AUSTRALASIAN PLANT SOCIETY
NEWSLETTER

PENTACHONDRA

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An Australian garden in the Netherlands

AUSTRALASIAN PLANT SOCIETY

Newsletter Number 48

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Candlebark gums (*Eucalyptus rubida*)
Yarra River at Warburton, Victoria, February 2012

EDITORIAL: Still optimistic

Judy Clark

A year ago I wrote that I intended to be optimistic in 2011, on the grounds that surely we wouldn't get a fourth hard winter in a row. So I did indeed take a calculated gamble and put some tender-ish plants into the ground in my garden in Hastings. As I'm interested in Australasian species that will survive outside without artificial help such as fleece all I did by way of protection was to mulch them with grit. All were looking fine until the prolonged cold that pounced in early February, just when I was beginning to think I'd got away with it. Subsequently some did turn up their toes But many of my plantings were seed grown and I have spares of most of them. So what else to do but to try again until I get a winter warm enough for them to get their feet down? To steal a phrase from Tom Hart Dyke, who describes some of his experiences with Australasian plants in this issue (page 5), this is one of the joys of growing exotic plants in our fickle climate.

Despite the cold some of the young melaleucas grown from seed did survive; *Melaleuca gibbosa*, *M. thymifolia*, and *M. spathulata* plus two others whose identification awaits their flowering. One may be *M. viminea* and the other comes from seed I collected from a plant that I happened across in a garden in Playden, near where I live on the south coast of the UK. (Its branches *were* hanging over the path.) A small *M. pustulata* also survived but having been told that the species has survived in Tom Hart Dyke's garden where temperatures drop far lower than they do in mine this was not unexpected. A small *M. ericifolia* (planted between the shed and the fence where little else will grow) also survived as expected, as did my eight year old *M. squamea* (of which more on page 8).

I did lose small plants of *M. hypericifolia*, *M. wilsonii* and *M. nodosa* as well as larger specimens of *M. armillaris* and *M. lateritia*. The latter I find a most infuriating species; specimens in pots have survived the last two winters outside but all my endeavours to get it going in the ground have failed. My twelve year *M. squarrosa*, up till now dependable if not the most glamorous of shrubs, is still alive but looking most unhappy with lots of dead branches; why is another mystery.

Another survivor was bluebell creeper, *Billardiera heterophylla* (synonym *Sollya heterophylla*). In June I purchased two small plants at a market in Totnes, putting one in the ground immediately but not planting the other till September, in the shelter of a tree in a different part of the garden. Only the latter survived last winter, presumably reflecting subtle differences in microclimate.

But enough of my garden which presents nothing like the challenges of growing Australasians in the more northerly parts of continental Europe. Two articles in this issue

describe experiences of doing so in the Netherlands. Liesbeth Uijtewaal studied botany in the early eighties and did part of her study in Melbourne where she fell in love with the Australian flora. She started growing Australian plants in 1994 as a hobby and became a member of ASGAP (now ANPSA – Australian Native Plants Society (Australia)) in 1997 since when she has been back to Australia several times. She now opens her garden to visitors. John Purse suggested I reprint the article (page 24) which she wrote originally for *Australian Plants* and which was first published in December 2010. In contrast Maurits de Vries (page 29) has only recently started out, but his enthusiasm knows no bounds and he is already a passionate advocate of growing Australasian species.

Two articles about places to visit continue the European theme, albeit in a more forgiving climate. I'd never heard of either but both John Purse's erudite account of the eucalyptus arboretum El Villar in southern Spain **(**page 33) and Tim Darrington's delighted enthusiast's description of an Australasian garden on the French Riviera (page 35) made me want to get on the Eurostar and trek south immediately. Both are places that I'm sure I would otherwise never have come across and I'm guessing that they will be new to many APS members too. I would love more contributions like these; if you've found an inspiring or unusual place to visit then do tell us about it.

Other items in this issue focus on particular species. I shall be carefully following Jeff Irons' instructions about growing waratahs (page 16) as I was recently given one as a present and I've never tried a waratah before. Another article by Jeff reviews *Ozothamnus* species that are reliable in the UK (page 7). John Purse writes about a really cold tolerant eucalyptus (page 13) while Tony Entwistle reflects on his 60 years experience of growing eucalyptus (page 15). In the greenhouse Jeff Layman has been growing *Isophysis tasmanica* (page 11), an endemic Tasmanian species common in alpine and sub-alpine parts of western and southern Tasmania where it grows in wet moors and pastures. It is described by Wrigley and Fagg[1] as desirable but difficult but having been the lucky recipient of a rhizome from Jeff and seen it in flower I'd say it's more striking desirable than gorgeous desirable. Read Jeff's article and see if you agree.

Seeds of lots of the species referred to in this issue are on the APS seedlist. If you have been encouraged to try something new, or even to try propagation from seed for the first time, then do put in an order. If you would like more information about growing from seed don't hesitate to contact me (contact details inside back cover). I also welcome articles about members' experiences of growing Australasian plants from seed. There's always more to be said and it's the details that make such contributions so valuable. I've just sown seed from some old packets because I hate throwing things away and I didn't want to give away seed that might not be viable.

It will be interesting to see what germinates.

Last, but certainly not least, the 2012 AGM and national meeting will take place on August 19th at Cambridge Botanic Garden. It should be a good day and it would be great to see lots of you there.

Note

1.Wrigley JW and Fagg M, 2003, Australian Native Plants, 5th edition, Reed New Holland

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APS NEWS

Annual General Meeting 2012

On Sunday 19th August 2012 we will be holding our National Meeting and AGM at Cambridge Botanic Garden, Cambridge University. It contains a wonderful collection of over 8000 species planted throughout 40 acres (16 hectares) of landscaped gardens and glasshouses.

The outdoor Terrace Garden has recently undergone a major redevelopment to show the flora of New Zealand. The Temperate Glasshouse displays a range of plants from south western Australia and the Cape region of South Africa and other glasshouse collections include alpines and plants from tropical rainforests, arid lands and oceanic islands. Further attractions include systematic (order) beds, a chronological bed showing plant introductions to the British Isles, and a fern courtyard.

We will meet at the main Brookside Gate entrance on the corner of Bateman Street and Trumpington Road. The APS will pay the admission charge for attending members so please can you arrive around 10.45 so that we can enter as a group at 11 am. The Garden is open until 6pm and there is a café which serves lunch.

If you intend to come please advise our Meetings Secretary Amanda Kershaw (meetings@ anzplantsoc.org.uk or telephone 0151 639 7611) in case of any last minute changes. She can also provide more information, or go to www.botanic.cam.ac.uk/Botanic/Home.aspx.

Abbotsbury Subtropical Gardens

We will be visiting Abbotsbury Subtropical Gardens near Weymouth in Dorset (DT3 4LA) on Sunday 17th June 2012. This fantastic 20 acre (8 hectare) garden is filled with rare and exotic plants from around the world, many of which were the first introductions into the UK. It holds the National Collection of the New Zealand genus *Hoheria* and is also noted for its rhododendron and hydrangea collections, camellia groves, magnolias. You can even enjoy coastal views from the woodland walks. Facilities include a specialist plant nursery and a restaurant for meals and snacks, open until 5.30pm. Parking is free.

We plan to meet in the car park at 12 noon . If you are interested in attending please contact Meetings Secretary Amanda Kershaw (email meetings@anzplantsoc.org.uk or

telephone 0151 639 7611) to confirm that this time is suitable and for final details. And if you have any plants to swap bring them too.

For more information about Abbotsbury phone 01305 871387or go to www.abbotsbury-tourism.co.uk/gardens/index.htm .

Keep up to date

If you want to be kept up to date with news and events by email **please make sure we have your current email address.** Members who do not have access to email and would like information about events as soon as they become available should contact the Meetings Secretary.

From the Treasurer

The APS financial statement for 2011 is enclosed with this newsletter. In addition, if you have not yet paid your 2012 subscription you will find a polite but firm reminder to do so. If you have paid between the editor receiving the membership list and the publication of this newsletter then please ignore the reminder.

The Treasurer would again like to urge members in the UK to pay by standing order as this reduces the need for reminders to be sent. If you would like to do so please contact Jeremy Spon (details inside back cover) to obtain a standing order form to send to your bank.

2012 Seedlist

Seeds can be ordered using the form enclosed with this newsletter. For £4 (£5 for non-UK members) you get up to twenty packets of seed which represents tremendous value. That the APS can offer such a benefit to members is down to the hard work of seed manager, Richard Christmas. Richard would be grateful if seeds could be ordered as soon as possible, and by 30th June at the latest.

The seed on the seedlist comes from various sources, with most purchased but some supplied by APS members who have saved seed from plants grown from APS seed in the first place, or from seed of other known origin. Seed from members is welcome as long as it is correctly named and details concerning its origin and when and where it was collected are included.

New members

The APS would like to extend a warm welcome to new members Brent Hine, Mike Friend, Susana Leota and Ben Ram.

Pentachondra contributions

The deadline for the next issue is **31st October 2012** but there's no need to wait till then. You could write about a favourite plant, or about your garden, or about a place to visit, or about a book you've found particularly interesting; in short, any contribution that has at least a passing connection with Australasian plants will be most welcome. The same goes for photos and drawings, whether to accompany articles or as stand-alone items, but please, include captions. Length is not important

and short items of a paragraph or two are as much appreciated as lengthy articles about particular plants. And if you've any questions then don't hesitate to contact the editor.

Contributions should be sent direct to the editor (details inside back cover). Articles may be submitted electronically or as typed hard copy. Photos and drawings should be submitted electronically, preferably in separate files from the text, and not compressed before sending. Don't worry if files are large; my email seems to cope.



A LETTER FROM THE PRESIDENT

Tom Hart Dyke

Firstly may I take this opportunity whilst writing my first article for Pentachondra to say how much of an honour it is to become president of the APS. A fabulous society that in my view can't be horticulturally 'touched', even by the legendary RHS!

My passion for all things Australasian was instigated by my inspirational late gardening Granny and by the fact that in her old herb garden here at our family home at Lullingstone Castle in Kent she used to grow two regularly pollarded *Eucalyptus gunnii*, the Tasmanian Cider Gum. It was love and first sight; they turned my red blood cells green. Their fast growth rate astounded me and their heteroblasty tendencies seduced me, let alone the seductive oily smell of their leaves.

It was thus inevitable, and only a matter of time, that, armed with grants from the RHS and Kent Gardens Trust, I travelled down under to Australia's only island state, plant filled Tasmania. From January to April 1999 I scoured every corner of Tasmania collecting in seed from potentially hardy woody plants, particularly species of *Acacia, Callistemon, Billardiera, Pittosporum, Olearia*, and of course my beloved genus *Eucalyptus*. Seeing these plants in the wild was exhilarating and so fulfilling. Little did I know what was around the backpacking corner and that this Tasmanian expedition trip was to form the genetic material base to further extend my love affair with the wonderful world of Australasian flora. Thank God I sent my extensive seed collections home, totalling some 116 mostly frost endowed provenances.

On June 16th 2000 my life changed. A just turned fourteen year-old walked into a makeshift palm house where my friend and I were being held hostage in the depths of the Colombian jungle. He pointed an AK-47 at my head and said you've got five hours left before I blow your head off! Without hesitation I began scribbling in my diary my dream garden design plan as a way of dealing with the situation. After nine months in captivity we were eventually released with no explanation from that day to this. And my dream garden design, The World Garden, is now in full horticultural flow!

I love every aspect of The World Garden and the thousands of plant species that we grow in a one-acre mini map of the world format within the two acre (0.8 ha) old walled garden (photo page 9), but it's for the Australasian plants I cultivate that I have a real soft spot. Since planting out the mini mainland Australian and Tasmanian sections in 2005 it's been a real mixed bag of what has survived, what has been damaged, and what has died. It doesn't help being in a valley bottom in rural north west Kent, which is not affected by the heat island effect of Greater London, only a few miles away. A real challenge as you'll all relate to.

The biggest upset by far since the major 2005 planting was the early wintry blast of November - December 2010 with temperatures down to -15.2ºC in the walled World Garden and - 18.7ºC outside it, and some 20 days without an incremental rise above freezing. There was no warning of the cold, so these Aussie plants simply hadn't time to shut down properly and some were still growing. The now well established Australasian section, many from seed collected in 1999, was simply devastated. So surely any plants that survived are 'hardy'.

My horticultural hat goes off to the following plants. My 20 ft (6 m) broad centre piece to the mainland Australian section, *Eucalyptus perriniana*, the Spinning Gum, pulled through with only minor damage. Whilst on the subject of the Eucalypts I should also mention *Eucalyptus neglecta* (Omeo Gum) which has survived remarkably well and should be more widely grown. Even the bombproof *Eucalyptus pauciflora* or Snow Gum types had more damage compared to the Omeo Gum. And of course the stalwart *Eucalyptus gunnii* didn't let me down, only receiving minor lower branch death.

Every species of *Callistemon* was killed or levelled to the ground. Making the best recovery was *Callistemon viridiflorus* (synonym *Melaleuca virens*) the Green-flowered Bottlebrush (photo page 9) from seed I collected in Central Tasmania. Other woody plants to be virtually unaffected by this severe cold spell were the legendary *Prostanthera cuneata* (Alpine Mint Bush), *Melicytus angustifolius*[1] (Tree Violet), the splendidly spreading Tasmanian *Leptospermum rupestre* (Creeping Tea-tree) and an unscathed 10 ft (3 m) high Swan River Cypress, *Actinostrobus pyramidalis* from south west Australia. Finally other Australasian plants that deserve medals for their cold hardy resistance include *Parahebe perfoliata*[2] (Digger's Speedwell); *Diplarrena moraea* (White Flag Iris); *Orthrosanthus laxus* (Morning Iris); *Anemanthele lessoniana*[3] (Pheasant's Tail Grass); and *Stylidium graminifolium* (Trigger Plant). *Dicksonia antarctica* (Soft Tree Fern) survived with no protection at all. Lastly *Scleranthus biflorus*, the Mossy Scabweed positively thrived in the cold, as it should!

Well readers, since this severe cold spell it's been positively tropical

and with lots of gaps to fill, re-planting has been in full swing. Oh the joys of growing exotic plants in our fickle climate! Happy growing to you all in 2012!

Editor's note
1. The naming of tree violets is complicated but in Australia *Melicytus dentatus* has priority over *M. angustifolius* when the two are treated as one species.
2. This species was known as *Derwentia perfoliata* in Australia but there it is now *Veronica perfoliata*.
3. Still often sold as *Stipa arundinacea*.

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OZOTHAMNUS

Jeff Irons

My enthusiasm for plants has led me down several side tracks. One of them is the meaning of plant names. *Ozothamnus* is a tricky one. Robert Brown did not say why he had chosen the name, so we have to work it out ourselves. The usual explanation is that it comes from two Greek words, meaning smell and shrub. The Australian botanist Tony Orchard believes that the first part of the name comes from the Greek word for twig; several species are quite twiggy. I do not go along with him. Every genus has what is called a type species and while I do not know the identity of the type species for *Ozothamnus* I think it is likely to be *O. ledifolius.* A compact shrub, with the common name Kerosene Bush, it can scarcely be called twiggy. The common name comes not because it smells like kerosene but because the aromatic oil in its leaves makes it burn vigorously in bush fires.

I used to grow several species of *Ozothamnus* but after the 2010-2011 winter only two remain in my garden. They are the ones I shall describe, along with another that I know was uninjured in many gardens and another that should survive in dry soil.

Ozothamnus ledifolius has, as we might guess, leaves similar in shape to those of the genus *Ledum*. A dense compact shrub, suitable for small gardens, it takes a good many years to reach a metre in height. The hairy undersides of its young leaves and stems are covered with a yellow exudate that gives the shrub a bicoloured appearance. In summer sun this exudate makes the plant strongly aromatic. I have come across people who grow the shrub for this reason alone. In April or May the flower buds turn the plant to a terra cotta colour (photo page 10). After this magnificent display the creamy white flowers (photo page 10) come as a bit of a disappointment! While it can be put anywhere in the garden I believe that *O. ledifolius* can be made an all seasons plant by placing it where winter sun can shine through the leaves. Not unsurprisingly it has an RHS Award of Garden Merit. It does not take kindly to cutting back and if plants are to be kept compact they should be given a light clip over with shears after flowering.

Ozothamnus ericifolius has tiny leaves and a smell similar to but not the same as that of *O.*

ledifolius. Its habit is upright and unpruned specimens can reach 3m in height (photo page 19). Flowering is shortly after that of *O. ledifolius* and the buds are paler in colour (photo page 19). Like *O. ledifolius* it can self seed, particularly if there is a peat bed nearby. However self seeding is a rare occurrence and these two shrubs will never become weeds. Seedlings differ considerably in colour and while some have little colour contrast between their leaf surfaces others are quite pronounced. This shrub is rarely encountered in nurseries and is best grown from seed.

O. rosmarinifolius has two forms, a dark green leaved form from inland Australia (including Tasmania) and a grey leaved form from coastal Tasmania. This latter form is sold as 'Silver Jubilee' because it was introduced to commerce by John May in the year of the queen's Silver Jubilee. He had grown it from seed given to him by the Tasmanian native plant enthusiast Jeannette Closs. Both forms grow rapidly to about 1.8m in height and have attractive red flower buds which last for about a fortnight if cut for floral art. I no longer grow this plant but I guess that 'Silver Jubilee' was probably killed or damaged badly by the 2010-2011 winter while the inland form either survived or was damaged slightly.

Finally we have *Ozothamnus leptophyllus* (photo page 19). This was transferred to *Ozothamnus* only in 1997 and most nurseries still sell it as a *Cassinia.* Graham Hutchins collected a good form near the town of Ward, in New Zealand's South Island. He sells it as 'Ward Silver'. Growing to nearly one metre it is a good plant for very dry soil. I think it likely that while 'Ward Silver' survived the winter of 2010-2011 in dry soil it was almost certainly killed when being grown in moist soil.

This article was written during 2012's cold snap. Though other *Ozothamnus* will give a good floral display in the garden they cannot be relied upon and I stick to my opinion that these are the only species that can be recommended for those who value dependability above the excitement of growing something rare.



MELALEUCA SQUAMEA

Judy Clark

I am very fond of paperbarks and honey-myrtles (*Melaleuca* species) which I think are under-rated compared with their siblings the bottlebrushes (*Callistemon* to some authorities, *Melaleuca* to others[1]). The great majority of melaleucas are endemic to Australia but how many Australian species there are is uncertain. Ivan Holliday's book published in 2004 included all 219 species then described (not counting any former *Callistemon*) but the number has almost certainly changed since then[2].

The name *Melaleuca* comes from the Greek, *melas* meaning black and *leucos* meaning white. This is in reference to those species which have black trunks and white



The World Garden at Lullingstone Castle as seen by a cherry picker in August 2010 (before the severe cold of winter 2010); the Australasian section is on the bottom right.



Callistemon viridiflorus in full bloom in the World Garden



Ozothamnus ledifolius in bud



Ozothamnus ledifolius in flower

branches[3], so is a name which neither reflects their diversity nor does justice to their charms.

One species that in my view merits attention in the UK, at least in its southern parts, is *Melaleuca squamea*, swamp honey-myrtle or swamp melaleuca. I have never seen it in the wild but apparently it is quite common, growing in damp and wet heathy locations on the coast and in open forest, with a south eastern distribution taking in New South Wales, Victoria, Tasmania and South Australia.

The plant in my garden is from APS seed sown in 2004 and germinated using the bog method. It was put in the ground in 2005 and first flowered in 2006. It has flowered liberally every year since, starting in April or May. It even flowered for a second time in November 2011 when the weather was uncharacteristically warm, though not as prolifically as it did in the spring. The flowerheads, comprised of numerous flowers with conspicuous stamens that have mauve filaments and creamy white anthers, look like sparkly mauve balls. They can last for up to a month (photo page 20). Some books describe the flowers as purplish or pink, and a white form is found in Tasmania.

After 8 years my plant has developed into an attractive shrub nearly a metre high and sprawling over a more than a square metre, though not too untidily. I prune it a little to encourage a bushy habit and I water it in very dry weather if I remember. The heavy clay soil in which it grows would have had something added to it at the time of planting to improve the drainage, but I don't have a record of what. It is sheltered from the wind but is otherwise growing in the colder part of the garden. Nonetheless it has survived unscathed all the frost, snow and ice that recent winters have thrown at it. What more could I want from a plant?

Notes

1. The basis for classification into two genera is the arrangement of the stamens. In general these are separate from one another in *Callistemon* and joined in bundles in *Melaleuca* but this difference is not clear-cut for all species. In 2006 Lyn Craven proposed to combine the two into one genus (see asgap.org.au/callis1a.html). As far as I can understand in Queensland, Tasmania and the Australian Capital territory *Callistemon* is now included in *Melaleuca*, broadly defined (Australian Plant Census, www.anbg.gov.au/chah/ apc/).

2 Ivan Holliday, 2004, Melaleucas: a Field and Garden Guide, Reed New Holland

3. Elliot WR and Jones DL, 1995, Encyclopaedia of Australian Plants suitable for cultivation, Volume 6, Thomas C. Lothian Pty. Ltd.



ISOPHYSIS TASMANICA

Jeff Layman

Apart from being a member of the APS, I am also a member of the South African Bulb Group (SABG). Like the APS, the SABG

has a seed and bulb/corm list. A couple of years ago I noticed that the list included corms of *Isophysis tasmanica*. (They are actually rhizomes and Bryan[1] refers to them as such but it is interesting to note that in the numerous references to *Isophysis tasmanica* on the internet, all seem to carefully avoid mentioning the underground part of this plant!). I requested some, and four small rhizomes arrived.

These were potted up, two to a 7.5 cm (3 in) pot, in early October 2010, in equal parts of JI ericaceous and peat. One pot was placed on a cool south east facing bedroom window sill. The other was placed in a greenhouse (minimum temperature 1°C). After a few weeks a shoot appeared from the bedroom pot. A couple of weeks later two individual shoots appeared in the greenhouse pot. These three (one never appeared) grew over the next few months. There was only one leaf from each corm and it varied between 25 and 60 cm long (10 to 24 in). I allowed the plants to dry off over summer.

When the 2011 SABG list appeared, once again *Isophysis tasmanica* was offered. In case the ones I had planted had suffered over summer, I requested more as an insurance. This time two larger rhizomes were sent. I potted up one on 9 October, and sent the other to Judy Clark (see page 2). The new pot was placed in a second greenhouse (where I keep my Australian and South African bulbous plants) and I started watering the pots again. The bedroom pot started growing first; it currently has a single leaf about 90 cm (35 in) long. The other original pot started a few weeks later. Interestingly, one of those plants decided it would have two leaves this time[2]. I checked the new pot, and found a very small leaf appearing. Over the winter, I intermittently checked the original pots, but forgot about the new one.

In mid-February I was checking the Australian plants, and noticed something odd amongst them. I thought that one of the SA bulbs was flowering, but not in the usual place I keep them. It was only when I picked up the pot that I realised it was the new *Isophysis tasmanica*. The flower was about 5 cm (2 in) across, and a dark burgundy-purple in colour (photos page 21). To me there was a very slight unpleasant scent which my wife and my neighbour can also detect. On reflection, the nearest smell I can compare it to is "wet dog" (my neighbour agrees). However I can find no mention of this in the books I have, or on the internet. I would not be surprised if there was an unpleasant scent as the colour of the flower suggests that it may be pollinated by insects which are attracted by carrion. It is not in the same class as *Stapelia* or *Dracunculus*, but it *is* there.

In search of further information I emailed the Australian National Botanic Gardens to ask about pollinators of *Isophysis tasmanica* and was very surprised to get a reply from Murray Fagg! It seems that no-one has studied this, or whether *Isophysis* (the genus has only one species) has any relationship with sapromyiophily (pollination by dung insects) or not.

Isophysis tasmanica doesn't really seem that much different to South African winter-flowering bulbs in the treatment it requires. In a few months the plants will start their summer dormancy. I hope that there will be flowers next year.

Notes

1. John E. Bryan Bulbs Timber Press (Revised edition 2002) ISBN 0-88192-529-2
2. I asked the original supplier of the rhizomes whether or not her plants had one or two leaves and she replied that some have one and some have two.

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EUCALYPTUS GUNNII 'AZURA': A eucalyptus variety with exceptional cold tolerance

© John Purse

Eucalyptus gunnii is generally regarded as one of the hardiest eucalypts. However, during the winter of 2010-2011, large trees of this species were killed to the ground in many central parts of both the UK and Ireland. There are many precedents for this, not only in the British Isles, but also in France and The Netherlands. Azura (a Trade Name) originated as a variety known under the Registered Name 'Cagire' in a French forestry breeding programme in south-west France. The circumstances that led to the identification of Cagire and the processes that led to the release of the variety Azura give an insight into some of the unacknowledged work that leads to varieties on sale in garden centres. In the case of Azura itself, it points to a feature that is not highlighted on the plant label in garden centres, but has become apparent in the Netherlands this past winter: it really does seem to be exceptionally cold tolerant.

The French started selecting cold-tolerant eucalypts for forestry in south-west France (around Toulouse) in 1972. Operational planting started in the early 1980s, and by the end of 1984 around 1000 hectares had been planted. Then, in January 1985, the area experienced extreme cold. A temperature of -20°C was recorded in Toulouse. Almost all the eucalypts were killed to the ground, and the planting programme was abruptly halted.

The foresters responsible didn't give up, but tried to learn from the experience. One key point that became apparent during 1985 was that most trees over a year old had not been killed outright, but started to coppice. The other point was that certain trees had survived on certain sites. Because many of the plantings had used rooted cuttings from selected trees, it was possible to see that certain trees that were genetically identical had survived on less cold sites. One of these was *Eucalyptus gunnii* 'Cagire'; it was apparent that this variety could survive -18°C. It was also unusually vigorous and of good form for the species. Moreover, it rooted relatively easily from

cuttings of coppice shoots. Today, hybrids bred from Cagire and similar selections form the basis of a successful forestry programme in the Midi-Pyrénées region. They are planted on sites that are now much better-described in terms of their risk of cold, and the potentially coldest areas are not used at all.

Cagire is too vigorous to be an ornamental tree for gardens. However, the relatively easy rooting of coppice shoots of this variety suggested that cuttings from the crowns of mature trees might also prove to be rootable. If so, this would offer a selection that would be expected to grow with much reduced vigour , a fairly general phenomenon in woody plants that has been observed with eucalypts on other occasions. Of course, this is of no interest at all for forestry, but of much more interest for gardens. The approach taken was to use micropropagation to produce a core population of rooted stockplants derived from crowns of Cagire, and to use these stockplants as a source of cuttings for rooting. The rooted cuttings so produced then had to be trialled. It all worked as predicted, and the result was Azura, genetically identical to Cagire, but with 50% of Cagire's vigour, and a bushier habit. It was submitted for EU Plant Variety Rights in 2007 (EU Application 2007/0559), and became available in UK garden centres in 2010.

I bought an Azura in spring 2011. I have heard anecdotally that it has not sold particularly well so far, and I can understand why. It doesn't look particularly special in garden centres, and after a year in the ground it looks happy enough but still unremarkable. It is advertised as having intense silver/jade glaucous foliage, but my specimen is sub-glaucous, and it is distinctly less glaucous than some other *E. gunnii.* It was also expensive: my specimen in a 7 litre pot was £29.99. However, it is probably too early to judge it. In The Netherlands it has very nice blueish though still not very glaucous foliage, so the foliage colour may depend on environmental conditions.

The Azura label in Britain says that it is hardier than the normal form of *E. gunnii,* though this information is not prominent. This aspect was not tested over our recent (2011-2012) winter in the UK, despite the cold snap in February. However, winter conditions in continental Europe are more challenging, and the label on plants sold in The Netherlands says the variety is hardy to -20°C. In February the weather in The Netherlands was certainly more challenging than in Britain, and I was particularly interested to hear of Liesbeth Uijtewaal's experience with a young Azura in her garden in Limburg in the south of the Netherlands. It was planted as a 60cm tree in May 2011. It is now almost 2m tall and was unaffected by 2 weeks of continuous sub-zero temperatures in February, with clear skies, no snow, and minima of at least -12°C. The daytime maximum was generally -2°C, occasionally -5°C and the cold period followed a period of mild weather that would have been

expected the lead to some de-hardening. A *Eucalyptus pauciflora* subsp. *debeuzevillei* nearby and a group of seven further away were damaged, though this species is normally regarded as more cold-tolerant than *E. gunnii* grown from seed.

So Azura may be particularly well-suited to colder parts of the British Isles, and we may see it in parts of continental Europe where eucalypts outdoors have hitherto been short-lived. It would be interesting to hear of other members' experiences with Azura.

Acknowledgement
My thanks to Liesbeth Uijtewaal for her comments on her Azura and on a draft of this article.

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STALWART EUCALYPTUS

Tony Entwistle

My experience with *Eucalyptus gunnii*, about which John Purse wrote so eruditely in issue 47, dates from as recently (!) as 1954, when I obtained seed from an old tree in Bulley's Garden (now Ness Gardens). I do not know the provenance but Arthur Bulley may have obtained the seed from Tasmania via Howard Comber.

Five seedlings were planted in my late father's garden on the Wirral and by 1962 were some 5 ft (1.5 m) high. Then came the vicious winter of 1963-63. John remembers the sea freezing and in parts of the town where I then lived the mains froze and water had to be delivered by tanker. My *E. gunnii* defoliated completely but at the end of May erupted in lovely blue leaves and not a branch died.

Eucalypts: RIP in Cheshire

amygdalina,*archeri*, *botryoides*, *caesia*, *camaldulensis*, *cordata*, *cypellocarpa*, *dalrympleana*, *debeuzvillei* (now *pauciflora* subsp.*debeuzvillei*), *delegatensis*, *dives*, *fraxinoides*, *glaucescens*, *globulus*, *johnstonii*, *kybeanensis*, *landsdowneana*, *leucoxylon*, *mitchelliana*, *nicholii*, *nitens*, *obliqua*, *parvifolia* (now *parvula*), *perriniana*, *subcrenulata*, *urnigera*, *viminalis*, *vernicosa*

In the 1970s I grew many eucalypts from seed sent by an Australian friend but they all died in the winter of 1980. Some were quite small but *E. urnigera* and *E. cypellocarpa* had grown well. In 2004 a collection was bought for the Quinta arboretum in Cheshire (I am on the management committee) from the now defunct Celyn Vale nursery, but they have all died in the past few winters except for *E. niphophila* (correctly *E. pauciflora* subsp. *niphophila*). This has been corroborated by my own tree, in Delamere (Cheshire), planted in 1992 and now some 40 ft (12 m) tall and never defoliated or damaged at all.

Altogether, the RIP list (see box) is quite extensive! So my conclusion after 60 years is that for this part of the north of England there are only two stalwarts: that is, *E. gunnii* and *E. niphophila*.

WARATAHS

Jeff Irons

Waratah (wŏ-ra-TAH) is an Australian aboriginal word that has become the universal common name for the plants that botanists call *Telopea*: a name meaning "seen from afar" that refers to the striking red flowers. An aboriginal legend relates the waratah to a plant that grew up in the rock cleft where a young woman had willed herself to die after her beloved failed to return from a fight against another tribe. The genus originated in warm wet forests and today's species are all dwellers of forests and woodland. Only one, *T. speciosissima* grows in dry forest, though even that is seasonally wet.

The striking red flowers of *Telopea speciosissima* attracted early settlers in Australia and in 1791 the first Governor of New Holland (as Australia was then known) wrote to Sir Joseph Banks saying that he was sending him a drawing of it. What happened to that drawing is unknown and the earliest extant botanical drawing dates from 1793. The first specimen had been sent to London in 1791, by John White, surgeon of the First Fleet. In 1793, Sir James Smith described the waratah under the name *Embothrium coccineum* in his book "A Specimen of the Botany of New Holland". He wrote: "*The most magnificent plant which the prolific soil of New Holland affords is, by common consent of both Europeans and Natives, the Waratah*". In her book "Notes and Sketches of New South Wales" (1844) Louisa Anne Meredith wrote of "*A sisterhood of queens- a group of eight or 10 splendid waratahs, straight as arrows – tall, stately, regal flowers, that with their rich and glowing hue - seemed like the magic jewels we read of in fairy tales.*"

In 1809 Robert Brown split the genus *Embothrium* into four and one of his new genera was the one that is still called *Telopea.* Nowadays the genus, which originated about 70 million years ago, contains five species, all of them blooming in early summer. In England this is from flower buds produced the previous autumn, on shoots formed the year before. Like most Proteaceae waratahs have paired flowers with a style that starts life as a pollen presenter and after the removal of pollen becomes receptive to pollen from another flower. The anthers are on the perianth segments.

Telopea speciosissima

By common consent the New South Wales Waratah, *T. speciosissima*, has the most striking flowers (photo, page 22). A mature bush can rival the best rhododendrons for quality and quantity of flower. In Australia it has been hybridised with other species, producing a range of forms in different shades of red.

Unfortunately for British gardeners this species is also the least cold tolerant. It has been seen growing against a boilerhouse wall near Kirkudbright (pers. com. P. Matthews) but for most gardeners has to be regarded as a plant for the cool greenhouse. Like all waratahs its cultivation is easy. Unless you poison or desiccate a plant in a pot,

it will grow for you. The natural habitat is woodland (canopy cover 10-30%) and open forest with sandy soil, in areas with some rain all the year round, but with a pronounced summer maximum. Frosts below -4°C are rare.

Like all red flowered plants it can have white variants. 'Wirrimbirra White' is a selection with creamy white flower heads, found in 1970 at Kangaloon, near Robertson in NSW. This cool wet area is the locality of *T. mongaensis*, so the selection may be hardier in Britain than most forms of the species.

Telopea mongaensis
Uncommon in British gardens, *T. mongaensis*, the Braidwood Waratah, was found to be the easiest to grow outdoors at Kew (pers.comm. B. Halliwell). It also grows well outdoors in Devon, on a well drained site. A suckering habit leads to a compact form and makes it respond well to pruning. Found on the southern tablelands of NSW, this is another species from an area receiving heavy rain in summer.

Telopea oreades
The Gippsland Waratah, *T. oreades* (photos page 22) , is a reasonably hardy species that will withstand frosts to at least -12°C without injury and even though the natural occurrence is in wet open forest or rainforest, will grow in soil that is fairly dry in summer. Although it does not seem to be cultivated, this species too has a white form, found on Gippsland's Errinundra Plateau.

Telopea truncata
The hardiest species of all is the Tasmanian Waratah, *T. truncata* (photo page 22). It is also the only species that will grow in soil that is wet in winter. Large specimens grow in eastern Scotland, notably at Wester Balruddery in the hills behind Dundee and it grows equally well in southern England. It does have a yellow flowered form and a few years ago pollen was taken from the original plant of f. *lutea* (sold as 'Essie', after Essie Huxley) for hybridisation with mainland species, in the hope of producing a new colour range, including orange. The wild occurrence is in doleritic soil, with some root protection, either from boulders and other vegetation or perhaps in a rock cleft; from montane to sub-alpine levels.

Telopea aspera
T. aspera, the Gibraltar Waratah, comes from the Gibraltar Range, in New South Wales. Similar to *T. speciossima*, it differs in that the rough textured leaves have rusty red hairs on them and the leaves have an acute to truncate tip; *T. speciosissima* leaves have rounded apices. Its cultivation has proved difficult at the RBG Sydney, though easier in the cooler climate of the Mount Tomah annexe.

Apparently not available in Britain, 'Braidwood Brilliant' is a hybrid between *T. mongaensis* and *T. speciosissima*, developed in 1962 to give greater frost and soil tolerance together with a compact shape. Its bright red flower heads are 60-80mm across (about 2.5 to 3 in). Similar to those of *T. speciosissima*, the flowers are a little smaller and the bracts are more like those of *T. mongaensis*. 'Burgundy' is a hybrid between *T.*

speciosissima and *T. oreades*, hardy to about -7°C. In north-west England it blooms in late spring or early summer.

Since its discovery the striking waratah flowerhead has attracted artists and there have been many depictions, on things as varied as furniture and wallpaper. A special set of commemorative plates decorated with *Telopea* 'Essie' were made in 2005 to celebrate the wedding of Princess Margaret of Denmark, who had been a student at the University of Tasmania.

Brief botanical descriptions of *Telopea* species

Telopea speciosissima

Shrub to 3m high with several stems arising from a lignotuber (swollen rootstock). Leaves narrow obovate with a rounded apex, to 25 cm. Margins usually serrate, sometimes lobed. Flowers on stalks up to 10 mm long, perianth 25 mm long. Up to 90 pairs per head, the whole up to 15cm diameter. Follicle up to 12cm long, containing up to 20 seeds.

Telopea mongaensis

Lignotuberous shrub to 3 m. Leaves dark green oblanceolate, entire or lobed with rounded tips, 10-15cm long, margins slightly recurved. Flowers ca. 25 mm long with stalks ca. 20 mm long, the whole head about 90 mm diameter. Follicle 70 mm long. Bracts greenish, inconspicuous.

Telopea oreades

Lignotuberous shrub to 3 m, 10 m in sheltered sites, leaves to 20 cm, narrow obovate with a rounded apex, margins toothed. Flowers in terminal racemes, to 9 cm diameter. Stalks 20 mm long, perianth 25 mm long. Bracts green or pink, inconspicuous. Follicle about 12 cm long.

Telopea truncata

Lignotuberous branched shrub to 3 m high (rarely 10 m), entire oblanceolate leaves to 10 cm long, the underside often hairy. Flowers red in short terminal racemes of 10-20 flowers, bracts not conspicuous. stalks ca 10 mm long, flowers 20 mm long, the whole head about 60 mm diameter. Follicle 50 mm long with about 15 seeds.

Cultivation

All species need well aerated acid soil. Ideally the pH should be between 5.2 and 6.0. If there is any doubt about drainage outdoor specimens should be planted in mounds raised above the soil surface. These can be anywhere between 30 and 50cm high (12 to 20 in.) Telopeas form very fine seasonal "proteoid roots", which extract nutrients from the top layer of poor soils and when present make up half of the root mass. Because of this the area around them should not be cultivated. Plants in the ground need no fertiliser. Proteoid roots are not absolutely necessary and few are formed in fertile soils. Nevertheless a high level of nutrients in the soil will actually slow down growth, because the nutrient content of new growth is directly proportional to the quantity of proteoid roots and excess fertility suppresses their formation. If there is a surface dressing of leaf mould the proteoid roots will grow into it, as they do with leaf litter in the wild, so



Ozothamnus ericifolius in bud



Ozothamnus leptophyllus



Ozothamnus ericifolius in flower





***Melaleuca squamea*,**
flower and habit



A *Eucalyptus cinerea* (Argyle apple) specimen at the El Villar arboretum. The crown of glaucous juvenile foliage is characteristic of this species, but is exceptionally well-developed on the trees at El Villar.







Isophysis tasmanica



Telopea speciossisima



Telopea truncata
cultivar (left)



Telopea oreades
cultivar (right)

increasing their quantity and effectiveness.

Good seed will germinate within a month. It should be sown between May and August, in warm conditions. If a heated propagator is used 25°C is ideal. A communal pot can be used at this stage. Seedlings should be transplanted as soon as the radicle is seen. If space is a problem this can be into containers as small as 5cm (2 in) square forestry tubes. However since good management will ensure that even in the first year proteoid roots are formed, one litre pots are better. Composts containing soil are easier to manage than soilless ones, because clay in the soil helps to buffer the mix against any over provision of phosphorus.

Unfamiliar to most British gardeners, phosphorus poisoning can be recognised by its symptoms of chlorosis and necrosis, which begins at the leaf tips and works down to the base. It is difficult to treat and the best way is probably to wash off all compost and repot in fresh compost. Nitrogen can alleviate the effects of phosphorus but calcium exacerbates the problem.

Equal parts of lime free soil, peat and sand or perlite has proved to be a satisfactory compost. Believing that the large seed contains plenty of nutrients I treat the seedlings as if they were grevilleas and do not fertilise in the first year, though some growers do add 1g/l of low phosphate slow release fertiliser such as 6 month N:P:K 17:2:10. In their second year plants should be transplanted into 5 litre pots and zero phosphate slow release fertiliser can be added at up to 1g/l of compost. Pot grown plants will benefit from regular repotting into larger containers. Because of the importance of the proteoid root system, these should have as large a diameter as possible. If it is desired to keep to fairly small pots, when repotting because the permanent root system has filled the pot, it should be possible to use another method that has proved successful with a number of genera. It is to remove half the compost by making a vertical cut close to the stem, then replacing the plant in the same pot and putting fresh compost in the empty portion. The next repotting should remove the remaining old compost.

Well grown plants can produce flowers in their fourth year. Flowering will be encouraged by pruning after flowering. Cutting out all flowered stems to with a few cm. of their base will encourage a branching, bushy habit and promote future growth. Gawky plants that have not been pruned for several years can be cut back almost to the base, say to about 30-50cm (12 to 20 in). Plants grown in a greenhouse border can be mulched with leafmould. The leaves of all species are attractive to gastropods, which can defoliate even quite a large plant in one night. They are preferred to that other delicacy from the same tribe of the Proteaceae, *Embothrium coccineum.* Unless a lignotuber has been formed plants die after such defoliation. The most liked is *T. mongaensis.* It is followed by *T. speciosissma* and then *T. oreades. T. truncata* is the least liked. Not

having grown *T. aspera* I cannot comment on its position in the gastropod preference list.

Propagation can be from summer cuttings of half ripe or tip growth. In Australia leaf bud cuttings are used for propagation of named selections. There seems to be no reason why the more tender species and hybrids could not be grafted onto a *T. truncata* rootstock. It is standard practice to graft tender species of (the related) grevilleas on to a rootstock hardy in the area where the plants are to be grown. Experience has been (pers. comm. N. Marriott) that grafted plants turn out to be more winter hardy when planted out at around 1.5 m (5 ft) high or more than when put into the ground as smaller specimens. This is possibly because the rootstock of the larger plants has developed a lignotuber. Telopeas could be expected to behave in a similar way, larger plants being more tolerant of their first British winter.

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Editor's note

This article was written several years ago.

GROWING AUSTRALIAN PLANTS IN THE NETHERLANDS

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During my stay in Melbourne in the early eighties I fell in love with the Australian flora. Those unusual flowers, stamens and styles frequently the most conspicuous part of the flower, made them very special to me. The plants themselves, often with their leathery leaves and rugged, ancient, character completed their enchanting nature.

I have been growing Mediterranean plants in pots since 1993 and became a member of the Oranjerievereniging, the Dutch Society for Growing Mediterranean Plants. Members of this Society keep their frost sensitive plants outside in summer and move their pots to a frost free greenhouse by the middle of October when the risk of night frost in the Netherlands is increasing. By the middle of May, when this risk is over, the plants are taken out into the open again.

Some members are lucky enough to have their own greenhouse to overwinter their plants; others, like me, initially, rely upon garden centres or other commercial facilities, mainly disused greenhouses. A couple of regions of our society rent greenhouses for their members' plants.

I bought my first bottlebrush in 1994, *Callistemon* ´Rose Opal´, a

very floriferous *C. viminalis* cultivar. It has lived in a pot for 15 years. In 1995 I found the book "Australian plants identified" by Gwen Elliot and spent many happy hours reading through it and drooling over photos of all those magical plants.

Whenever I found Australian plants in a nursery or in somebody's collection I tried to obtain cuttings or to buy the plant but it was very hard to find any. One day I got overly excited when I found some *Melaleuca thymifolia* plants in a specialist nursery and, of course, one came home with me. Other plants occasionally available from nurseries are *Prostanthera cuneata*, for use as a bedding plant; several *Callistemon* more often than not named *Callistemon laevis*, a name that is never used in Australian literature; and *Acacia dealbata*, *A. paradoxa* (usually named *A. armata*) and *Eucalyptus gunnii*. Occasionally grevilleas appear on the market like *Grevillea semperflorens, G. juniperina, G.* 'Ivanhoe' and *G.* 'Clearview David'. *Grevillea lanigera* 'Mt Tamboritha' and *G. johnsonii* are getting more and more common. As far as I know, the grevilleas are mainly grown by Israeli nurseries but other Australian plants mainly come from Italy.

Some Dutch and Belgian specialist nurseries grow their own unusual plants, including Australian ones. This is where I got a *Hakea sericea*. It flowered for the first time when it was overwintering at a friend's place who was wondering why on earth I kept a pine tree in a pot. Well, it turned out it wasn't!

Early in 1997 I became aware of the SGAP (as it was called at the time[1]) since it was mentioned in Gwen Elliot's book and I became a member. From then on my collection and knowledge expanded considerably.

By the end of 1998 I felt confident enough to start growing *Banksias*, that I absolutely loved when I lived in Melbourne, from seed. I pre-germinated them in a box lined with moist kitchen towelling, a sturdy type that resists the frequent lifting of the paper to check for germination. Germinated seeds were planted into small pots with seed raising mix soon after the root tip became visible.

My husband, Bert, and I started looking for another place where we could have our own greenhouse and a larger garden for Bert. We found the perfect spot in 1999, in a disused dairy farm. The two cowsheds could be converted into greenhouses, one for containers and one for a bush garden. The 8000 square metres (about 2 acres) of paddocks and old sheds developed into an extensive paved area for plants to be outdoors in summer, an ornamental garden and a small orchard on one side of the house, and, on the other side, a small dam and an arboretum with a variety of plants from all over the world. Recently a little Aussie hut completed the garden. Photos on pages 31, 32 and the front cover show some of these features.

The older cowshed is attached to the house, and measures 9 x15 metres (29.5 x 49 feet). We replaced its roof with glass in 2000

and for the first time I could keep my pots at home in winter.

Because of all the available space I could grow more and more plants. I started off with *Callistemon, Melaleuca, Acacia, Eucalyptus* and the odd *Grevillea* but, after a while, I managed to obtain seed of many other species and had surprising success in growing them.

After a while I mastered the art of growing the more difficult banksias and by the end of 2008 I had 60 species (see page 31 for photos of two of them) of which 40 flowered or budded up and 7 set seed. In 2003 I started growing *Dryandras* as well and even some of them grew well and flowered. In all I had around 900 different Australian plant species by the end of 2008, mainly *Callistemon, Calothamnus, Darwinia, Eucalyptus, Leptospermum, Verticordia, Correa, Prostanthera, Westringia, Acacia, Anigozanthos, Lechenaultia, Banksia, Dryandra, Grevillea* and *Hakea*.

One of the prerequisites for this is, of course, the potting mix. In Holland there is a wide range of available potting mixes but all of them contain fertilizer high in phosphorous. Besides, drainage, mineral content and pH of these mixes are not optimal for most Australian plants so I was very pleased to find a potting mix company that was willing to make a special mixture for me in 2001. It is peat based with volcanic grit, mineral sand and trace elements added. Right before potting on I add low phosphorus Osmocote for Australian natives at 3 g/litre. This is not available on the Dutch market but I managed to obtain it directly from the Dutch manufacturers. Initially I had it brought over by friends visiting Australia, only to find that it was produced only 50 km from where I live. Those first supplies of Osmocote made quite a nice detour!

Since I started using the specially made potting mix and Osmocote my success with more difficult plants increased considerably. I found that just about any plant can be successfully grown in a pot, provided it gets the proper care. Where necessary drainage can be improved by adding more volcanic grit to the potting mix.

Of course plants in pots require more attention than plants grown in the garden. For instance, they need repotting at regular intervals: I may pot on young plants twice a year, depending on their vigour. In general, the next pot is twice or three times the size of the old one, by volume. Older plants in, say, 20 litre (12 inch) pots generally get potted on once every 2 or 3 years. If they are lucky they receive an extra dressing of Osmocote in the year they're not potted on. I tend to use smaller pots rather than larger ones to avoid water logging during rainy periods.

Watering, done with a hose, may take me several hours per day during warm periods in summer. In the middle of winter watering can be reduced to once a week or even less since the temperature in the greenhouse is kept just above zero and even though the

temperature may go up to 10°C on sunny days, the plants do not use a lot of water during that period. I always use plastic pots; they are cheaper and it is easier to judge by the weight of plant plus pot whether or not water is needed. This requires some experience.

When we bought this place I had visions of me looking over my own bit of Australian bush in a greenhouse. For this, the larger cowshed, which measures 12 x 24 metres (39.5 x 79 feet), got a glass roof in May 2004 and in December 2005 the concrete floor was removed. Eighty cubic metres of good quality topsoil was added and mixed in, by hand, with the subsoil. In April 2006 the first plant was planted with many more to come. Paths were constructed and I was looking forward to my own private bushwalks amongst lushly flowering plants. However, being able to grow Australian plants in pots did not necessarily mean that growing them in the ground would be easy!

One of the challenges was to get to grips with correct watering regimes and to find suitable plants for the sometimes harsh conditions inside; for example, the high humidity and relatively low light conditions in winter. In summer it can get very hot on sunny days. Success has been varied but slowly more and more plants seem to feel at home and flower. Recently I have laid out soaker hoses and let them run for some hours at regular intervals on bore water; it works wonders!

Plants that are doing well are species of *Acacia, Correa, Eucalyptus (*for example *E. torquata, E. woodwardii,* 'Torwood', *E. leucoxylon* 'Rosea', *E. caesia* ssp. *magna, E. kruseana), Callistemon, Melaleuca (*for example *M. elliptica, M. incana, M. huegelii, M. pulchella, M. nesophila), Calothamnus, Prostanthera* and *Westringia*. I am trying some *Eremophila* in a drier area.

After my visit to the ASGAP conference in Perth in 2005, my first time back in Australia since the early eighties, I realized how different the Western Australian vegetation is compared to the vegetation in the eastern states. I felt it would be inappropriate to mix the plants so the middle section of the 'bush' is planted with WA plants and plants from the eastern states are growing on the sides.

For some years I have been growing a selection of Australian plants in the garden quite successfully. These were several *Ozothamnus, Olearia, Grevillea* (*G. australis*, G. *alpivaga, G. victoriae, G. juniperina*), *Hakea microcarpa, Banksia canei*, *Callistemon* (*C. pallidus, C. pityoides, C. subulatus*), *Leptospermum* (*L. lanigerum, L. micromyrtus, L. rupestre*), *Baeckea ericoides*, *Prostanthera cuneata* and *Acacia* (*A. dealbata ssp. subalpina, A. pravissima)*.

The last couple of winters, though, were very severe with temperatures occasionally dropping down to -20°C at night with daytime temperatures around -8°C for weeks which was too much for

most plants. Only *Olearia megaphylla*, *Hakea microcarpa, Callistemon pityoides* and *Leptospermum micromyrtus* survived without much damage. Most *Callistemon* plants reshot from the base in summer.

Unfortunately, during a very cold period in January 2009, the plants that were supposed to be safe in the 'old' greenhouse were not safe at all: the thermostat controlling the heating failed during a very cold period when outdoor temperatures reached -20°C and I lost over 700 plants. I was devastated at the time, but subsequently pleasantly surprised to see that some plants survived these extreme conditions including *Banksia brownii* (compact form), *B. integrifolia, B. ornata, B. spinulosa*, some C*allistemon* species, *Darwinia grandiflora, D. taxifolia var. macrolaena, Xanthorrhoea australis* and several *Grevillea*. It must have been at least -10°C at night and well below zero during the day for some three days. Unfortunately the heater gave up again in December 2009, even though we thought we'd fixed it, and I lost some plants again. The results of these two winters are very sad since many ten year old plants and even older ones are on the compost heap now but I have learned a lot from growing them, it was great fun and I have many young plants on the shelves again. One important thing I learned is that plants can cope with lower temperatures if the potting mix is dry.

Few problems with pests are encountered. Hungry wasps may chew on *Banksia* flowers if there is no other food source available for them (this happened in 2008) and occasionally I find scale on a plant but this is not a major problem. More annoying are little moths, or rather their grubs, that seem to like Australian plants even more then I do. They especially like the sheltered environment of the new bush garden but with the help of insect eating birds who fly in and out of the greenhouse (and even nested inside in 2009 and 2010!). With grub-squash expeditions I am getting them under control. For the bird lovers amongst you, the birds are great tit (*Parus major*) and blue tit (*Parus caeruleus*), lovely little colourful creatures. Insects like (bumble) bees, wasps and (hover) flies pollinate many of the plants. There are of course no honeyeaters in Holland.

A major problem outdoors is the wind, blowing many plants over, which is very annoying. In one area I build little walls around the pots with hexagonal paving slabs but even this does not always prevent the plants from falling all over the place. Wooden tubs help to stabilize pots too.

Visiting the Netherlands?

Liesbeth and Bert will be happy to welcome APS members to their garden at Dries 22, 6086AW Neer. Check with Liesbeth beforehand to to avoid any disappointments. Email uijtewaal@merrigum.com or phone +31 475494881.

I open my garden to visitors in the summer months and there is a lot of interest in these extraordinary plants, especially for visitors who have been in Australia or have relatives there. Most people love the unusual foliage and flowers and are interested to hear how well adapted they are to their natural environment. They are even more amazed when they learn that many species already existed millions of years ago. Let's hope and make sure that future generations can still enjoy the beauty of Australia's flora!

Note
1. Now ANPSA, Australian Native Plants Society (Australia) asgap.org.au/index.html

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THE BIRTH OF AN AUSTRALIAN PLANT ENTHUSIAST

Maurits de Vries

I'm an Australian plant enthusiast from the Netherlands. That's mostly my first sentence when I write to foreign nurseries or foreign arboretums for seeds or cuttings. Most of the time I receive surprised reactions like "Huh… Australian plants in the Netherlands?". I'm still amazed that almost everyone is happy to send cuttings or seeds. In my opinion plant lovers are really fair and good people.

I live in the North East of Holland in a little village called Schoonebeek. I think it's maybe one of the coldest places in Holland. I started my hobby in 2006. We moved house from a flat to a detached house with a lot of ground. It was a new construction and I had to do something with the vacant land. So in the beginning we had much grass and only a few plants. I had no experience with plants but all that changed when we went for a holiday to the Greek island of Corfu.
On Corfu island the huge number of exotic plants was overwhelming and I was impressed by all those wonderful plants. Once back in Holland I started searching on the internet for a few tropical plants. I didn't know the names of plants but searched for photos. Quickly I found a photo of *Albizia julibrissin* (Silk tree). I remembered that I had seen the same tree on Corfu. I didn't know anything about albizias or about their winter hardiness so I asked a few people on the internet and heard that it was reasonable hardy. When I searched for more information I found an exotic plant nursery not far from our home which sold *Albizia julibrissin*. I bought two trees and am still in contact with the owner. A year later I saw in his nursery three beautiful eucalyptus trees, *Eucalyptus gunni*, *E. debeuzevillei* and *E. niphophila* (correctly *E. pauciflora* subsp. *debeuzevillei* and *E. pauciflora* subsp. *niphophila* respectively). I bought all three and that was the beginning of my interest in Australian plants.

Because I was getting more plants every year, I thought it would be handy to start a website. On the one hand it would be useful to educate

the visitors about what is possible in Holland and on the other it is helpful for myself. Now I have a place to store all my collected information about my plants. With no knowledge about websites I managed to create something simple. But the site has was become bigger by the year.

I got more and more interested about Australian plants when I saw for the first time a photo of a *Callistemon rigidus* in full in bloom somewhere in the Netherlands. In my quest for hardy callistemons I met Liesbeth Uijtewaal and she taught me a lot about Australian plants and gave me many hardy plants. We still exchange seeds or plants now and then.

At the end of 2009 I read something very interesting on an Australian plant forum. I read about the book "Australian plants: a guide to their cultivation in Europe" by Ross and Irons. I found a website for the book (www.australianplants.net/) and ordered it. Boy, this book was very handy about what to try and what not to try. This was also the first time that I read about the Australasian Plant Society and so I became an member. After reading the book I wrote to Jeff Irons. He recommended many plants that I could try in Holland and he has taught me so many things about growing Australian plants.

The box shows my experiences with hardy Australian and New Zealand plants in the Netherlands during winter 2010-2011. The losses are quite high but Jeff Irons

Dead

Acacia pataczekii
Astelia nervosa
Astelia chathamica
Callistemon citrinus
Callistemon sieberi
Callistemon laevis
Callistemon 'Little John'
Callistemon pallidus (pink)
Callistemon speciosus
Cordyline indivisa
Cordyline 'Zuidland'
Correa backhouseana
Eucalyptus debeuzevillei
Eucalyptus delegatensis
Eucalyptus macarthurii
Eucalyptus neglecta
Eucalyptus perriniana
Eucalypyus moorei
Grevillea 'Canberra Gem'
Kunzea ericoides
Leptospermum lanigerum
Leptospermum scoparium

Heavy damage, but recovered

Callistemon rigidus
Callistemon salignus
Callistemon subulatus
Callistemons viridiflorus
Feijoa sellowiana
Tasmannia lanceolata

Winter hardy

Brachyglottis 'Sunshine'
Callistemon pityoides
Eucaltpyus niphophila
Kunzea 'Badja Carpet'
Leptospermum micromyrtus
Leptospermum rupestre
Olearia haastii
Olearia nummulariifolia
Ozothamnus ledifolius
Podocarpus lawrencii

Editor's note
Names in the above list are as sent to me; not all are currently in use.



First Australian garden, May 2006



Banksia cuneata, 2009; note bumblebee landing



Bush area, May 2010



Dam and Aussie hut, September 2011

suggested that this is probably because all my plants were very young. If my plants had been older losses would probably have been fewer.

If there are any APS members who have *Oxylobium alpestre* or *Pittosporum dallii* in their garden I would love to receive cuttings or seeds. APS members who would like to follow my experiences with Australasian plants in the Netherlands can find my website at the following url: www.tropische-tuin.nl. I will always be happy to make contact with other APS members in the UK to talk about our experiences with Australian plants. My email address is maurits187@gmail.com.

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THE EUCALYPTUS ARBORETUM 'EL VILLAR' IN SOUTHERN SPAIN

John Purse

Europe's largest collection of eucalyptus species is almost certainly in the El Villar arboretum, near Huelva in the province of Andalucia in south-west Spain. The arboretum covers 75 hectares (about 180 acres), and contains only eucalypts, originally 80 species! This short article describes its origin, and what can be seen there today.

The British were responsible for the introduction of eucalypts to south-west Spain in the 1860s. This was a consequence of their involvement with mining there, most notably the copper and sulphur mines at Rio Tinto and Tharsis, and the need for mining timbers for these enterprises. After the Spanish civil war, the nationalist government was faced with a severe shortage of timber resources. Starting in 1951, the government instigated a series of trials of a wide range of fast-growing eucalyptus species throughout the country, in order to identify those with potential to support existing and new industries. In Andalucia, the trials started in 1955, and the first plantings at El Villar were made in that year. Trials continued to be planted until 1970, when the programme was closed.

El Villar and nearby arboreta were located on the huge area of wetlands and heathlands that today is largely occupied by the Doñana national park, though El Villar itself is outside of the park. In the 1950s this area was regarded as a land resource suitable for economic exploitation, and an early consequence of the results of the arboretum trials was the planting of huge areas of the marshes and heath with eucalypts (mainly *E. globulus*) to feed a pulp mill on the outskirts of Huelva. Almost all these plantations have since been removed, and there is now a huge effort to restore a semblance of the original vegetation.

By chance, El Villar arboretum survived the policy changes and neglect after 1970 almost intact. The Andalucian government realised several years ago that the

arboretum was part of the history of the area, as well as being an interesting scientific resource and an unusual and pleasant location, and so efforts were made to secure it. The result is very low-key: a small car park, basic signage, a picnic area and a walking trail. The trail itself is a fair hike; the full trail is 6km! But to anyone with a little knowledge of eucalypts, it is extraordinary. The species were planted in blocks of varying sizes, and the majority of these are still present today. There have also been recent plantings of some of the well-known ornamental eucalyptus species from Western Australia, although these are not well cared for.

The climate at El Villar is Mediterranean, with modest winter rainfall. Its proximity to the sea means that it is essentially frost-free. The soil is very sandy. However, the area has numerous marshes and small slow streams, and many parts of the arboretum have a high water table for a good part of the year. Unsurprisingly, species originating from parts of Australia with Mediterranean climates tend to have performed well; for example the Sugar Gum (*E. cladocalyx*), Yellow Box (*E. melliodora*) and Salmon Gum (*E. salmonophloia*) stands are magnificent and must be unique in Europe. However, the summer heat combined with the availability of water in summer means that species from further north in Australia also thrive. The many *E. cinerea* (photo page 20) are particularly happy and have sprawled to uncharacteristically colossal dimensions. Lemon-scented Gum (*E. citriodora*) is much better-behaved, and is present in two attractive stands. The sub-tropical species Flooded Gum (*E. grandis*) struggles on the drier sites but is very happy and handsome when living up to its name, standing in water for a good part of the year.

By contrast, the eucalyptus species familiar to us in Britain are hardly represented. A single surviving Shining Gum (*E. nitens*) looks uncharacteristically shrubby, and has very poor form. This and other species originating from more temperate parts of Australia are likely to be poorly-adapted to the intense summer heat at El Villar.

The species represented at El Villar are mainly vigorous species with economic potential, and they are mostly planted in large plots to examine their growth under plantation conditions. This makes the arboretum rather different from the type we are more used to seeing; it is certainly not a collection of specimen trees in a parkland setting. But this in itself makes El Villar an interesting experience.

For those who understand some Spanish, more background and details including a full species list are provided in a scientific paper (available online): Los arboretos de eucaliptos históricos de Huelva, Bouteloua **6** (2009) pp 115-133.

For anyone interested in industrial history and its wider influence, the Rio Tinto mine site, the mining museum there, and all the associated infrastructure with

British connections makes a fascinating visit. The now-abandoned mine site is awesome rather than attractive; one immediately appreciates why it has been used to test rovers designed to explore Mars. There is a huge range of past links between the Huelva area and Britain described on the web, all with their roots in mining.

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LE PARC GONZALEZ

Tim Darrington

On the 9th March 2011, my wife and I visited the public Parc Gonzalez in Bormes-les-Mimosas on the French Riviera. This small municipal garden of only 2,400 m² (0.6 acres) is well worth a detour, being entirely devoted to Australian plants, with the best display I have seen anywhere in Europe.

The creator, Gilles Augias, started work in 2001 and the garden opened to the public in 2004. Of course the climate enables the subjects to be permanently planted out. The garden is well kept and mulched pretty much everywhere with wood chippings. Without all the hype and the hordes of the better known and much larger Domaine du Rayol at Canadel-sur-Mer, the unassuming Parc Gonzalez is free to the public and we had the garden pretty much to ourselves, apart from one other Aussie plant enthusiast! It opens all year round; for more information including opening times, google "Parc Gonzalez" on the internet.

Visit Tim's garden

Tim Darrington gardens in Vienne near Lyon in France, more than halfway between Calais and Parc Gonzalez! He welcomes visitors. Contact him on (0033) 4 74 53 36 68 or at Timothy.Darrington@univ-lyon2.fr.

In a town called Borme les Mimosas", there were of course plenty of acacias in flower. There were also a good number of grevilleas, eremophilas and eucalytus in flower including *Eucalyptus caesia*. Pleasing too was a densely flowering *Boronia*, I think *B. crenulata*, as it looks very similar to the *B. crenulata* that I cultivate in my garden.

Near the house at the top were several isolated specimens of brightly coloured hybrid Kangaroo Paws (*Anigozanthus*), both a yellow one and a red and green one (the flower clearly has *A. manglesii* parentage but the leaves are green and not grey-green), as well as a large patch of a deep red cultivar. In the middle of the garden are three *Xanthorrhea glauca*, which I am told all flowered in 2010, and one had a flower spike in spring 2011. In any case, they seemed to be producing viable seed, because all around the base of the mature plants, there were numerous seedlings growing.

However the highlight for me was the *Banksia praemorsa* in flower right against the bottom fence, behind other shrubs. All but the most passionate enthusiasts would

miss this as some rock climbing from the road below was required. There were also several other Banksia species, including a flowering *Banksias petiolaris*.



HOW WE GOT OUR PLANTS

Jeff Irons

If we travel 600 miles east from where we live in Europe or North America we find the same kind of plants, but although they are close together Australia and New Zealand have very different plants. Have you ever thought why this is so?

Both countries formed part of the ancient continent of Gondwana. When it split into several fragments, called tectonic plates, the plates began to drift apart. Australia and New Zealand were on different tectonic plates. The Austro-Indian plate drifted northwards, turning as it did so. What was the east-west axis of Australia became its north-south axis and because of the northwards drift temperatures remained much the same, although the country dried out. A consequence of this is that Australia still has its Gondwanan flora. The fossil record shows that some plants, especially in Tasmania and the south-west of Western Australia have remained unchanged for 80 million years. The rotation of Australia explains why some genera, such as *Eucryphia* are found (at different altitudes) in places as far apart as Tasmania and Far North Queensland

In contrast, since the break up of Gondwana, New Zealand has stayed in much the same position. Originally it had a full complement of Gondwanan plants but they were largely wiped out during the last Ice Age. Only a few plants living in refugia remained unscathed. When the ice retreated there was a barren land, waiting for colonisation. It came about by long distance dispersal. Some seeds and spores were carried in by birds, some were windborne and some drifted in from the sea. Finding an empty land they were able to speciate rapidly, so we find large numbers of very similar plants. *Hebe* and *celmisia* are two examples. *Leptospermum scoparium* is an exception to the general rule. For some unknown reason it did not mutate into different species, but instead adopted many different forms, tall and short, with white flowers and coloured flowers, even with double flowers In Australia it remained invariant. I know of only one pink form in Australia, found near Yorktown in Tasmania by Dick Burns.

Fossil floras indicate that south eastern Australia and New Zealand used to have almost identical warm temperate plants. Both had forests in which *Podocarpus* and *Nothofagus* were dominant. Tasmanian mountain coniferous forests and shrublands are their descendants. In New Zealand a few isolated genera are shared with Tasmania and some are also shared with South America.

As they evolve plants mutate and their characteristics change. By examining them closely and comparing their differences botanists can work out their lineage. Taking *Dracophyllum* as an example, many very similar species occur in New Zealand. In contrast the few Australian species are very different from on another. Botanists believe that the genus originated in New Caledonia and spread out from there. The Australian species are thought to be quite ancient while the New Zealand species have a much more recent origin.

New Zealand has more high mountain plants than Australia and where genera are shared it is usually the case that an Australian plant has spread eastward to New Zealand. Fifty five alpine plants are found in both Australia and New Zealand. Only five of them have travelled from New Zealand to Australia. *Celmisia* is interesting. By studying the characteristics of individual species botanists can work out their relative ages and as a consequence they believe that the genus travelled from Australia to New Zealand and then back to Australia. They believe that it split from *Olearia* quite early in the latter's development.

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Plants that have spread, against the prevailing wind, from New Zealand to Australia include *Abrotanella*, *Brachyglottis*, *Chionohebe*, *Myosotis*, and many grasses. Sometimes horticultural publicity gives prominence to New Zealand specimens of a species even though it is actually an Australian! Two names that come to mind are *Pentachondra pumila* and *Phyllachne colensoi*. Both travelled from Australia to New Zealand. Its diminutive size and small flowers makes it easy to forget that *Phyllachne* is actually in the same family as the Trigger Plants, the *Stylidaceae*, which is predominantly a Western Australian family.

Not all modern Australian plants have fossil ancestors. Nevertheless we know that they have a Gondwanan origin because their relatives are found in other southern countries, but not in northern ones.

Even though they are fascinating, plant origins receive little mention in gardening literature. They deserve more.



THE CAMERA NEVER LIES, OR DOES IT?

Jeff Layman

In the December 2011 issue of Pentachondra. Jeremy Spon was waxing lyrical about the Australian Garden at the British Museum. He said that "*it is hard to imagine that a more spectacular temporary display of Australian plants has been staged anywhere in this country in living memory*" (page 4).

Now that got me thinking. In June 1984, I went to the International Garden Festival (IGF) in Liverpool. A couple of years earlier I had visited Western Australia, and my

love affair with Western Australian plants had begun. I remember reading somewhere that there was going to be a display of Australian plants at the IGF, so was determined to go. From what I remember, there was a very interesting display.

I was certain I had taken a few slides of displays at the festival, but where were they? I must say that although I have been consistent at labelling slides from trips abroad, and storing them in magazines with a list of the slide contents, I was very lax when it came to slides taken in Britain. They just remained in the boxes returned by Agfa.

Sometimes I would put a simple label on the box as a general reminder of what was in it. Occasionally, a scribbled piece of paper recorded what was on each slide, but the slides themselves remained unlabelled. So I started looking through old boxes of slides. The third one had a scrap of paper scribbled with the slide contents, and part of it was of the IGF! But none were of the Australian display. A further six boxes on, I found the other slides. Another scribbled scrap had "1. Pavilion; 2. Belgian garden; 3 Italian garden; 4 Egyptian garden; 5 & 6 Australian garden". Bingo! So I got out my slide viewer. Oh, what a disappointment! Geraniums, marigolds, lilies, astilbes ..... Basically, a bog standard display which could have come from anywhere.

I have no reason to believe that I had misrecorded what I had photographed. But I remember seeing Sturt's Desert Pea, *Clianthus formosus* (now *Swainsona formosa*), growing on sandy banks and in flower. You never forget that in flower. The only other time I had seen it in flower was at a wildflower show in Kings Park in Perth on that earlier visit to Western Australia, and those were cut flowers standing in water. Also at the IGF were *Anigozanthos* (Kangaroo Paw) in flower. But I have no slides of those Australian flowers; I can only assume that having photographed them in Perth, I didn't bother with them at the IGF.
After joining the APS, some years later I happened to discuss the Liverpool IGF with Jeff Irons. If I remember correctly, he said that the Australian plants on display had been grown and flown in specifically for the festival.



MYRTLE RUST

Judy Clark

When I was in Melbourne in February this year I visited Nicky Zanen, former APS secretary, and was fortunate to meet other native plant enthusiasts at events I attended. So I learned of their concern about the recent discovery in Victoria of the destructive plant fungus myrtle rust. When I got home I trawled the internet for the information I've used to put this article together. I should add that my knowledge of rusts is confined to those I think I've seen in my garden, so I hope it doesn't contain any serious errors.

Myrtle rust, scientific name *Uredo rangelii*, is a member of the eucalyptus/guava rust complex (*Puccinia psidii*). It spreads in the environment via tiny spores that it produces in large numbers. These can be transported naturally, by animals, wind and water, as well as spread by humans via contaminated plant material, equipment, vehicles, clothing and shoes.

First detected in Australia in New South Wales in April 2010, by November of that year myrtle rust had spread to Queensland. Since then it has been found in numerous locations in both states, including commercial plant nurseries, public amenities and large areas of bushland. In Victoria over 52 sites have been identified, mostly production nurseries and plant centres in and around Melbourne. Most recently it has been found in public parks and at Shepparton and Ballarat. Although myrtle rust is susceptible to fungicide treatment the disease spreads so easily that eradication is not considered technically feasible. The hope is to control it, but it could well spread further.

Myrtle rust, as its name implies, affects plants in the myrtaceae family. This family, which includes the genera *Eucalyptus*, *Leptospermum*, *Melaleuca* and *Callistemon*, comprises something like 10% of Australia's flora, so it is no wonder that its appearance is being met with such apprehension. Most of the 2200 or so known Australian myrtaceae species could well be susceptible. By early 2012, in Queeensland and NSW, myrtle rust infection had been found on about 179 species from 41 genera. All this sounds very serious but as relatively little is known about the disease and its impact under Australian conditions the extent of the threat it poses to plants and ecosystems over time remains uncertain.

Myrtle rust infects young, actively growing leaves, shoot tips and green stems as well as fruits and flowers (for pictures go to one of the sources at the end of this article). Severely infected young plants may become stunted and even die. But temperature and moisture conditions have to be right for myrtle rust to take hold, and not all host species seem to be affected to the same degree. CSIRO scientists tested 118 different taxa and reported that for about two-thirds of those tested only some individuals became infected. This result implies that there could be some level of resistance present in many species.

On the other hand, that myrtle rust attacks such a wide range of species is likely to favour its survival. If one host is absent this does not condemn it to oblivion as there are likely to be others around that can take its place. Host species showing moderate to severe infection already include some which are rare, like the endangered *Rhodamnia angustifolia* (narrow-leaved mallet wood); some which are ecologically important such as broad-leaved paperbarks which are a significant source of nectar for native wildlife; and the native guava (*Rhodomyrtus psidioides*) which plays a successional role in rainforest regeneration.

Myrtle rust has the potential to not only jeopardize myrtaceae species in their natural environment but also various Australian industries which depend on them, including forestry, horticulture, essential oil production (such as tea tree oil) and economic crops such as lemon myrtle (*Backhousia citriodora*). It is a notifiable pathogen in all Australian jurisdictions and all states have introduced myrtle rust movement controls, while the Australian nursery industry has developed a myrtle rust management plan to try and mitigate its impact. APS Victoria has taken the step of banning all movement of species in the myrtaceae family (for example using them in displays or offering them for sale) until January 2013 to avoid being in the position of unintentionally spreading the disease.

Myrtaceae are not confined to Australia (think myrtles), and of course Australian members of the family, such as eucalyptus, have been introduced all over the world. Guava (*Psidium guajava*), also a member of the myrtaceae, is infected by guava rust (*Puccinia psidii*) , first described in Brazil in 1884. In 1973, again in Brazil, many young *Eucalyptus grandis* in nurseries and plantations were killed by guava rust. Now also known as eucalyptus rust, *Puccinia psidii* is reported to infect 28 myrtaceae species native to South and Central America, though usually with mild impacts. It may well be the origin of the myrtle rust invading Australia which, despite its designation as a separate species, differs hardly at all from eucalyptus rust.

Could myrtle rust get to Europe? It is highly mobile. Absence of visible signs does not mean absence of the disease and myrtle rust spores are believed to remain viable for between 3 and 6 months under optimal conditions. However, for myrtle rust to survive once it arrived it would have to find susceptible hosts in an area where myrtaceae do not feature to any great extent, as well as the right environmental conditions to flourish.

Nonetheless, it is important that visitors to Australia are aware of myrtle rust and the ease with which it can inadvertently be spread by humans. Anyone who is planning a visit, especially to states such as Tasmania where myrtle rust has not yet been detected, and is interested in plants, and should find out more about it.

Sources:

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