

# Natural capital stocks in cotton growing areas

■ By Julian Walls – 2rog consulting

**T**HE success of the Australian cotton industry is founded on natural capital stocks that occur in cotton growing regions. These stocks comprise our rich soils, clean water, unique biodiversity and fresh air that each provide an array of 'ecosystem services' that support the cotton industry.

Ecosystem services are the flow of benefits from nature to people, ranging from food and fibre production to air and water purification to a variety of cultural and social benefits associated with being part of nature and landscapes.

As we know in financial management, the drawing down of a stock of financial capital has the effect of reducing future interest payments that are generated by this capital. The same analogy applies to natural capital. Drawing down a stock of natural capital has the effect of reducing the flow of ecosystem services that are generated by this capital.

The major difference between financial and natural capital is that a stock of financial capital is more easily replenished than a stock of natural capital whose initial and ongoing drawdown may manifest in perverse and irreversible outcomes including soil

degradation, salinity, channel erosion, vegetation fragmentation, and loss of biodiversity. This will reduce the flow of ecosystem services and ultimately the productive potential of farm enterprises.

Past management practices within the cotton industry have



Iconic species such as the wedge-tailed eagle are part of the cotton landscape.

## WHAT YOU AND YOUR COMMUNITY CAN HELP WITH

To protect iconic and threatened species in the cotton landscape, the best option for the cotton community is to retain and improve remnant bushland that remains on cotton farms, and to augment it with strategic long-term native vegetation plantings that link to larger vegetation reserves across the cotton landscape.

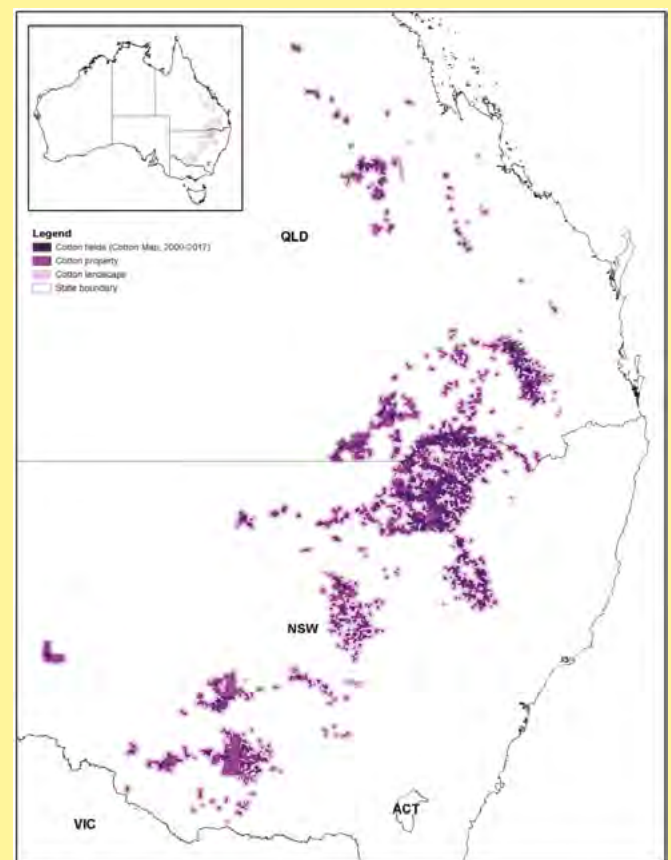
For any pieces of bushland that remain on the cotton farm:

- Retain structural features such as hollow-bearing trees, dead standing trees (stags), large fallen logs, termite mounds, surface rocks and thickets of shrubs, as these all supply habitat for different native species.
- Give the patch frequent rests from grazing, particularly in wetter areas (springs, streams and wetlands).
- Keep on top of exotic plants and animals as much as possible (this is often possible through a community initiative).
- Keep large snags in the river and try and regenerate river banks with river red gum and other native species if there are opportunities.

It is also important to retain paddock trees if possible as these provide stepping-stones for birds and other animals to move across the landscape.

And think about the 400 metre rule. Any part of your cotton crop that is within 400 metres of a patch of bush or even a single paddock tree is more likely to be visited by beneficial predators (birds and bats) than parts of the crop that are more than 400 metres from the nearest bushland. Is there any option on your place for establishment of habitat strips to build up natural capital stocks in future?

**FIGURE 1: Cotton landscape of eastern Australia**

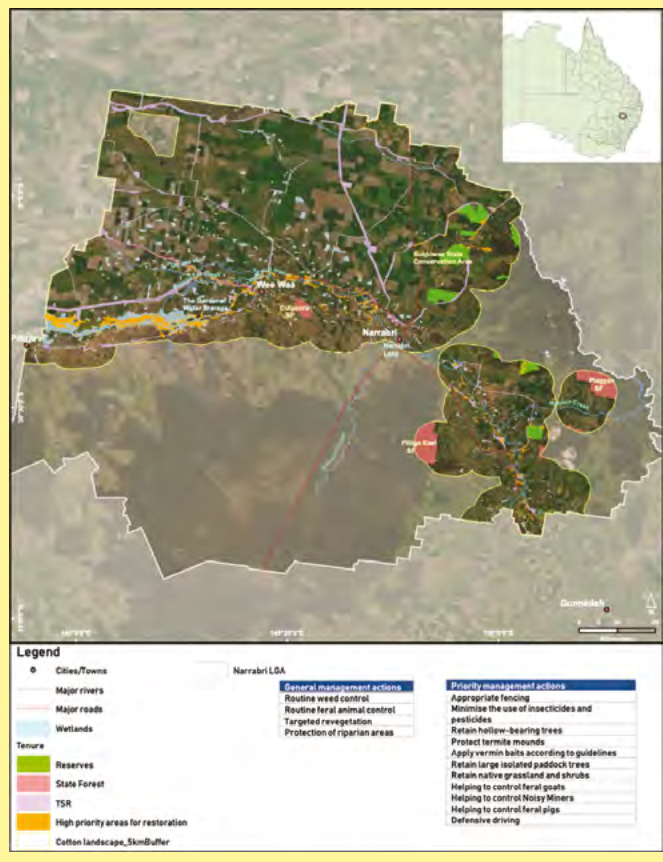


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**FIGURE 2: Example of a region profile map – Narrabri Shire**



on the whole depleted natural capital stocks over the past 50 years. But emerging initiatives such as 'myBMP' seek to place the industry on a sustainable footing by improving on-farm practices that include better irrigation, more responsive use of chemicals, and appropriate management of native vegetation. These initiatives are being driven by a growing awareness that protection and restoration of natural ecological processes and

ecosystem complexity in cotton landscapes are important factors in the control of agricultural pests, maintenance of healthy rural landscapes, and improvement of farm profits.

Although challenging at both an industry and farm scale, natural capital stocks can slowly be replenished, and this will increase the future flow of ecosystem services into farming systems.

### Taking stock of natural capital

In 2017 a small company called Zrog Consulting was contracted by the Cotton RDC to undertake a stock-take of biodiversity assets across cotton growing regions of eastern Australia (Figure 1). The study covered an area from the NSW-Victorian border to the Fitzroy Basin in Queensland and identified actions to assist with management of iconic plant and animal species in these regions.

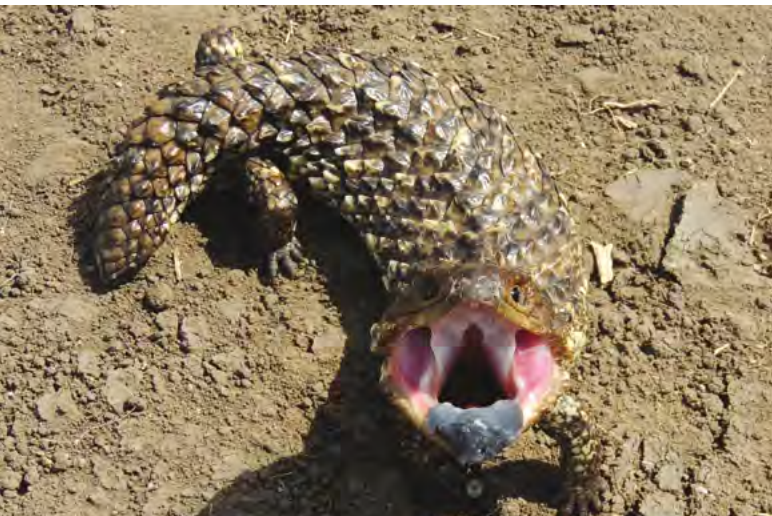
The study found that cotton growing regions contains a rich diversity of native plant and animal species that occur in a mosaic of forest, woodland, wetland, grassland and cropland systems. Major findings of this project in relation to native vegetation included:

- 21 per cent of the combined extent of all cotton properties retain a cover of remnant native vegetation.
- Most of the extent of native vegetation (over 75 per cent) is retained in large patches of more than 200 hectares while most vegetation patches across the cotton valleys are under 200 hectares.
- 35 per cent of cotton properties comprise a 'high' or 'very high' ecosystem diversity, which means that over 10 broad communities occur within 10 km. As well as floodplains, many properties contain red-sand hills that support a different set of native plants and animals.
- Corridors that stretch across and between cotton farms provide pathways for dispersal of many animal species, mapping has shown that cotton areas have a total length of almost 6000 km of landscape-scale corridors enclosing 11,300 km<sup>2</sup> of land.

A number of findings from the study in relation to wetlands, rivers and fauna include:



**Cotton properties contain over 6500 individual wetlands.**



**Shinglebacks are widely distributed through cotton areas.**

- Wetlands contain many unique flora species and are often visited by flocks of migratory shorebirds. Cotton properties contain over 6500 individual wetlands including parts of two Ramsar sites and 11 wetlands of national importance.
- Riparian areas provide refuge for many fauna species and are also a source of native beneficial predators of cotton pests. A total of 35 rivers and 149 major creek flow through cotton properties in NSW and Queensland – a combined length of about 7700 km.
- A further 12,200 km of minor creeks intersect cotton properties.
- A total 315 iconic and threatened plant and animal species were identified in the cotton landscape of eastern Australia.

### Iconic species

In addition to threatened species, 2rog and the CRDC considered it important that ‘iconic’ species be considered as part of cotton landscape management. Iconic species are those that are not necessarily rare, but are unique or distinctive in the region, bring about a sense of place, or are species that are appealing in some way. They may be cute, beautiful, quirky, aggressive or dangerous, or they may be a local emblem. Iconic species are those that cotton growers are proud to have on their places, or that provide re-assurance that all is well. Examples of iconic species in the cotton landscapes are:

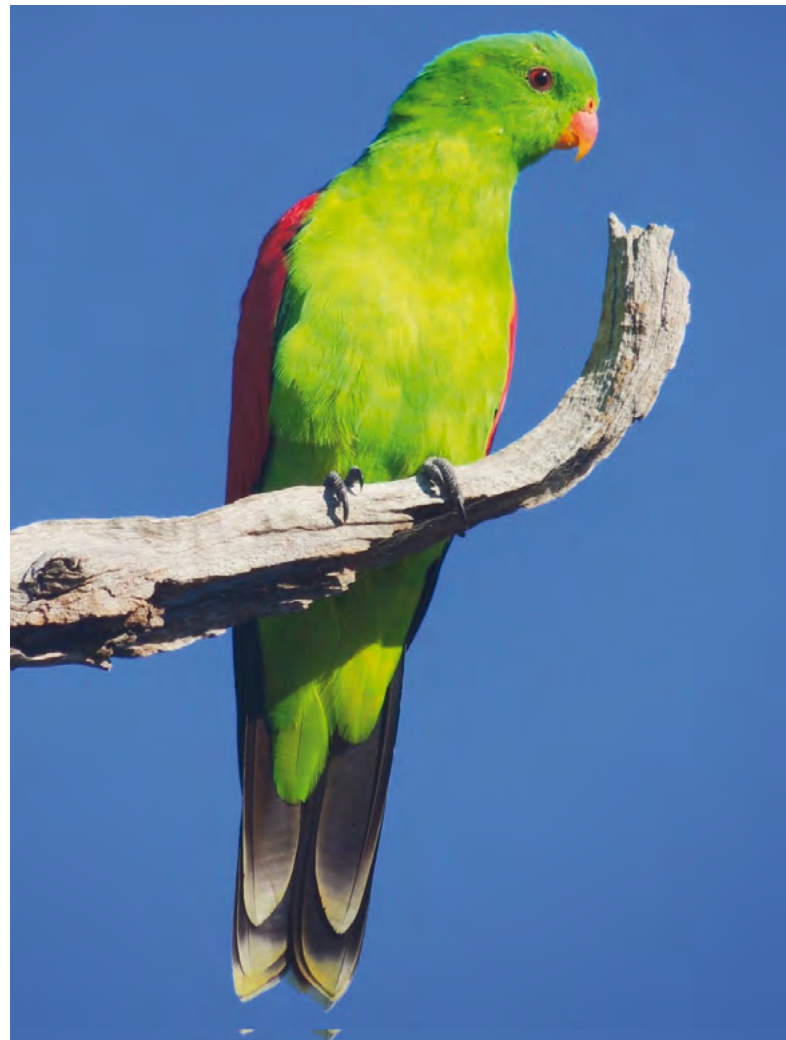
- **Plants:** Brigalow, leopardwood, Queensland bottle tree, river red gum and slender Darling pea.
- **Animals:** Australian bustard, black-breasted buzzard, black-headed python, brolga, brush-tailed rock-wallaby, duck-billed platypus, echidna, fitzroy river turtle, frill-necked lizard, greater glider, koala, northern quoll, redclaw crayfish, superb blue fairy-wren, superb parrot, wedge-tailed eagle and western blue-tongue Lizard.

We welcome your feedback on iconic species – which are the species that resonate with you, your family, and your community?

### Managing native bushland valley by valley

To identify opportunities for improving habitat that supports iconic species, the cotton landscape was divided into 36 separate regions based on local shires in NSW and Queensland. A profile was developed for each region that provides:

- An overview map identifying areas of remnant vegetation that should be prioritised for protection and enhancement on account of their values (e.g. Riverine vegetation, threatened



**Red-winged parrot.**

ecological communities, landscape connectivity, proximity to established reserves, proximity to cotton fields). An example is shown in Figure 2.

- A list of key biodiversity assets including vegetation types, wetlands, iconic species, rivers and creek lines, and adjacent public land reserves.
- A description of four generic management actions that include routine weed and pest management, protection of riparian areas, and targeted revegetation.
- A set of region-specific management actions that focus on the habitat requirements of the particular group of species likely to occur in that region.

There are considerable opportunities for on-farm conservation programs within the cotton industry to improve biodiversity values, because collectively cotton properties comprise the following assets which are distributed across the region in various condition states:

- About 20 per cent of the total area of all cotton properties is covered with remnant vegetation (956,100 hectares).
- Almost half the area of remnant vegetation on cotton farms is considered as threatened ecological community (comprising some 455,800 hectares).
- Large areas of wetlands, both natural and artificial totalling 492,900 hectares.
- 7702 km of major rivers and creeks.
- 12,205 km of minor watercourses.