

Landcare UpHunter

Autumn 2019

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The Great Cactus War

A type of fleshy cactus known as “prickly-pear,” specifically *Opuntia stricta*, tested the mettle of the entire nation during the first third of the twentieth century and brought thousands of rural dwellers literally to their knees to pray for deliverance. In the process, many of them not only lost the family home to the ravages of this plant, but their farms and livelihood as well.

In 1901, the government of Australia offered a generous reward, valued at nearly three-quarters of a million dollars in today's terms to anyone who could come up with a practical solution to this crippling plague. Six years later the reward was doubled. And yet, in spite of years of intense effort of both government workers and dedicated individuals, this great green “octopus” continued to spread across the landscape, almost unabated.

At its peak, a thick blanket of cactus averaging from 1.5 to 2 metres and up to 10 metres high, held within its spiny grip more than sixty million acres. This was a region larger than all of Great Britain. For Australia, this loss represented a huge portion of its best farming and dairy land. Alarmingly, the “green monster” was also estimated to be spreading at the rate of a million acres per year.

The solution to this problem, when it came, was exquisitely simple. A small moth, *Cactoblastis cactorum*, was discovered in Argentina and introduced to the prickly-pear. The moth's cactus-eating larvae did the rest, performing what seemed a miracle to nearly everyone, including the scientists who had discovered it. By the end of World War II, the problem with the “pear” was just a memory. It had been eaten into submission. However, recent observations are indicating that Australia's “cactus war” may not be over.

Why? Firstly, a predator usually does not eat all of its food. That would be suicide. So what has *Cactoblastis* and other biocontrol insects left behind? The plants that taste bad? Have too thick a cuticle to be able to chew through? Or those that have developed insect-repelling toxins? (There is evidence that some prickly-pears, when stressed, have the ability to create propylene glycol, a natural insecticide). Prickly-pear cacti are very durable plants. Their ability to survive drought, flood, wildfires, poison, being chopped into hundreds of pieces, and most herbivores, is legendary. They can regenerate from decapitated rootstocks, a fallen fruit or flower, a single pad that touches the ground, or even a small portion of that pad.

Their seeds can wait for decades for the right conditions before they germinate. In fact, there is even evidence that some of their seeds are programmed for delayed germination. Although most sprout as soon as environmental conditions are favorable, some seeds seem to be equipped with delayed “timers” and will wait— good conditions or not— two, three, four, 10, 20...possibly 60 to 100 or more years before sprouting. As a group, prickly-pears seem to have all their reproductive bases covered.

Depending on which botanist you ask, there are between 12 and 29 species of introduced cacti growing in New South Wales. Why so much difference in these estimates? Some of these “species” are natural hybrids. (Prickly-pears and other *Opuntiods* are particularly great at hybridisation, especially in the tough growing conditions of the Australian outback).

Today, there is a new cactus-plague brewing. Although it primarily affects thinly-populated range lands, it has spread across the Wheat-belt and Goldfield regions of Western Australia, to the Flinders Ranges of South Australia, the Wimmera of Victoria State, and the lower Darling Basin and Lightning Ridge areas of New South Wales. In certain localities in outback Queensland, impressively large stands of invasive hybrid cacti have created impenetrable spiny barriers that exclude all stock animals and are choking out much of the other plant life. *Cont'd. on page 3*



Snake cactus Qld.
Photo: T Domico



Pear burners in USA
Photo: T Domico



Car surrounded by tree pear in Qld. (early 1900's)
Photo: V White

Junior Landcare Resources

We have a variety of resources available to Upper Hunter Shire based schools/other education and community services working with children and youth. They are suitable for a range of indoor and outdoor environmental and sustainability learning activities.

Wild About Trailblazing

Use a Trail Camera for 24 hour recording of local native wildlife around your school or at an external children's or youth project site. The camera has an inbuilt infrared facility so that night time photos are automatically recorded without disturbance to wildlife.

Download your choice of photos to a computer.
Available only on a hire (FOC) basis.



Talking Out of The Box

Talking Point Recorder Kits (TPKR) are easy-to-use, small hand held devices for recording different sounds like native birds, frogs and animals.

Use as learning tool by downloading/pre-recording via the internet, or work with your class or group to directly select and record, for them to learn more about particular native wildlife or even pests.

Playback of recorded sound is by pressing the top coloured section.

Available only on a hire (FOC) basis.

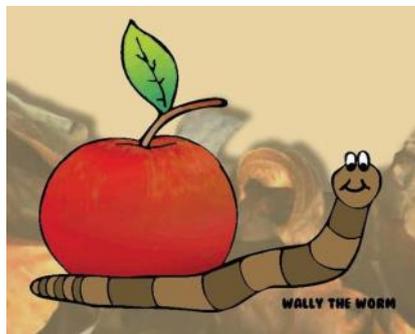
Landcare UpHunter has a range of written material resources available for Junior Landcare related activities. For example:

Lunch Munchers Education Kit

This aims to increase children's knowledge of their environment and improve sustainability through composting, recycling and growing vegetables and native foods.

The Kit focusses on a variety of lesson plans for primary school aged children from infants class and upwards. It covers biology and biodiversity teaching for classroom and outdoor activities. It comes in a spiral binder loose-leaf form.

How many hearts does a worm really have?



Biosecurity & Food Safety Warrior Training Manual

This great activity and learn book is suitable for middle-primary school aged children. It has a learning and actions focus, concentrating on food and fibre farm production.

Lots of written information in its pages and dot-to-dot colouring, find-a-word, symbols & labels, the maze, true or false, code cracker and more.

Completion certificate on back page.

Call Ruth on 0407 232 539 or email landcareuphunter@gmail.com for more information on our resources for children/youth.

The Great Cactus War (cont'd)

"The main problem species come from two different genera of *Opuntioideae* cactus, and unfortunately *Cactoblastis* has little or no effect on any of them" says Mike Chuk, the former chairperson of the Australian Invasive Cacti Network.

There are nearly two dozen species of *Opuntioideae* cacti that are currently on the "Weeds of National Significance" list. These include several true prickly-pears (*Opuntia*); the most problematic of them being the Wheel cactus (*Opuntia robusta*), and the Tiger pear (*Opuntia aurantiaca*) which infests large areas in eastern Australia, including some 494,000 acres in New South Wales. Also on the list are eight species of *Cylindropuntia*. Commonly known as "chollas" in their native North American habitats, these cacti can be identified by their long cylindrical segmented stems (true prickly-pears have flattened stems) and an internal woody skeleton "Some of the worst *Cylindropuntia* invaders are the extremely spiny Hudson pear (*Cylindropuntia rosea*) which infests more than 148,000 acres in the Lightning Ridge area of New South Wales, the hybrid Coral cactus (*Cylindropuntia fulgida* var *mammillata*), and the Snake cactus (*Cylindropuntia spinosior*), whose infestations in western Queensland are truly scary to behold," Mr. Chuk continues.

A survey of invasive cacti across Australia's rangelands by the Rangelands Natural Resource Management Alliance has indicated that the continued spread of these noxious plants will pose real challenges to primary production (cattle and sheep) in every mainland state. In several regions where there are already fairly large infestations, the cost of chemical control is often exceeding the value of the land. As these cacti colonies scattered across Australia's huge tracts of rangeland continue to hybridize and evolve over time, some of them will eventually become resistant to whatever insects that have been placed out there to control them. There is growing evidence that this is already happening.

A number of "pest-pear" (*Opuntia stricta*) varieties are demonstrating resistance to predation by *Cactoblastis*. Tiger pear (*Opuntia aurantiaca*) or "jumping-jack" (so-called because of the way its segments break off and attach so readily to passing animals or car tyres) was for a long time effectively controlled by two species of cactus moth (*Cactoblastis cactorum* and *Tucumania tapiacola*) and a species of cochineal from Argentina (*Dactylopius austrinus*). Today, some large colonies of this low-growing invasive cactus are spreading rapidly, seemingly unaffected by continued presence of these three insect herbivores.

These examples of prickly-pear and other invasive cacti's continued survival in spite of our biocontrols and chemical pesticides serve to remind me of one of evolution's most persistent conundrums: You have to continually "out-evolve" your enemy, or both of you might perish.

Terry Domico



Cactoblastis cactorum Photo: Terry Domico

Note: Adapted from *The Great Cactus War* by Terry Domico. Published by Green Flash Books. Reprinted by permission. Copyright applies.

Resources & Funding

Agribusiness-linked Library—Agribusiness Development Institute on-line resource library at <http://www.abdi.com.au/resources>

Wild deer in New South Wales—Department of Primary Industries February 2019 (Primefact 1678). An easy-read information source covering the six species of wild deer in NSW (Fallow, Red, Sambar, Rusa, Chital, Hog deer), their effect on our landscape and water sources, hunting and shooting regulations, reporting sightings and population mapping. Just go to www.dpi.nsw.gov.au

Fast-Tax-Facts—The Australian Tax Office, a guide for primary production businesses on what to claim for Landcare and similar expenses. For example, the cost of weed control and pest control; pest proof fencing; warren ripping and revegetation for reduction in soil erosion; employing effective methods for restoring landscape health. You can view information and the guide at <https://www.ato.gov.au/Business/Primary-producers/In-detail/Capital-expenditure/Landcare-operations/>

The Effect of fire on small mammals—Mark Graham (Nature Conservation Council), from a discussion on the importance of small mammals to Australian ecosystems and using fire regimes to support different species. To access a copy of this paper just go to <http://fireandrestoration.org.au/mark-graham-thinking-about-small-mammals-in-fire-regimes/>

A Ranger's Handbook: Managing Feral Pigs for Biodiversity Conservation in Cape York—PestSmart, CSIRO, James Cook Uni., Indigenous rangers series of 12 handbooks on methods for the control of feral pigs and monitoring their impacts on biodiversity. Techniques used can be applied in similar environments. Shared resource with Balkanu Cape York Development Corporation P/L. To view and download any of these handbooks go to <https://pestsmart.org.au> then click on pest animal species then Feral Pigs.

NSW Quad Bike Safety Improvement Program—SafeWork NSW offers farmers and their workers access up to 2 rebates value \$1,000 each, to implement harm prevention measures in the workplace. Rebates can cover a combination of bike, helmet and drone solutions. Just go to <https://safework.nsw.gov.au> then link into NSW Quad Bike Safety Improvement Program for information.

Funding

Organics Infrastructure Fund—NSW Environment Protection Authority (NSW EPA) has various grants available each year to Local Councils, Business, Industry, community groups etc. For example, Waste Less, Recycle More grants up to \$300k to develop new markets or expand existing markets for compost; Love Food, Hate Waste Education or Litter Reduction projects. You can view case studies of past projects at the EPA on <https://www.epa.nsw.gov.au/working-together/grants/organics-infrastructure-fund>

Events for your Diary

Landcare UpHunter stall—farming, environment, Landcare, education resources, plants/herbs. Visit us at: EarthFest—Saturday 27th July at Segenhoe Inn, 56 McQueen Street, Aberdeen (opposite Jefferson Park) from 10.00am to 4.00pm.

A local drought support event with entry by gold coin donation. Local stalls, workshops & entertainment.

Celebrate National Tree Day—plant a tree. Costa Georgiadis (ABC Gardening Australia) will be there!

Other Events:

How to Make a Video on Your Smartphone (workshop for Primary Producers) - 7th June at Scone TAFE, 2 Flemington Drive, Scone from 9.30am to 1.30pm. Bookings at <https://www.trybooking.com/book/sessions?eid+504434>

Upper Hunter Young Farmers Group —15th July at Scone RSL, Guernsey St, Scone from 6.00pm. Incl. NSW Farmers, Scone branch committee formation. Email: Mick at collinsm@nswfarmers.org.au

Gundy Farmers Dinner—6.30pm first Friday of every month at the Linga Longa Inn, Riley St, Gundy.

Merriwa Landcare Group. Contact Jenny Lee on 0429 337 557

Murrurundi Landcare Group just Email Sandy@boydscreek.com.au

Pages River Warriors Working Bee Wilson Memorial Oval, Murrurundi 1st & 3rd Sunday monthly (morning) Email Sandy@boydscreek.com.au

Landcare UpHunter & Scone Landcare—refer details below

Return and Earn

Scone has been a recipient of the Return and Earn NSW scheme since this container deposit project's early roll-out, being so popular with residents that the first Reverse Vending Machine installed in town was quickly followed by a second (bottles and cans).

There are over 600 collection points in NSW with details of all outlets available on the website. You may want to find the nearest collection point to you when travelling within the State or incorporate that knowledge when planning a holiday etc. away from home.

Just go to <https://returnandearn.org.au>.how-it-works for lots of information on this great recycling scheme or to access the app go to www.mytomra.com.au/return-and-earn/

Ruth Hardy

Mixed Waste Organics

In the past, some organic materials from household bins (red-lid) have been used for processing mixed waste organic material which is produced at alternative waste treatment facilities, primarily to divert general household waste from landfill sites.

In October 2018, the NSW Environment Protection Authority (EPA) changed the current regulation to stop the use of mixed waste organic material on agricultural land and suspend its use on forestry and mining land until further controls can be considered.

A comprehensive independent research program has concluded that there are limited agricultural or soil benefits from applying the material at the current regulated rates, but there are physical contaminants, such as small pieces of plastic and glass and potential environmental risks. Preliminary findings from a Human Health and Ecological Risk Assessment indicate that the material is unlikely to present any health risk to the general public, including consumers buying produce. However, the EPA decided to stop its use.

You can read more here: <https://www.epa.nsw.gov.au/your-environment/recycling-and-reuse/resource-recovery-framework/mixed-waste-organic-material-is-no-longer-in-use>

The EPA has worked with alternative waste treatment facilities to ensure that local waste collections continue without disruption, with these materials being temporarily sent to landfill. EPA staff are working together with industry and local government to identify a longer term, sustainable solution for this mixed waste organics material.

A number of measures exist to assist stakeholders during the transition to an alternative resource recovery approach. This includes a support package for up to 12 months to cover additional costs of sending mixed waste organic material to landfill during the period of regulatory change and development, and funding the removal of any material currently stockpiled on agricultural land.

Compost and biosolids still beneficial to land

This regulatory change *does not apply to compost or biosolids*. Compost (food/garden waste) and biosolids are beneficial and can be used on land, under existing regulation.

More information about this distinction can be found in the document Applying Compost & Biosolids to Land fact sheet at <https://www.epa.nsw.gov.au/search?q=18p1313>

If you would like any further information, please contact the EPA Environment Line on **131 555** or email: epa.engagement@epa.nsw.gov.au.

Emily Ingram



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Landcare UpHunter

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Visit us at www.landcare.nsw.gov.au/groups/scone-landcare-group