physical and biological structure has been under relentless attack from a several vertebrate invaders.

The island was an important destination for seal hunters who, over 180 years ago, took cats to the island. Several decades later they released rabbits as a food source and unintentionally introduced rats and mice. All of these mammals made the island their home. Over time these species pushed several native species to the edge of extinction (and caused the extinction of at least two endemic bird subspecies). And the rabbits had devastating impacts on the island's cover of native vegetation (leading to significant soil erosion).

Macquarie Island is currently home to 12 EPBC-listed species; an endemic orchid, endemic cushion plant, an endemic cormorant, 3 species of burrowing petrel, four species of albatross, two species of giant petrel, two species of seal and the Antarctic tern. Many of these species were preyed upon by cats and rats, or indirectly impacted through disturbance and habitat loss by grazing rabbits, or changes in predation pressure due to prey availability. Mice had a big impact on native invertebrates (and specifically spiders).

So, while Macquarie is yet another horrible example of what a small group of non-native species can do to an island ecosystem, it is also turning out to be a wonderful case study and learning opportunity of what can be achieved if those invaders can be removed.

Since the 1970s rabbits were controlled through the introduction and continued deployment of the myxomatosis virus. Feral cats were eradicated from Macquarie in 2000 but it was always acknowledged this partial solution wasn't enough. The motivation for cat eradication at the time was to ensure that burrowing petrel species did not go extinct on the island, which was achieved. Rabbits, rats and mice remained on the island. The rabbit population went through another explosion in the 2000s, due most likely to the eradication of cats, a reduction in the efficacy of myxo and vegetation recovery due to previous myxo success. The big breakthrough came with the successful eradication of rabbits, rats and mice in a program that commenced in 2013 through a large-scale aerial baiting program that cost $24.8 million (that also included targeted follow-up hunting). It was the largest, most ambitious and most expensive multi-species vertebrate eradication program ever attempted in Australia. (The eradication was jointly funded by the Australian and Tasmanian state governments. Logistic support was provided by the Australian Antarctic Division.)

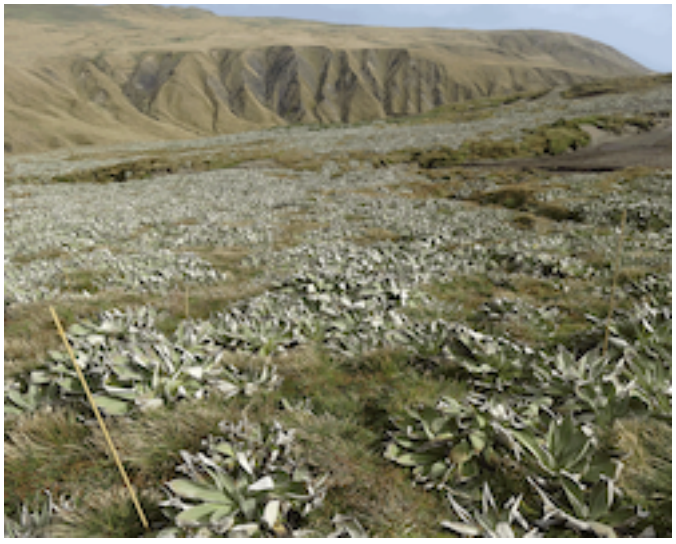
How has the island ecosystem responded to such a large-scale management intervention? I've been privileged to lead a project to find out. I have assembled a team of collaborators; scientists from other universities (Melbourne, Monash, UTAS), and Tasmanian state and federal government agencies. As part of this effort we have recruited three PhD students who will examine different aspects of species and ecosystem recovery. Two are based within the TSR Hub at the University of Queensland, one is at the Institute of Marine & Antarctic Studies at the University of Tasmania.

The first stage of the project has been to trawl through a variety of historical sources and databases to collate records of where species have been observed and studied. We are using archival imagery and remote sensing to identify when and where rabbit grazing and burrowing had the greatest impacts on vegetation and threatened species habitat. This work is in conjunction with the Tasmanian Parks and Wildlife Service.

New field data have been collected, and more is proposed in years to come, with the goal of tracking ecosystem change into the future. All of these elements will assist in the development of an optimal long-term monitoring strategy for the island. Furthermore, this project will quantify the conservation return-on-investment of the eradication program. The hope is that we can assist with decisions relating to island eradications all around the planet.

We have identified several 'obvious' candidates for monitoring. Among these were some of the invertebrates found on the island (including spiders). They were a major prey item of mice, and to a lesser extent rats, and rabbits greatly transformed their habitats. They play a major role in nutrient cycling on the island.

Burrowing petrels are another good target for monitoring. They were preyed upon by cats and rats, and their nesting habitats were greatly altered by rabbit grazing. While it has been assumed they will recover, we currently have little data to support this. We do not currently know if all species will respond the same and at the same rate.



Pleurophyllum hookeri now recovering Image: TSRH

Skuas are another focus. This native predatory bird ate rabbits, and some were poisoned during the eradication process (an anticipated but unavoidable form of collateral damage of the project). Skuas also prey on burrowing petrels so there are some interesting and complex feedback interactions that are likely to play out now that the cats, rats and rabbits are gone, and the prey available to skuas has changed. It is of great relevance to managers and threatened species scientists (locally and globally) to determine the impacts of skua predation on threatened borrowing petrels.

What have we found so far? 'Good' responses on the whole. Preliminary work by PhD-student Melissa Houghton has shown that spiders are increasing in abundance and distribution following the rodent eradication. Grey petrels have increased since cat eradication. As they are listed under the Agreement on the Conservation of Albatross & Petrels, there is much interest in determining their population status and future trajectory. As already mentioned many brown skuas (several hundred) died during the eradication process when they ate poisoned rabbit carcasses. But what happened afterwards? Preliminary results collected by PhD-student Toby Travers show a reduction in the breeding population and the reproductive output of the island skua population.

This summer we will focus our efforts on investigating how the brown skua diet has changed following rabbit eradication, particularly to understand what the predation pressure may now be on burrowing petrels.

The burrowing habit of the petrels makes then very difficult to monitor. Last summer, bio-acoustic recorders were deployed on Macquarie Island to survey the nesting burrowing petrels (for the first time). PhD-student Jez Bird will undertake more field work this coming season that resurveys areas where we have historic data. This will enable us to estimate trends in relative abundance and the breeding success of these petrels. Jez will review existing methods of species monitoring, and examine known sites to identify an island-wide approach to monitoring seabird presence and abundance.

It is planned that all three PhD students will be travelling south this summer to undertake more field work. The Tasmanian Department of Primary Industry, Parks, Water and Environment is a key collaborator in this project. The project is also funded and supported by the Australian Antarctic Science Program.

No-one can forecast what they will find because what is happening on Macquarie Island is without precedent. I can say, however, there is an enormous sense of excitement as the island's native ecosystems begin to recover after a century and a half of disruption.

There is much greater value to the project than simply documenting change and informing management on Macquarie Island. Since the eradication, there have been other rodent eradications undertaken on sub-Antarctic South Georgia and Antipodes islands, and more are proposed for Gough and Marion Islands. The global island conservation research community is eagerly watching what happens on Macquarie Island in the hope that it will inform what we might do on other islands.

Justine Shaw on Macquarie Island Image: TSRH

For me the excitement of what is occurring on Macquarie Island is very personal as I have witnessed so much change on this unique sub-Antarctic island over recent decades. In my time I have seen the island inscribed as World Heritage; been present when cats were eradicated; and then the rats, mice, and rabbits removed. Now Macquarie is bouncing back with a tremendous growth in its unique native vegetation. We are seeing the return of the grey petrel, the recovery of endemic orchids, and who knows what's more to follow...

For further information

Justine Shaw j.shaw6@uq.edu.au

Wollemi Pine

Last Bulletin I asked if anyone had successfully germinated Wollemi Pine seed. I posted something on my FB page and this appeared.

Seedling Wollemi Pine
Greg Bourke - Curator/Manager of the Blue Mountains BG Mt. Tomah.

On the NSW Native Plant Identification FB page Greg Bourke stated:

'The good news is we have over 300 seed grown plants now which is roughly 3x what's in the wild. This is one endangered species that has a bright future'.

Project WildEyre

Calgaroo August 2017

WildEyre is a vast conservation project covering over 1.2 million hectares of the spectacular west coast of the Eyre Peninsula in South Australia. Stretching across over 300km of coastline, WildEyre showcases a diverse range of natural landscapes: from rugged cliffs, windswept beaches and sheltered coastal bays, to wetlands, majestic gum tree woodlands and huge expanses of mallee.

The area is recognised as nationally significant in terms of biodiversity conservation. Such a huge variety of habitat gives rise to a unique suite of flora and fauna species, many of which are endemic. This means they are found nowhere else on Earth - making the conservation and restoration on the Eyre Peninsula even more important.

Mount Annan Plantbank

Calgaroo August 2017

The general aim of the Plantbank is to preserve and study the seeds of all 6000 plus plants in NSW and the 25,000 plus plant species in Australia. Staff mount gathering trips periodically to bring in seed from different species. Samples are usually representative of the plants in the wild rather than just the best specimens. Most are dry land plants where the seed can be preserved fairly easily. The active part of the seed is separated from the surrounding chaff, it is then dried at 15°C and 15% humidity, then sealed in metal foil packets and stored in the vault at -5°C. For most species this will maintain the ability to germinate for many decades up to hundreds of years. Not all of the sample is stored at Mt Annan – parts are forwarded to other plantbanks around the world.

Mt Annan's major partner in this process is the Millenium Seedbank at Kew Gardens in the UK. Wet area plants and rainforest plants are not as easy to handle. The seeds are often larger with more flesh and require specialised techniques to preserve them. Plant tissues and seeds are prepared in special bottles and then stored in the vapour from liquid nitrogen at -196°C. This process preserves them almost indefinitely. The Plantbank building is an excellent facility and cost $20 million to build. It has been going for some years now and will take another 20-30 years to accumulate all the species of interest – it has plenty of capacity to accommodate this. As existing samples age there will also be the need to replace them periodically. The Plantbank also has a nursery to check seed viability in a practical way and this also provides specimens for the Botanic Garden and various ecological experiments.

20th September 2017
Australian Garden History Society

Cosmopolitan Conservationists
Greening Modern Sydney (Peggy James 2013)

Peggy James writes about Sydney's interwar cosmopolitan conservationists who, along with their professional and social networks, shaped many government initiatives, policies, and legislative reforms that aimed at making Sydney a beautiful garden city. They called for 'green belts' to protect Sydney's bushland, parks and open spaces; something later to unravel. Their networking and cooperation provided a powerful counterforce to the dominant message of 'progress'.

Many of these early 20th Century conservationists were well off, well educated, well connected and well travelled. They had influence with politicians, the legal profession, public servants and the media. Often they had interstate and international connections. They embraced social justice issues such as women's rights, prison reform, peace, alternative spiritualties and the recognition of Indigenous peoples. Two influential conservationists were David George Stead, founder of the Wildlife Preservation Society (1909) and Annie Forsyth Wyatt, founder of the NSW National Trust of Australia (1945).

David G. Stead was one of Australia's most significant early 20th Century conservationists. He was a self-educated naturalist and marine scientist who led the NSW Department of Fisheries for many years. He grew up in North Sydney in the 1880s and roamed its bushland and its harbour foreshores. There he witnessed the sewerage and industrial pollution dumped into Sydney Harbour that contributed to the 1900s plague. Not only did David Stead play an influential role in the Wildlife Preservation Society for many years but he was also extraordinarily active in many other learned societies such as the Aquarium, the Naturalists', the Geographical, the Australian Forest League, the Town Planning Association, the Gould League of Bird Lovers, and the Royal Zoological Society of NSW. The Wildlife Preservation Society was one of Australia's first conservation groups to campaign to end the massive koala hunting culls of the 1920s.

Annie Forsyth Wyatt was passionate about Australian heritage as well as being an unashamed 'ardent tree lover'. She grew up in Rooty Hill in the 1890s where she witnessed the 'wanton destruction' of its bushland and fine colonial houses. This profoundly distressed her for the rest of her life. She went on to play a prominent role in protecting Balls Head Reserve, on Sydney Harbour (1931), and a reserve, overlooking Palm Beach (1938). Annie was also pivotal in protecting Sydney's Blue Gum High Forest in Pymble-St Ives - one of Sydney's most significant and rare forests. Annie was instrumental in founding the Kuringgai Tree Lovers' Civic League (1927) and later the National Trust (1945) based on the English National Trust (1892).

Others:
Walter Burley Griffin 1876-1968
Australia's National Capital Canberra.
Architect for Stella James House, Avalon, now a National Trust (NSW) property. Walter Burley Griffin Society continues his work today.
Legacy: Castlecrag, Bushland at Middle Harbour

Charles Bean 1879-1968
WW1 historian who celebrated the Gallipoli Legacy. Established War Memorial at Canberra.
Parks & Playground Movement that promoted the value of parks and playgrounds for a healthy nation. Up until the 1960s, healthy, intact, healthy bushland existed close to Sydney.
Legacy: Garigal National Park

Marie Byles 1900-1979
First practicing woman lawyer who provided the legal advice to many conservation groups.
Built 'Ahimsa', that became a property of National Trust (NSW).
Legacy: Bouddi National Park

Myles Dunphy 1891-1985
Elite bushwalker and wilderness campaigner.
Patron of the Colong Caves Committee that became the Colong Foundation for Wilderness.
Founding member of National Parks Association of NSW that campaigned for the 1967 National Parks & Wildlife Service.
Legacy: Greater Blue Mountains National Park

Save our Flora

Seed and Cuttings Exchange

Please send all requests directly to the person making the offer or the group email saveourflora@gmail.com
Please follow the correct protocols for requests of seed or cuttings. These are detailed on the next page. Please note that some species are in very short supply and cutting material may be limited.

Maria Hitchcock
16 Hitchcock Lane Armidale NSW 2350
Correa eburnea
Correa calycina
Callistemon pungens
Grevillea wilkinsonii
Zieria adenodonta
Zieria prostrata
Zieria floydii
I also sell some species through my online nursery coolnatives.com.au

Arthur Baker
55 Moran ST Gatton Qld 4343
Gardenia psidiodes
Grevillea quadricauda
Grevillea glossadenia
Eucryphia wilkiei
Graptophyllum ilicifolium
Xanthostemon formosus
Phaius tancarvilleae
Plectranthus nitidus
Zieria prostrata
Grevillea mollis?
Eremophila nivea
Dodonaea rupicola
Xanthostemon arenaris
X verticulutus/seeds or cuttings
Kunzea flavescens
K graniticola
Callistemon pearsonii
Callistemon flavovirens{seeds}
Melaleuca irbyana
Lilaeopsis brisbanica {Water plant}
Hernandia bivalis
Spathoglottis pauliniae {Tropical ground orchid}
Rhododendron Lachiae

Charles Farrugia (email saveourflora@gmail.com)
Eremophila denticulata ssp trisulcata
Eremophila denticulata ssp denticulata
Eremophila nivea (blue form)
Eremophila nivea (white form) - limited.
Eremophila vernicosa – extremely limited

Russell (email saveourflora@gmail.com)
Boronia clavata

Denise & Graeme Krake
752 Warrigal Range Rd. Brogo NSW 2550
Seed of
Hakea dohertyi
Hakea ochroptera
Hakea longiflora
Grevillea maccutcheonii

Geoff & Gwynne Clarke
Grevillea humifusa - cuttings
Angophora robur - seed
Dodonaea crucifolia - cuttings or seed
This was named a couple of years ago by Ian Telford who came down from Armidale to look over our block. Many people were calling it *Dodonaea hirsuta*, but it is not very hairy and has no hairs at all on the fruits. It also grows in a nearby flora reserve. If people would like to try this I can make it available when the material is ready. I have grown it successfully from cuttings, but it does not live long after planting out. It also produces seed and I can collect that after the next flowering (spring fruits). It grows happily around the block, popping up from seed here and there, produces plenty of seed, but it is not long lived even when self sown. Fruits are showy reds.

Bob O'Neill
7 Hillsmeade Drive, Narre Warren South, Vic. 3805
I want to increase our range of Lechenaultias and Correa pulchellas. Can anyone help us out? Both of these groups of plants are doing well for us at Narre Warren South, Vic. I would be delighted to offer cuttings from our range to interested people. Some plants may be available to people who are able to come to our home address.

Paul Kennedy (Leader ANPSA Hakea SG) (email saveourflora@gmail.com)
I have seed of *Hakea dohertyi* and a large plant of *Hakea ochroptera* from which cutting material could be taken. I also have a plant of *Callistemon megalongensis* which has not flowered yet, but cutting material would be available in autumn. The seed originally came from the Melaleuca Study Group seed bank many years ago.

Do you have any EPBC plants growing in your garden with sufficient foliage to share cuttings with our members? Let me know and I'll print it here. It would be easier if we can add your address so that members can contact you directly. Please make sure you follow the protocols on the back page. (Ed)

Save our Flora

Requesting and sending seed by post

Please follow these simple steps.

Make a request

1. Send your request by email first. It will be forwarded to the grower so you can request seed and ask for the address.
2.Send your request enclosing a self-addressed envelope with two 60c stamps attached. Post the envelope.

Send seed

1. When you receive an envelope with a seed request, package up the required seed which includes the name, provenance (if known) and date of collection. Add any tips on germinating the seed and post.

Receiving seed

1. Seed should be stored in paper (small manilla seed packets are best but any cheap envelopes will do) and kept in a cool dark place. Some people use those small paper lolly bags and staple them at the top. Add mothballs if you like. This will prevent insect attack. I save moisture absorbers from medicine bottles and add them to my seed drawer to ensure the seeds do not rot.

Seed life varies according to species. Acacias will last for many years while Flannel Flower needs to be really fresh. Old seed may not germinate and needs to be thrown out. Test some of your seed periodically. It's worth asking seed suppliers for the age of certain species of seed before purchasing.

Requesting and sending cuttings by post

Please follow these simple steps.

Make a request

1. Send your request by email first. It will be forwarded to the grower so you can request cuttings and ask for the address.
2. Purchase an Express Post small satchel for $10.55. it will hold up to 500 gms.
3. Self address your satchel and place it in an envelope with your cuttings request. Add a label/s with the name of the species and sender. Pencil is best for writing on labels.
4. Post the envelope.

Send cuttings

1. When you receive an envelope with a satchel inside, cut about 6 stems of the requested species. The best time to do this is early morning. Store cuttings in the crisper part of the fridge until they are ready to be posted.
2. Wrap the cuttings in damp newspaper and place them in a cliplok plastic bag. Make sure you label each parcel with the names of the species and sender. Squeeze air out of the bag and fasten top.
3. Put the bag in the satchel and post.

Receiving cuttings

1. As soon as you receive your cuttings put the unopened plastic bag in the crisper part of the fridge until you are ready to prepare them.

Group Members

ANPSA Groups
APS Melton Bacchus Marsh Vic
SGAP Ipswich Qld
SGAP Sunshine Coast and Hinterland Qld
APS Echuca Moama Vic
Crommelin Native Arboretum NSW
Swan Reserve Garden Vic

Botanic Gardens and Reserves
Hunter Regional BG NSW
Tamworth Regional BG NSW
Lindum Park Flora and Fauna Res.
Burrendong Arboretum Wellington

Nurseries
Bilby Blooms Binnaway NSW
Cool Natives Armidale NSW
Mole Station Tenterfield NSW
Forest Heart Eco-Nursery SE Qld

Seed Suppliers
Victorian Native Seeds

Study Groups
Acacia SG
Correa SG
Epacris SG
Garden Design SG
Grevillea SG
Hakea SG
Waratah & Flannel Flower SG