



WEEDING OUT KIMBERLEY WEEDS

Each year since European settlement, seven to 11 species of exotic weeds have become naturalised in Australia, with many species affecting precious areas such as the State's far north. Work being carried out under the *Kimberley Science and Conservation Strategy* should see several species of Weeds of National Significance eradicated from the north Kimberley in the medium term.

by Greg Keighery



Weeds are a major threat to Australia's world-class biodiversity. They can alter fire patterns (for example, invasive grasses increase fuel loads and result in hotter, more frequent fires), modify soil characteristics or compete directly with native species. Currently, 2739 species are naturalised in Australia, or about 19 per cent of the flora. Even so, Australia is still comparatively free of weeds compared to countries such as Britain with 32 per cent and New Zealand with 51 per cent of their floras now naturalised exotics. Western Australia fares a little better than the nation, with 1239 weeds known or 12 per cent of the State's total flora. Most of these are found in the intensive land-use zone of southern WA. Because of limited agricultural use, low population densities, seasonal aridity and low soil fertility, Australia's tropical regions have lower percentages of weeds.

WEEDS IN THE KIMBERLEY

Dealing with weeds is less like a war and more like trying to control a street party organised over the internet. There are the locals (native species), invited guests (agricultural and garden plants, some of which may misbehave) and the uninvited guests who need to be dealt with in varying ways. Dealing with such a large number of species present on many sites with differing access and tenure requires many hands and many approaches with input from the whole community.

In February 2015, Environs Kimberley organised a very successful workshop in Broome to bring together as many of the numerous players who work on weeds in the Kimberley as possible. This involved government (State, Commonwealth and local), non-government organisations, Indigenous ranger groups and land managers and, importantly, interested members of the public. A series of presentations on weed surveys and control led to the establishment of a Kimberley weeds action group.

The 2015 Kimberley weed list was updated for the workshop, resulting in a list of 306 species, comprising nine per



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Main Parks and Wildlife ranger Gary Edwards treats giant sensitive plant.

Inset Giant sensitive plant is known from three populations around Kununurra.

Photos – David Chemello/Parks and Wildlife

Above A grader grass infestation at Old Mitchell Homestead.

Photo – John Hayward/Parks and Wildlife

Right Trucking out neem (*Azadirachta indica*).

Photo – David Chemello/Parks and Wildlife



cent of the region's flora, compared to the Northern Territory, which has 237 species of weeds representing six per cent of its flora, the lowest percentage of any Australian state or territory. Most weeds in the Kimberley originated in tropical Africa, America or Asia and were introduced as garden, amenity or fodder plants. Most are annual or perennial herbs with small seeds that are usually dispersed in soil and by machinery, wind and water.

The departments of Agriculture and Food Western Australia (DAFWA) and Parks and Wildlife have undertaken systematic analysis (see both department's websites) of the list to prioritise the actual and potential weeds of the Kimberley. DAFWA is responsible for biosecurity and preventing serious weeds such as devil's claws (*Martynia*

annua), parthenium weed (*Parthenium hysterophorus*) and witchweed (*Striga asiatica*) not present in WA from entering the State, hence saving both the environment and agriculture from large future costs. Parks and Wildlife is responsible for managing weeds that impact on our conservation estate and has listed a series of weeds as 'alert species' that are potentially serious weeds for bushland but not yet recorded in conservation lands in the Kimberley.

Some weeds – such as escaped bananas present on Sunday Island, and various lawn and garden weeds – will never prove to be a threat to the Kimberley landscape. Others, including khaki weed (*Alternanthera pungens*), require removal from specific sites because of their impact on park visitors.



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THE KIMBERLEY SCIENCE AND CONSERVATION STRATEGY

The Kimberley is essentially a large area of natural vegetation which, especially in the north Kimberley, has the appearance of unaltered wilderness. The north Kimberley is recognised as a stronghold for declining native mammals and an Australian biodiversity hotspot for endemic plants, snails, reptiles, frogs and mammals. To maintain this, the strategy’s Landscape Conservation Initiative aims to ‘retain current near pristine biodiversity and landscape values of the north-west Kimberley by preventing significant impacts from introduced animals, weeds, inappropriate fire regimes and other identified threats’.

The strategy recognises that the entire region has a low number of weeds compared to the highly altered landscapes of temperate Australia and that the focus should be on species that are highly invasive and can replace native species or alter ecosystem processes, rather than those already widespread and with low impact, for example, the asthma plant (*Euphorbia hirta*).

FIGHTING THE GOOD FIGHT

The *Kimberley Science and Conservation Strategy* partners in the north Kimberley are having significant success in their attempts to completely eradicate several Weeds of National Significance with limited populations in the north-west Kimberley. These species include the giant sensitive plant (*Mimosa pigra*), the prickly acacia or nulla nulla (*Vachellia nilotica*, formerly *Acacia nilotica*), rubber vine (*Cryptostegia grandiflora*) and gamba grass (*Andropogon gayanus*). The partners are also working to prevent the introduction, establishment, spread and impact of already widespread invasive weedy plants in the north Kimberley, such as grader grass (*Themeda quadrivalvis*).

A declared Weed of National Significance, the giant sensitive plant (*Mimosa pigra*) from tropical America has infested 85,000ha of wetlands in the Northern Territory. In WA it is known from three small populations around Kununurra, especially on the eastern side of Lake Argyle, where a coordinated effort by Parks and Wildlife, DAFWA, the Water Corporation, Ord Land and Water

and the Miriuwung-Gajerrong Rangers is underway to contain and eradicate it. This will prevent the weed entering the north Kimberley.

Gamba grass is another Weed of National Significance and has had a serious impact in the Northern Territory. This robust tropical African grass grows to four metres tall and forms dense stands that increase fuel loads. It dries off late in the dry season and causes intense hot fires that kill many even relatively fire-tolerant woody plants. It spreads along roads via vehicles, machinery, graders, wind and in soil. Currently it is present in WA as a single population on El Questro Station in the east Kimberley where a combined effort by DAFWA, Parks and Wildlife and the Wunggur Rangers is attempting to eradicate this species before it can spread.

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Above left A Yawuru ranger manually cuts and removes neem (*Azadirachta indica*).
Photo – Tracy Sonneman/Parks and Wildlife

Above The Mitchell Plateau is one of the most spectacular areas in the landscape.
Photo – Rio Tinto



“Fortunately grader grass has a relatively short-lived seed bank of three to five years, but is best controlled when flowering during the wet season.”

Another Weed of National Significance, prickly acacia or nulla nulla (*Vachellia* prev. *Acacia nilotica*), also forms a large infestation in the north Kimberley. This fast-growing African tree forms dense thorny thickets that choke out native vegetation. It is found sporadically over 10,000ha west of Wyndham. Ord Land and Water, under the auspices of the Rangeland Biosecurity Group, has been controlling this species since 2010 and has reduced the population by 96 per cent! Given this fantastic reduction, eventual eradication may be possible. However, it

has very long-lived seeds, so long-term monitoring and control will be essential. This species is a potential threat to all alluvial surfaces of the Kimberley.

Like gamba grass, grader grass (*Themeda quadrivalvis*) forms dense stands that increase fire intensities that kill trees and reduce fire-sensitive species such as mistletoes, and transforms parts of the north Kimberley into annual grassland. The fight against grader grass is being coordinated on stations and roadsides Kimberley-wide by the Australian Wildlife Conservancy and involves the

Shire of Derby-West Kimberley, Parks and Wildlife and the Wungurr and Unguu rangers. While this largely annual Indian grass is already present on more than 400km of roadsides, settlements, stations and some conservation areas, the aim is to stop further expansion and reduce infestation levels with some local eradication. Fortunately grader grass has a relatively short-lived seed bank of three to five years, but is best controlled when flowering during the wet season when access and working conditions are most difficult.

Above Kandiwal traditional owners Lionel Pindan, Selwyn Malay and Kade Malay, with Parks and Wildlife ranger Greg Goonack, and hand-pulled grader grass at Mitchell Plateau.

Above right Wungurr ranger Dean Smith spraying gamba grass at El Questro Station.

Right Ranger John Hayward spraying grader grass at Mitchell River National Park.

Photos – Richard Tunnicliffe/Parks and Wildlife





Above The hairy seed pods of the giant sensitive plant are easily dispersed.
 Photo – David Chemello/Parks and Wildlife



Right Grader grass at Mitchell River National Park.
 Photo – John Hayward/Parks and Wildlife

THE REST OF THE KIMBERLEY

In the south and east Kimberley, the implementation goal for the *Kimberley Science and Conservation Strategy* is

‘to enhance biodiversity values at a landscape scale... by significantly reducing the detrimental impacts of inappropriate fire regimes, introduced animals, weeds and other threats, focusing on selected high value assets, including pathways for these identified threats to impact on the north-west Kimberley’.

This will be achieved by controlling damaging environmental weeds in areas where there is potential for significant natural habitat and species recovery over the long term. The impacts of weeds in the south and east Kimberley has already been substantial and there are many serious widespread weeds. Weeds such as buffel grass, noogorra burr, parkinsonia and leucaena are already impacting high value riverine habitats along the Fitzroy River and couch and buffel are degrading

wetlands of national and international significance (the Broome wetlands and around Lake Gregory).

However, Parks and Wildlife staff and ranger groups in their conservation reserves and areas of activity are working to reduce weed impacts throughout the area, including neem (*Azadirachta indica*) in Yawuru conservation estate around Broome, buffel grass on the Dampier Peninsula by the Bardi-Jawi and numerous weeds in the national parks along the Fitzroy River. Local governments, Rangelands NRM and community groups are educating the public about weeds in their towns and are the major hope in reducing or eradicating new weeds that are still emerging. These include neem, a tree native to east Asia with bird-dispersed fruits that is extremely invasive in native ecosystems, spreading from plantings in towns throughout the region. We will only prevent this and many other species from invading the entire Kimberley by concerted and coordinated efforts of many groups in the region.

So after careful initial planning the party is in full swing. We know the locals, the invited guests and their tendencies that need managing and hopefully have a greater awareness of those guests we won't invite or how to control those who come uninvited.

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Want to join the party? Parks and Wildlife and DAFWA invites members of the public to assist by keeping an eye out for weed species in the Kimberley, particularly weeds of national significance. Please go to the WeedWatcher section of DAFWA's website (www.agric.wa.gov.au) to learn how to recognise these species and for reporting details.

