TYING IT ALL TOGETHER

A well-watered Prickly Acacia tree like this produces more than 170,000 seeds per year.

Our very first community consultation back in 2003 identified weeds as the major threat to the productivity and environmental values of the Desert Channels region, which covers one-third of the State.

Since then, our weed control efforts have ramped up to where they are today: Prickly Acacia eradication as the centrepiece, supported by cactus control, Rubber Vine control and our Weed Outlier Program that weaves in and out of them all, adding value, protecting investments to date and tying it all together at the landscape scale.

Commenced in 2013 and winding up at the end of June 2018, this five year program funded by the Federal Government will see the investment of $1.5 million supporting landholder efforts to eradicate emerging and isolated weed infestations both in paddocks and sensitive riparian areas. It aims to stop new outbreaks of weeds, and the remove infestations left isolated by other weed treatment programs.

The primary focus has been the ‘Big 3’ Weeds of National Significance – Prickly Acacia, Parkinsonia and Mesquite – in the Diamantina River catchment. This geographic focus in the west of the region is a deliberate and systematic effort to mop up fringe infestations not covered by the blanket Prickly Acacia eradication work further upstream. It has seen the treatment of weeds from south of Winton all the way through to Corfield.

But it’s not only our Prickly Acacia Eradication Program that it ties in with. The Weed Outlier Program also links to the our regionally funded HEAT (High-value Environmental Area Targets) Program that protects high value ecological sites through weed and feral animal control. And it also ties in with the individual efforts of landholders, which is one of the reasons why they are such strong supporters of the program.

Another reason landholders support our Weed Outlier Program is we are working with Government Agencies and local government partners to expand the list of weeds being targeted. Detailed surveys are exposing the location and extent of weeds such as Mother of Millions, Parthenium, Belly Ache Bush and Rubber Vine, all of which are now firmly in our crosshairs.

While Prickly Acacia is the super-sized leader of the 'Big 3' weed issues in the region, and Mesquite a much lesser but ongoing threat, it's the mid-sized Parkinsonia issue that has been the target of biological control efforts under this program.

Parkinsonia dieback is caused by a naturally occurring suite of fungi that spread through the soil, infecting the roots, debilitating and killing the tree and preventing seedling development. Of the more almost 200 fungi tested over 12 years of research, three have been settled on by BioHerbicides Australia for inclusion in their patented *Di-Bak Parkinsonia* capsules, which are drilled into trees to start the infection.

Stem injecting Parkinsonia with pellets of fatal fungus.

Like any good campaign, DCQ's Weed Outlier Program is informed by good intelligence. Much of this has been gathered by the almost 900 people using our smartphone- and computer-based Fulcrum app which we've customised for weed data collection. By harnessing the people on the ground to crowd-source data that, when combined with surveys, paints a richer picture of the weed issue and informs a more strategic, targetted investment.

By the time DCQ's Weed Outlier Program is finished, more than 7,000 hectares of paddocks and 64 kilometres of riparian areas will have been treated for Weeds of National Significance as well as new and emerging weed threats. The program will also have hosted field days to inform, educate and enlist landholders.

There may be only 11 months left to run for our Weed Outlier Program, but while weeds continue to pose the biggest threat to the productive capacity and environmental health of our land, as well as the ongoing resilience and strength of our rural communities, DCQ will continue to fight for any available funds to protect the region's future.

For more information on our Weed Outlier Program, or our Fulcrum app, or if you know of new infestations of weeds in your area, contact our weed man, Peter Spence, on (07) 4658 0600.

SEEING IS BELIEVING

PARLIAMENTARY ENQUIRY MEMBERS INSPECTING PASTURE RECOVERY

On the 19th and 20th of June, the Queensland Parliamentary Enquiry into the impacts of invasive weeds and their control sat in Hughenden and Barcaldine respectively to take submission on the Prickly Acacia component. As well as making submissions, we took them for a tour of some of our project sites.

There is nothing like a first hand look to really understand the enormity or the Prickly Acacia problem; likewise for appreciating the amazing success of our integrated system of different control techniques and technologies.

The members of the enquiry viewed landscapes where, after four years, there are three and four live stems per hectare; before our treatment, there were upwards of one thousand. Before there was 100 kilograms per hectare of grass biomass, now there is 1,500.

Seeing is believing.

T'WAS BUT IN PASSING

Over the past month, DC Solutions has had two teams out surveying weeds across the central and south west for the Department of Transport and Main Roads. This is the seventh such survey we've done in eight years so we've become quite good at it, which is probably why TMR engage us.

All up we travelled more than 12,000 kilometres, checking out 30 metres each side of the road centreline, and recording any weeds present. Unsurprisingly, the northern parts were dominated by Prickly Acacia – most of it treated by previous projects we have done for Main Roads – while the southern parts were dominated by Prickly Pear.

The latter are vestigial outliers of the historic infestations that covered nearly a quarter of a million square kilometres of Queensland and New South Wales in the early decades of last century before being devastated by the Cactoblastis moth and caterpillar, which was released in 1925.

People may not be aware that TMR Central West District, through their Senior Environmental Officer, Chris Kiernan has, for the best part of a decade, been tremendous supporters of our proactive weed control. Wherever possible they work in with adjoining landholders and DCQ projects to link their road corridor work with adjoining paddock work to maximise the landscape benefit of weed control investments.

PLANE TO SEE

DCQ doesn't rest on its laurel; that's plain to see. So while our Prickly Acacia eradication program is synonymous with drones and cutting edge technology, it should have come as no surprise for people to see us trialling the cost-effectiveness of a fixed wing Agricultural aircraft in specific circumstances.

Facing 320 hectares of dense Prickly Acacia north of Barcaldine, we did our sums and figured it was well worth trialling a plane on an infestation of this density and scale. The treated area will be monitored over the coming wet season to gauge the success of the trials; if the technique proves as successful as expected it will add yet another weapon to the armoury.

With the ongoing support and funding from landholders and the Queensland and Australian governments, we've perfected the techniques and strategy that, for the first time, are giving landholders hope that this pest can be beaten.

And beat it we must: Prickly Acacia costs producers more than $33 million a year in control costs and lost production

SPINES AND BACKBONES (OR… COCKROACHES AND CACTI)

Australia has no native cacti but, over the past 125 years, it's become home to more than two dozen species. Some, like Prickly Pear, were brought in on the First Fleet to feed the cochineal beetles with which the British dyed their red army coats, others have come in as ornamentals, only to escape the confines of the tended garden, or to be carelessly discarded into the bush when they were no longer wanted.

Cacti hail from the Americas; they thrive in arid and semi-arid climes, making most of Australia at risk of invasion. And they spread vegetatively, meaning any small piece that falls off, or sticks to the fur of a passing kangaroo or steer and drops 100 or 1000 metres away, becomes another plant. Cattle pads

become lines of cactus plants radiating like spokes of a wheel from the hub of an infestation at a bore or a trough.

Whether it's the sandy Mulga country of the south-west, the light soil forest country of the Desert Uplands, the heavy clays of the Mitchell Grass Downs, the dissected residuals and scree slopes of the jump-up country, or the rocky hills of the Mount Isa Inlier… cacti thrive. They are the ultimate survivors. When Fatty Kim and the Short-fingered Vulgarian have their penis size compensation duel with phallic, A-bomb-tipped ICBMs, and we're all burnt to cinder stick-figures, the world will be populated by cockroaches and cacti.

The image above is of a segment of cactus after sixteen months in a perspex box without water or contact with soil. This is Australia's worst nightmare.

Cacti are full of spines, they skewer wildlife, livestock and people, outcompete native plants, have no natural predators, and they spread like the plague. Sadly, cacti are already far more than a shiver up and down that backbone of our pastoral industry, Australia's rangelands.

Six years ago, in an effort to halt the spread of this invidious pest across the western half of the State, Desert Channels Queensland got together with its sister organisations, Southern Gulf NRM and South West NRM to take a stand.

We knew we had to act; there is no way to live with cactus. Rural Australia witness that first hand in the early years of last century when Prickly Pear enveloped 240,000 square kilometres of New South Wales and Southern Queensland. Prickly Pear was a spreading spiny green tide arrested only by the introduction of the *Cactoblastis cactorum*, the grub stage of which infests and devours its flesh.

That was in 1925, so we knew that pinning the future of our rangelands pastoral industries and communities on the release of another miracle biocontrol agent after 90 years of trying was probably not a wise option.

We had to act. We had to galvanise our landholders. We had to show that chemical control was the only current option as we wait and hope for another biological bullet. To do otherwise would be folly. The Australian Government Biodiversity Fund agreed, and signed off on the project at the beginning of 2012.

Initial mapping of cacti infestations across the three NRM regions, which account for half of Queensland, confirmed that the problem was as huge as we thought. Our call for landholder applications for herbicide, which included estimations of infestation areas and densities, showed that we were going to need between $30 million and $70 million, depending on which chemical we used.

But this project was not intended to eradicate cacti across the three regions, it was to perform three critical roles: provide in

itial impetus to get people started on the long journey; reinvigorate stalled momentum; and to close out local eradication.

The two keys to cactus control are: start now; and keep going!

After the mapping and expressions of interest, we ended up with 48 project sites across more than 900,000 square kilometres, 29 in the Desert Channels Queensland region, 10 in the South West NRM region, and 9 in the Southern Gulf NRM region.

And we found ourselves up against nine species of this spiny devil across the three regions: Coral Cactus, Rope Cactus or Devil's Rope, Snake Cactus, Tiger Pear, Harrisia Cactus, Jumping Cholla, Common Pear or Prickly Pear, Velvet Pear and Hudson Pear.

While DCQ managed this project on behalf of the other two NRM regions, it wouldn't have got anywhere without the tremendous support of committed and enthusiastic landholders and local governments, namely Barcaldine, Blackall-Tambo and Longreach regional councils as well as Barcoo, Cloncurry, Richmond and Winton shire councils.

Another bright spot has been the success of a species of Cochineal Beetle (*Dactylopius tomentosus* fulgida biotype) for the control of Coral Cactus. A distant cousin, twice removed, of the very insect that cactus was first brought to Australia to feed, has turned out to be the biological bullet for Coral Cactus. Thanks to the hard-working researchers and field assistants with Biosecurity Queensland, who provided the seed stock and worked with us to conduct field trials and spread the little blighters to Coral Cactus infestation across all three NRM regions.

We've even set up our own Cochineal Beetle breeding herd using imported South African genetics that have proven so successful in that country. Our breeding trays filled with segments of Coral Cactus and myriads of merrily copulating beetles are providing the seed stock to go forth and conquer at least one species of cacti.

Unfortunately, Coral Cactus is the only species that our Cochineal Beetle devastates. Hopefully the wizards at Biosecurity Queensland can replicate their triumph with other species before too long.

Getting this story, and others, out has been another significant achievement of the project. Not only have we been writing articles and holding one-on-one extension with landholders, we've been distributing copies of the Field Guide to Invasive Cacti in Australia as well as completely revamping and updating the website of the Australian Invasive Cacti Network (www.aicn.org.au).

This is all good and well, but how do we know if we're really making a difference? That's where the odd happy snap comes in. Well, more than a happy snap. We set up formal monitoring sites with photo points where we can go back year after year and take another photo at exactly the same spot. What we end up with is a set of time series photographs of the change over time caused by our actions.

Added to this, we visit all project sites, map treated areas, take selfies with dead or dying cactus infestations, and blog on the evils of cochineal – the British have a lot to answer for.

As with any project, we not only monitor the results of our activities, we evaluate their effectiveness and how we could have done things better. It's all about continuous improvement: self-awareness, honest assessment, learning from reflection and striving to do better. A bit like life, really.

Too often we hear stories like *'… there was only a bit in the bottom corner of the paddock near the station dump. We didn't think anything of it till 15 years later when it was suddenly all down the creek and up through the hills. Now we can't get on top of it.'*

So, lessons… we have a few:

- **Start now!** – don't wait until next year, or after the wet, or after the dry. Start now!
- **Go back every year**, again and again, until you can't find any more. Then keep going back every year again and again until you really can't find any more.
- **Don't be discouraged** when you keep finding cactus in places you thought you had cleared. Everybody misses the small pieces, which all grow into big plants.
- **Cactus does not need to flower, fruit and seed to spread** – it will grow from tiny pieces, and the tiny pieces survive long periods of dry weather.