

ALIENS FROM THE GARDEN

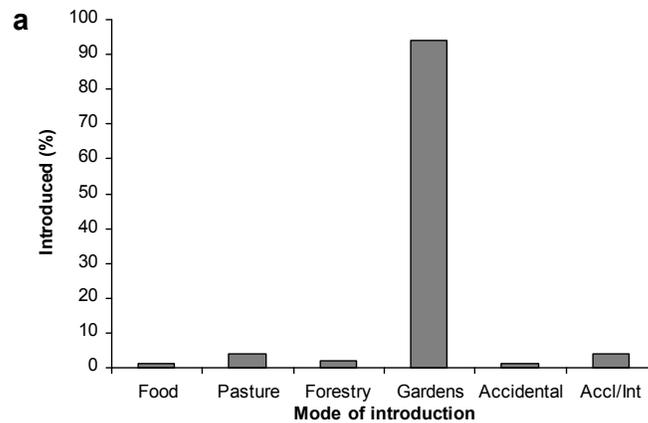
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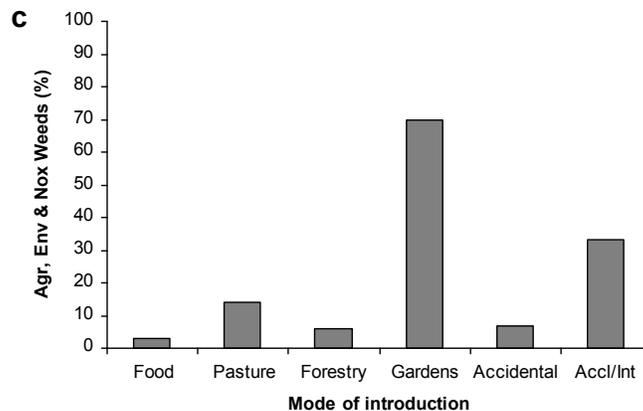
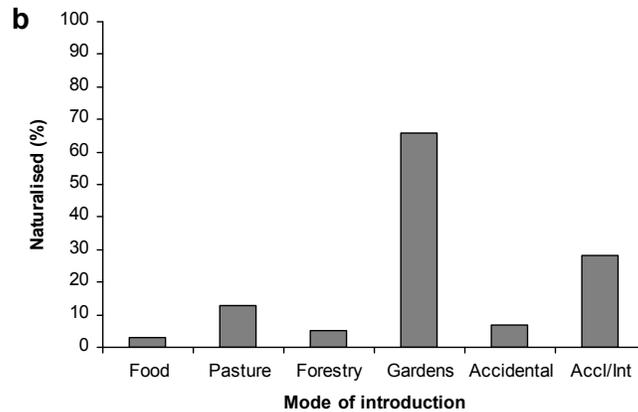
INTRODUCTION

Aesthetic choices made historically by urban gardeners shape Australia's environment today. In this new project we are using a history of urban garden tastes to understand the emerging phenomenon of environmental weeds. Principally we focus on garden plants that threaten the ecological functioning of Australian bushland, but we are putting this in the context of the changing history of garden aesthetics more generally, since a gardener's wider environmental sensibilities may be at odds with choices made when selecting plants for a private garden. Because Australia is a highly urbanised place, the vast majority of gardens are in cities and reflect the taste, values and objectives of city-dwellers. George Seddon has commented that gardeners are 'one of the most important groups of land managers in this country, ... [managing] more than 50 per cent of all urban land in Australia'. (Seddon 1997: 183)

The impact of urban gardens can be felt well beyond city limits. Those hardy plants that enliven the urban landscape have often been chosen as 'survivors'. It is just such survivors that can become invasive weeds in the Australian bush. Because they have been identified as hardy, they are welcomed as successful by gardeners, but over the fence, in the Australian bush they seriously limit the opportunities for other plants, and ultimately compromise biodiversity in the bush. Plants chosen for gardens now account for 69% of agricultural weeds and 72% of environmental weeds. A staggering 94% of the plants that are deliberately brought into Australia are for gardens (Virtue *et al.* 2004).

FIG. 1 The percentage of species in introduced (a), naturalised (b) and classified as agricultural, environmental or noxious weeds (c) classified by the mode of introduction. Acc/Int represents species that are thought to have been introduced to Australia by accident but were subsequently known to have been cultivated. Some species have more than one introduction mode and so the sum of the percentages is greater than 100. Based on Virtue *et al.* 2004, Table 2.





Open plain country and forested bushland alike are invaded by ornamental plants that have escaped from gardens. This is not a new phenomenon. Nineteenth-century Government Botanist, Ferdinand von Mueller, already aware of the march of ornamentals into the Australian bush, called them ‘garden fugitives’. Ornamental choices that favour colourful introduced plants look obviously out of place in the subtly coloured Australian bush. However, not all problem garden fugitives are introduced from overseas. Australian plants chosen for ‘patriotic’ reasons or simply because they require less watering, can also escape and become weeds in the bush. The paradox is that both have the potential to invade bushland: some ‘aliens’ from the garden are natives, and this complicates the story.

A weed is usually defined as a ‘plant out of place’. In this project we are extending the notion of weeds beyond the spatial, to consider their history, both social and evolutionary. The central focus is, however, the ‘culture’: the definition of place that makes the plant a problem. We are particularly interested in how changing cultural aesthetics in different eras created the opportunities for particular garden plants to escape into the bush.

THE CULTURE OF WEEDS IN THE COLONIAL ERA

Weeds are not a new concept. The first record of a weed in the colony of New South Wales was in 1796. David Collins (1798) recognised the ‘drake’ (Darnel, *Lolium temelentum*) among the wheat crop. These plants were the famous ‘tares’ of the Biblical parable (Matthew 13:24-43), that could

not be separated from the wheat without uprooting the wheat itself. Tares were familiar in England since the Early Modern period. Weeds transferred quickly from the Old World to the New, 40 European weeds being reported by John Josselyn in New England as early as 1666 (McWilliams 2011: 294). As Europeans moved to new lands, taking their Bibles and their ploughs with them to 'civilise and tame' distant lands, they brought both their wheat and their weeds.

The European settler project depended for its success on its fellow travellers, what Alfred Crosby described as 'ecological imperialism' (Crosby 1986: 194). Cattle and sheep were sometimes called the 'foot soldiers of empire', as they went ahead of the pioneering settlers. Often formerly domesticated animals went wild, as did the plants that settlers planted in their gardens, or along the roadsides. Crosby argued that much of this biological invasion was invisible or unintentional, but contributed to a situation where very small groups of Europeans had been able to invade vast lands far from their homes. Nonetheless, some of the introductions were deliberate – including wheat, sheep and other commodities for the home and export markets.

Some introductions were 'sentimental', rather than economic. John Dwyer's study of weeds in early colonial Victoria revealed that the Scottish settlers planted 'Scotch Thistle' for patriotic reasons: for example Georgiana McCrae had planted them at Mayfield 'as a memento of her Gordon connections' (Dwyer 2006: 7). There were various thistle plants dubbed 'Scotch', including some planted in Victoria because they came from around the Robert Burns monument at Dumfries.

The creation of an 'English' landscape in Melbourne was a point of pride: William Howitt commented on this in 1852. When Howitt visited Tasmania in 1854, he remarked on Hobart's well-established hedges: 'It is England all over' (in Dwyer 2006: 11). Creating a 'new England' in the landscape was an aim, before the more famous acclimatization movement had begun to introduce things more systematically. Hawthorn (*Craetaegus monogyna*) and Blackthorn (*Prunus spinosa*) were both recommended by William Cobbett in his 1829 *The English Gardener* and therefore imported into Victoria: Hawthorn became weedy, and was declared as such (over a century later in 1965). Blackthorn did not. The weediest hedge of all was not an alien: the Kangaroo-thorn (*Acacia paradoxa*), was declared noxious in Victoria in 1909. (Dwyer 2006: 11).

A nationalist taste in gardens was one of the hallmarks of the new colonies – 'English' and 'Scottish' elements helping settlers to feel more at home far from the Old Country. But even the earliest gardeners and observers were conscious of weeds and the potential for 'good' plants to become weeds. Just 21 years after the founding of Port Philip colony, Victoria had its first weed legislation, and it was the sentimental Scottish plants that, along with Bathurst Burr (*Xanthium spinosum*, a native of South America), had the honour of being the subjects of the *Thistle Prevention Act*, assented to on 19th March 1856, Australia's first weed legislation. (Dwyer 2006: 16)

The settlers busily focused on growing exports, producing goods suitable for the home market in Britain that could travel long distances. Wool was an ideal raw product, feeding the mills of northern England, but in the 1850s, it was quickly overcome in Victoria by the rush for gold. Goldfields activities dramatically altered the landscape, literally overturning soil horizons and making mountains of overburden.

The wealth of gold encouraged a more systematic approach to remaking the landscape. Scientific and philosophical institutions developed in Melbourne from 1854 onwards, contributing to some of the first planning for water management and urban amenities. The Acclimatisation Society of Victoria, the first and most important of the acclimatization societies in the Australian colonies, was founded in 1861 (Gillbank 1986). Acclimatization societies introduced garden plants, along with song birds, fruit trees and other agricultural crops, adopting rational principles for the trialling and careful nurturing of their introductions. These societies also provide a source of information about tastes and cultural preferences of their era, through their choices. Thus were landscapes for British settler societies proudly 'tamed from the wild' by 'British Australians', as they still called themselves at the time of Federation in 1901.

CREATING A NATION: GARDENS FOR CIVIC IMPROVEMENT IN THE FEDERATION ERA

There has been much written about the moral virtue of gardens. In the Federation years the focus was often on public gardens where civic pride was fostered by formal tree-planting ceremonies. This is true not just in Australia but throughout the western world. The original Arbor Day was invented in treeless Nebraska in 1872 in this spirit (Robin 2007: 21). Arbor Day and Wattle Day served a 'civic' purpose. The moral virtue of a home garden was also encouraged. 'Youngsters' were encouraged to 'tickle Mother Earth' from the first volume *The Garden and Homemaker of Australia*: 'You will find the recreation pleasant, interesting and satisfying, and you will benefit mentally, physically and morally'. (1 August 1925: 2). The Victorian Education Department's Young Gardeners' League was established in response to the Australian Natives' Association School Garden Prize, an annual award from 1903. State School Gardening flourished in the first decades of the new nation. The Spring Flower Day at the Melbourne Town Hall featured the colourful flowers of children's gardens, and raised thousands of dollars for the Education Department's War Effort in 1916-1918. Its instigator, Cyril Isaac later ran a nursery in Hughesdale in the 1920s and 30s and designed floral clocks for the Royal Melbourne Show (Robin 1991: 31-34). Colour not design, and 'flowers' rather than 'plants', dominated the pages of garden magazines.

'Where there is a garden, you will find a home', Harold Stevens, the Editor of *Garden Gossip* wrote in his first column in September 1928. The Sydney-based magazine promised '48 pages of pleasure', and 'not one dull page'. Gardens were a key focus of nation building: 'home-life is the very foundation of a nation's well-being and strength – the hearthstone of its highest ideals'... 'Even many an old building is made more beautiful and valuable by the introduction of the verdure of nature – trees, shrubs and flowers.' (Stevens 1928: 5) The garden, a national duty, could improve the value of the home and engender health and happiness for the whole family. It was also a 'refining influence' that 'inculcated uplifting thoughts', offering all the benefits of nature (or what we came later to call 'the environment') for the urban dweller.

For most of the first half of the 20th century Australian garden magazines contained far more about roses, and other flowers that cut well for home decoration (like dahlias and chrysanthemums), than Australian native plants. There were earlier initiatives. Edna Walling (1885-1973) started writing for *Australian Home Beautiful* in the 1920s, celebrating roadside eucalypts and designing gardens that included native plants. Another garden magazine established a series of 'Articles on our Australian Native Flora, which is too much neglected' (*The Garden and Homemaker of Australia*. August 1928: 1).

The most celebrative native plant was wattle, 'our national floral emblem'. Planting it in gardens was a 'patriotic duty', for some like Wattle Day enthusiast and garden writer, Tullie Wollaston:

More gorgeous flowering trees there may be ... but where on all the habitable globe will you find a 30-foot tree seven years from seed which will yield you sprays ... packing 28 feet of it? ...And then in another five years your tree is 50 feet and finally 70 to 100, if you treat it fairly.

(Wollaston 1916: 11-13)

Edwin Cheel, Curator of the National Herbarium in Sydney, also recommended the 'easily grown' Cootamundra Wattle (*Acacia baileyana*) as an 'eminently suitable' plant for Sydney gardens. Cheel took a nationalist pride in the garden success of Australian native plants such as Native-heaths (*Epacris* spp.), Boronias, Acacias, Callistemons and others. He was particularly proud of their success with 'professional horticulturists in Europe and America' and boasted of their 'export quality' (Cheel 1928:20-21).

Many of Australia's most serious garden fugitives were planted during this period. High on Australian noxious weeds lists is *Lantana camera*, chosen by gardeners for its pretty red-orange flowers. Lantana quickly expands into the bush and farmland in the semi-tropical conditions of southern Queensland, then chokes out the light and resources for most other understory plants, economic or otherwise. Most of the 'patriotic' native plants on Cheel's list did not become weedy, but Cootamundra Wattle is now prominent on the list of invasive plants, both in Australia and overseas. Twelve Australian wattles, including *A. baileyana* are included in South Africa's list of

invasive weeds (Carruthers and Robin 2010). Wattles 'out of place' are common in Australia. In Victoria, ten species of Australian wattle were listed as serious or very serious weeds.(Carr et al 1992). There is no doubt that the patriotism associated with celebrating and planting wattle in gardens contributed to this spread.

NATIVE GARDENS AND PLANT INVADORS IN THE POST-WAR YEARS

The post-war years saw dramatic developments in all Australia's cities. Suburbs took over former farms, orchards and market gardens, and some native bushland. Garden tastes changed in the 1950s and 60s, as part of the boom in private housing, and at a time when many women's professional occupation was 'home-making'. Gardening is an intensely personal, for some, even spiritual activity. Gardeners are independent people, operating beyond zones that governments regulate. (Gaynor, 2006: 48)

Where before the war, front gardens displayed showy flowers to passing pedestrians, increasingly after the war, as car use increased, they became buffer zones between a private home and traffic noise. Quick growing plants were favoured to screen noise and maintain the privacy of the dwelling. Often gardeners chose natives. Back yards, historically, the place of the most private room of all, remained private. Toilets moved inside, but the Hills Hoist, a proud symbol of Australian technological innovation, continued as the centrepiece of the suburban yard up to the 1960s, only giving way to the deck and outdoor dining area in the 1970s and 80s.

Gardens in this era became increasingly servants of the home, less a public display of civic pride for those walking past, and more about the view from inside out. As the suburbs spread out towards the bushland, Australian gardens were increasingly planted as a visual bridge, bringing distant views into the home through large picture windows. For those on the edge of cities, the Australian garden physically connected a home with adjacent bushland, expanding the sense of private space by visually borrowing from beyond the fence line. Here in Melbourne, the Save the Dandenongs League fought in the 1950s and 1960s to preserve the aesthetic forested appearance of the Dandenong Ranges when land was being cleared rapidly for suburban development (Boyd 2010). President, John Turner, Professor of Botany, and Secretary, May Moon, a resident of the hills and staunch campaigner, argued for the value of the 'bush clad' view of Melbourne's hills in the 1960s, particularly after the major fires of 1962 (Robin 1998: 58).

These years also saw the rise of Edna Walling's influence in garden design. She also trained other landscape gardeners at the Burnley Horticultural College. One of her students was Gwynnyth Taylor, leader of the Save Our Bushlands Action Committee, which campaigned to save the Little Desert from agricultural development in the late 1960s. (Robin 1998). Many of those most interested in native gardens, like Taylor, were defenders of national parks and bushland reserves in Melbourne and beyond. They lobbied their local councils for native trees rather than imported ones in their streets. While most native plant growers concentrated on their home garden, some put considerable effort into their suburb or community as a whole, particularly those with an interest in gardens that attracted birds.

Suburbs like Blackburn, expanding in Melbourne's outer east in the 1960s and 70s, kept their trees and planted more in their streets and on 'nature strips', running counter to the dominant 'scorched earth' approach by developers that was famously criticised by Robin Boyd (2010: 95). Blackburn still maintains a 'bush' identity through its 'Australian' gardens and indigenous tree-lined streets. Blackburn Lake Sanctuary, now surrounded by housing, is still 'one of the few remaining areas of natural bushland reserves in Melbourne' (Blackburn Lake 2011). The Lake itself is a focus for education groups and planting days for schools, and has a regular voluntary 'small friendly weeding group' maintaining the creek lands. Two nearby nurseries boast sales of indigenous plants propagated from local seed and sold for nearby gardens. The suburbs around the lake are host to many active conservation and natural history societies, reflecting the values held by city people choosing to live near 'natural bushland'. Among these was the national headquarters of Bird Observation & Conservation Australia (BOCA) (based in Nunawading from 1974 until 2011), a

group that included Ellen McCulloch and Tess Kloot, who were active campaigners for gardens planted with nectar-rich (native) plants to attract birds (Robin 2001: 295-295)

Native gardening enthusiasm and concerns about environmental weeds co-evolved in post-war Australia. There was an active 'Wild Flower Garden Group' in 1948 (FNCV unpub. 27/7/48: 401). Soon after, Winifred Waddell, one of the leaders of the group, established a more formal Native Flora Preservation Group, which became the core of the Native Plants Preservation Society. The Beaumaris Tree Preservation Society actively worked to preserve the heathland flora from developments in the coastal suburbs south-east of Melbourne by in the 1950s (Robin 1994: 121). Central to the 'native gardens movement' was the establishment in March 1957 of the Society for Growing Australian Plants (SGAP), now known as the Australian Native Plants Society. There were over 400 'growers' (that is, private gardeners and nursery staff) from three states at its foundation meeting. They pledged 'to promote the establishment and breeding of native plants for garden, park and farm' (Hockings 2008). The SGAP movement was inspired by Arthur Swaby's column 'Know Your Natives' published from June, 1954 in the popular gardening magazine, *Your Garden*.

The Weed Society of Victoria was established 1966, the same year as the Weed Society of New South Wales. Some native garden enthusiasts joined weed societies, whose efforts focused on public bushland, including national parks. They created native gardens at home and 'gardened the bush' at weekends, arranging social 'Boneseed pulls' (removing *Chrysanthemoides monilifera* ssp. *Monilifera*), from nature reserves on the Mornington Peninsula to the Little Desert in the state's far north. Boneseed is not an agricultural weed, but it threatens greenhood orchids, one of the popular bush flowers of early spring. These Melbourne-based weed societies were not so concerned about the sorts of pasture weeds that were causing economic losses to farmers. By contrast, in New Zealand weed societies began relatively early with most concerns about pasture weeds. *National Weeds Conferences* were held annually from 1948, initially as an agronomy initiative of Lincoln Agricultural College, and later as the formally constituted New Zealand Plant Protection Society.

A range of Australian societies came together with the New Zealand Plant Protection Society for a joint conference in Melbourne in 1978. These groups formed core of the Council of Australasian Weed Societies (CAWS), which now has a group in every state (Fig. 2). CAWS is now an independent body that 'expresses national and regional views on all issues relating to weeds and their management' (CAWS 2011). Many weed societies, like New Zealand, have focused on agricultural weeds, but in Victoria, the emphasis on public land has persisted, highlighted by a conference on that subject in 1988. Many of the presidents of the Victorian Weed Society have also played other major roles in science policy and planning for public lands. The first president, W.T. (Bill) Parsons, who served from 1966-1967, was officer-in-charge at the Keith Turnbull Research Institute, and later Chairman of the Vermin and Noxious Weeds Destruction Board. He published an important book, *Noxious Weeds of Victoria* in 1973, and later *Noxious Weeds of Australia* (Parsons and Cuthbertson 2001). Dr Mick Lumb, President in 1974, was at the same time principal research officer for the newly formed Land Conservation Council, a body charged with determining the best use of public land in Victoria on scientific principles (Robin 1998: 119). Dr Bob Edgar, President in 1981-82, was acknowledged by former Premier, Joan Kirner, as the designer of the concept of Landcare (de Blas 2000).

FIG. 2. Council of Australasian Weed Societies (est. 1978) (from <http://www.caws.org.au/members.php>)

Member	Date est.
The Weed Society of New South Wales	1966
The Weed Society of Victoria	1966
New Zealand Plant Protection Society *conference	(1948)*
The Weed Society of Queensland	c.1981
Weed Society of Western Australia	c.1980s
Weed Society of Tasmania	1995
The Weed Management Society of South Australia	1999

In the last two decades, conservation biologists have fingered gardens as a major source of environmental weeds. Often 19th century acclimatization movements were blamed for these problems, but many garden fugitives had other origins, and sometimes the solution involves another deliberate introduction. The famous agricultural weed Prickly Pear (*Opuntia* spp.), was a private introduction, planted as a hedge and windbreak in gardens. It spread rapidly through the agricultural developments in northern New South Wales and the Brigalow country of Queensland early in the 20th century. By 1920, it was expanding at an estimated rate of 100 hectares a day (Nix 1994: 225). Eric Rolls relates this story in his pioneering history of weeds and feral animals, *They all ran wild* (Rolls 1969). It is a tale often told because of its 'happy ending': the introduction of *Cactoblastis cactorum*, a biological control agent, a moth whose larvae bores through prickly pear, which successfully eradicated much of the problem. In 1925, 2,750 eggs of the moth were imported from Argentina, then bred up at a laboratory in Brisbane. Eventually three billion eggs were distributed to farmers. The moth successfully removed the problem plant in the warm country of Queensland in just a few years, restoring productivity. It was less successful in New South Wales, particularly in cooler bushland up near the snow-line, where chemical sprays were the only option (Rolls 1969: 355-356).

Problem garden fugitives are not only historical introductions. Some known environmental weeds are still sold for use in gardens today. In 2005, a major report by Richard Groves, Robert Boden and Mark Lonsdale, sponsored by WWF, documented the availability in nurseries of garden plants known to 'jump the garden fence' (Groves *et al.* 2005). Many of these species are considered very serious environmental weeds in Victoria. They identified 720 potentially invasive garden plant species that are 'naturalised' (that is, have self-sustaining populations) and investigated their availability for sale. They found that more than half of these (55%) were available for sale in Australia with a staggering 40% of species declared noxious also available for sale in other states.

Surprisingly, new species continue to be introduced with great enthusiasm. Groves *et al.* 2005 tell the story of Mexican feather grass (*Nassella tenuissima*) introduced by a Victorian Nursery in 1996. The consignment was labelled as *Stipa tenuissima*, a genus included on the list of permitted plants at that time. Mexican feather grass was undergoing a name change during this period, but had it been labelled *Nassella tenuissima*, its new name, it would not have been permitted, as it would have been recognised as a close relative of serrated tussock (*Nassella trichotoma*), one of Australia's worst weeds. Just 8 years after its introduction, Mexican feather grass was reported in 2004 as naturalised. It has now been declared noxious in all states. As late as 2008, some 4,000 Mexican feather grass plants were distributed through nursery and landscaping outlets in Victoria, NSW and Queensland (as *Stipa capillata*, *Stipa lessingiana*, *Stipa capriccio* or *Stipa* Regal Sensation) (Victorian Department Primary Industries, 2011), prompting a national recall. Plants are still being traced and destroyed. Yet Mexican feather grass is still advertised widely on the internet as a desirable ornamental grass for gardens, and supported by some as a desirable plant for water-limited gardens (for example, Burns 2008).

Threats to global biodiversity come from more than just gardens: agricultural plants and their associated weeds, feral animals and polluting industries are also diminishing the quality of bushland (quite apart from activities that clear it altogether). The garden plant, by comparison seems a small target among a range of social choices made by settler Australians, although it looms statistically large in the tables of environmental and agricultural weeds. Historically, weeds have been more often defined as plants that compromise the economic aspirations of a society. What the new conservation biology has done is shift the emphasis to the ecological impacts on global biodiversity. We cannot conceive environmental weeds as simply 'alien invaders' from 19th century acclimatisation initiatives. They reflect, rather, many layers of garden tastes and agricultural aspirations over three centuries. Our social aspirations have enabled some opportunistic plants to establish themselves in the bush, in farming country and in forests.

As twentieth-century Australians embraced their environment as *home*, plants from other places became the *aliens*. Attacking introduced weeds, pests and feral animals has engendered a combative relationship with the biota. This is the idea of 'wild' that has carried forward into the new millennium – it is now not a 'bad' or frightening wild, but a 'good', biodiverse wild. The idea of

'biological purity', of nature free of human influence, is something that has been particularly fostered by British settler societies. David Lowenthal has contrasted this with other places, like ex-colonial Jamaica, where hybridity and creative intermingling are celebrated as 'national', and there is a cheerful willingness to domesticate what is alien. (Lowenthal 1997: 235). Perhaps this settler history is part of the reason why British settler societies including Australia, New Zealand and South Africa have become leaders in invasion biology, the branch of conservation biology that is most concerned with weeds and feral animals.

There is a history of perceiving environment in binaries: alien/native, foreign/familiar, abroad/home. In the acclimatization era of the 19th century, plants were often introduced to help people feel more 'at home', to surround the new society with plants from where they came from. But the moral fervour for cleaning up the landscape and purging it of problem plants is a common thread throughout the experience of Australian settler society. The only difference is that in the 19th century the 'problem' plants were the local ones in the way of development, and in the 21st they are the weeds of development itself.

By the 1980s and 1990s there was increasingly widespread recognition of the impact that introduced species could have on biodiversity. The issue of plant and animal invasions became a concern of the international conservation community. The Scientific Committee on Problems of the Environment (SCOPE) was established in 1969 under the auspices of the International Council of Scientific Unions (ICSU) to analyse emerging environmental issues. (Drake *et al.* 1989) The concern about the environmental impacts of introduced species was driven by conservation biologists (rather than weed scientists) and it is through the conservation movement that awareness of environmental weeds has developed. In 1996 Australia's first attempt to co-ordinate weed issues across Australia, the National Weeds Strategy was released. The strategy was initially envisaged to take one year but the first draft was widely criticised for its narrow focus on the economic impacts of weeds. After pressure from the community and a further four years of development, the final strategy was much more inclusive aiming to 'reduce the impact of weeds on the sustainability of Australia's productive capacity and natural systems' (Humphries 1996).

While national boundaries are important for quarantine and regulatory purposes, weediness is a property of 'disturbance' and ecology, and in no way reflects national borders. Environmental weeds may be Australian native plants in the wrong place. Cootamundra wattle is just one of many examples of native Australian garden fugitives that have become problems in the bush. Victoria alone has 200 native species classified as environmental weeds (Australian Government 2009)

CONCLUSIONS: THE CITY AND THE BUSH – SOME NEW THOUGHTS ABOUT OLD TENSIONS

The idea that Australian plants are good for the nation, and can symbolise or represent it abroad, dates back to the years leading up to Federation. (Robin 2007). The Bush, as created imaginatively by Henry Lawson in the pages of the *Bulletin* has played a central role in making Australian national identity, perhaps particularly, as Graeme Davison (1978) has argued, in the cities. Judith Brett (2011) noted that differences between the city and the bush are still shaping political identities and opportunities, including the crucial role of Independents, who represent rural electorates, in forming the Gillard Labor Government in 2010. The idea of a beloved urban garden damaging the bush is surprising. Weeds add a new dimension to the old city/bush divides.

Unkempt gardens and 'untidy' trees are another source of tension when fire danger rises in the heat of summer. Major bushfires have taken suburban homes and gardens from all our big southern cities (for example, Perth 2010, Melbourne and Adelaide 2009 and 1983, Canberra 2003, Sydney 1994, Hobart 1967). In many other years, they have threatened (for example, Brisbane 2007). Planners ask serious questions about 'fuel loads' in bushland near cities, and wild gardens in suburbs abutting bushland. Following the Black Saturday bush fires, the bushy suburb of Warrandyte on the outskirts of Melbourne, was chosen for a Fire Expo, where there were discussions about a new cleared and clean garden etiquette, part of being 'fire-prepared'. Adelaide,

Melbourne and Hobart are all built in the distinctively fire-prone 'fire flume' of south-eastern Australia, the world's most dangerous place for wild fire (Pyne 1995). The best 'fire-prepared' gardens have little biodiversity with concrete around the house, and no trees anywhere near the roof or power lines. Yet can we learn to love the empty/tidy garden of the 1920s again? The garden and the bush alike are the enemy of a culture that is anxious about fire, and has a long European history of fire suppression (dating back longer than the two centuries of British settlement in Australia). International fire historian, Stephen J. Pyne, reminds us that only Europeans *suppressed* fire, and use terms like 'ravaged' to describe a landscape after fire (Pyne 1995). Aboriginal people like the look of fired country, deeming to be 'clean' and 'tidy', but this is not a sensibility of European-Australians, who call the plants that make fires larger and more dangerous, 'fire weeds'. Plants like Gamba grass (*Andropogon gayanus*) in the north, and Monterey pine (*Pinus radiata*) further south significantly increase fire intensity when they spread as weeds. Both were introduced for economic reasons (not gardens), and are noted environmental weeds. There are 'post-fire weeds' too, and many of these were originally garden fugitives. These demand serious planning and significant resources. The Black Saturday fires of 2009 have been followed by a *Post-fire Weeds Triage* project, funded by the Victorian and Commonwealth governments as part of the *Rebuilding Together – Statewide Bushfire Recovery plan* (Arthur Rylah Institute 2011).

Connections are more important than the divisions between city and the bush in the question of environmental weeds, perhaps especially when the definition is stretched to include fire weeds. The future state of the bush and its biodiversity depends on care that very often starts in the cities. We need to be more conscious of city garden aesthetics that influence what is available in nurseries. What the nurseries sell can jump garden fences. Agricultural weeds are not the only problems for rural livelihoods: the bush itself is also a valued part of regions away from the cities. Educating householders and horticultural suppliers about what might escape and compromise biodiversity is essential to future good relations between the city and the bush.

REFERENCES:

- Arthur Rylah Institute 2011. *Assisting Land Managers in Prioritising Post-Fire Weed Management* http://www.dse.vic.gov.au/arthur-rylah-institute/research-themes/fire-ecology-and-recovery#weed_management
- Australian Government 2009. *Weeds of National Significance*. Australian Government.
- Blackburn Lake Sanctuary 2011. <http://home.vicnet.net.au/~blsac/>
- Boyd, Robin 2010. *The Australian Ugliness* (50th Anniversary edition, introduced by Christos Tsiolkas; first edition 1960), Melbourne, Text.
- Brett, Judith 2011. *Fair Share: Country and City in Australia, Quarterly Essay 42*, Collingwood: Black Inc.
- Burns, J. R. 2008. *Australian Gardens for a Changing Climate*. Penguin Group, Camberwell, Australia.
- Carruthers, Jane and Libby Robin 2010. 'Taxonomic imperialism in the battles for Acacia: Identity and science in South Africa and Australia', *Transactions of the Royal Society of South Africa*, 65(1), pp. 48—64
- Cheel, Edwin 1928. 'Wild flowers of Australia', *Garden Gossip* Special Spring Issue, September, 20-21.
- Collins, David 1798-1802. *An Account of the English Colony of New South Wales*. London. [reprinted 1975, edited by Brian Fletcher, Sydney: Reed].
- Crosby, Alfred W. 1986. *Ecological Imperialism: The Biological Expansion of Europe, 900-1900*, Cambridge: CUP.
- Davison, Graeme 1978. 'Sydney and the bush: an urban context for the Australian legend', *Historical Studies* vol. 18 (71), 1978, p. 208.
- de Blas, Ali 2000. 'International Landcare Conference' *Earthbeat* ABC Radio National (18 March 2000). Transcript online: <http://www.abc.net.au/rn/science/earth/stories/s112638.htm> (accessed 21 August 2011).
- Drake J.A. *et al.* (eds), 1989, *Biological Invasions: A Global Perspective*, Chichester, New York: Wiley.
- Dwyer, John 2006. 'Weeds in the Victorian Colonial Garden 1800-1860', *Studies in Australian Garden History* 2: 1-23.

- Field Naturalists' Club of Victoria (FNCV) Council, Minutes, (unpublished), National Herbarium Library, Royal Melbourne Botanical Gardens.
- Gaynor, Andrea 2006. *Harvest of the Suburbs: An Environmental History of Growing Food in Australian Cities*, Perth: UWA Press.
- Gillbank, Linden 1986. 'The Origins of the Acclimatisation Society of Victoria: Practical Science in the Wake of the Gold Rush,' *Historical Records of Australian Science* 6(3), pp. 359–374
- Groves, R. H. 1997. *Recent incursions of weeds to Australia 1971-1995*. Adelaide, CRC for Weed Management Systems.
- Groves, R. H., Boden, R. & Lonsdale, W.M. 2005. *Jumping the Garden Fence: Invasive garden plants in Australia and their environmental and agricultural impacts*. CSIRO report prepared for WWF-Australia, WWF-Australia, Sydney.
- Hockings, F.D. 2008. 'The Early History of ASGAP' online: <http://anpsa.org.au/history.html> (accessed 26 July 2011).
- Humphries, S.E. 1996. 'Australian National Weeds Strategy: What Are the Lessons?' J. Lovich, J. Randall, and M. Kelly (eds) *Proceedings California Exotic Pest Plant Council Symposium Volume 2*. San Diego, California, pp. 21-29
- Lawson, Henry 1895. 'But what's the use' reprinted 2009 in *Collected Poems* (edited Colin Roderick), Sydney: Harper Collins, pp. 212-214
- Low, Tim 2000. *Feral Future: The Untold Story of Australia's Exotic Invaders* Ringwood, Penguin
- Lowenthal, David 1997. 'Empires and ecologies: Reflections on environmental history' in Tom Griffiths and Libby Robin (eds) *Ecology and Empire: Environmental History of Settler Societies*. Carlton: Melbourne University Press. pp. 229-236.
- McWilliams, James E. 2011. 'Worshipping Weeds: The Parable of the Tares, the Rhetoric of Ecology, and the Origins of Agrarian Exceptionalism in Early America', *Environmental History* 16(2): 290-311.
- Nix, Henry 1994. 'The Brigalow' in Stephen Dovers (ed) *Australian Environmental History: Essays and Cases*, Melbourne, Oxford University Press, pp. 198–233.
- Parks Victoria 2010. 'Park and Forest Closure on Code Red Fire Danger Days' <http://www.parkweb.vic.gov.au/fire/code-red-park-factsheet.pdf>
- Parsons, W.T. 1973. *Noxious weeds of Victoria*, Melbourne, Inkata Press, 1973.
- Parsons, W.T. and Eric Cuthbertson, 2001. *Noxious weeds of Australia* (second edition, first ed 1992). Melbourne, CSIRO Publishing.
- Pyne, Stephen J. 1995. *World Fire: The Culture of Fire on Earth*, Holt. New York.
- Robin, Libby 1991. *Building a Forest Conscience: A Historical Portrait of the Natural Resources Conservation League of Victoria 1944-1990*, Springvale, NRCL
- Robin, Libby 1998 *Defending the Little Desert: The Rise of Ecological Consciousness in Australia*, Carlton: Melbourne University Press.
- Robin, Libby 2001, *The Flight of the Emu*, Carlton: Melbourne University Press.
- Robin, Libby 2007. *How a Continent Created a Nation*. Sydney: UNSW Press.
- Rolls, Eric 1969. *They All Ran Wild: The Story of Pests on the Land in Australia*. Sydney, Angus & Robertson.
- Seddon, George 1997. *Landprints: Reflections on Place and Landscape*, Melbourne, Cambridge University Press.
- Victoria. Department of Primary Industries. 2011. *Mexican feather grass*, Melbourne, DPI.
- Virtue, J.D., S.J. Bennett, and F.D. Randall. 2004. 'Plant introductions in Australia: How can we resolve "weedy" conflicts of interest?' in B.M. Sindel and S.B. Johnson (eds) *Weed Management: Balancing People, Planet, Profit: 14th Australian Weeds Conference, Papers and Proceedings*, Sydney: Weed Society of New South Wales, pp. 42-48
- Wollaston, Tullie C. 1916. *Our wattles* Melbourne, Lothian Book Publishing Co.