

Managing regrowth for habitat and production values

overview

A study carried out in the Queensland Brigalow Belt has found that well managed areas of regrowth can offer both habitat and production benefits. While regrowth can present problems such as reduced carrying capacity and additional clearing costs, it can offer a number of production benefits such as erosion control, water quality improvements and pest control (see Box 1). Well managed regrowth vegetation can also provide important habitat for native fauna, with places to nest, forage and shelter, and interact with other species (see Box 2).

Box 1. Enhanced production benefits from native ecosystems.	Box 2. What do quality habitats contain?
<p>Erosion control. Native ground cover, litter and logs on the ground help to slow the flow of water, improve infiltration and reduce run-off and erosion.</p> <p>Water quality improvements. Reducing erosion means less sediment and nutrients in the waterways which results in improved water quality</p> <p>Insect/pest control. Vegetation provides habitat for birds, bats and other beneficial animals, which help keep pests under control.</p> <p>Shelter for domestic stock. Shade and shelter provided by native vegetation protects animals from harsh weather conditions.</p> <p>Windbreaks. Crop and pasture productivity is improved by reduced evaporation from wind.</p>	<p>Mature trees. Older trees are needed to provide hollows (see below) and to produce the fallen timber that provides habitat for a range of animals.</p> <p>Understorey vegetation. A mix of vegetation layers is needed to accommodate a range of animals, for example spiky shrubs (lime bush, current bush) house and protect small finches and wrens.</p> <p>Ground cover. Includes native grasses, herbs and leaf litter, which provide food and protection to ground dwelling animals.</p> <p>Hollows. Hollows in standing trees provide a home for a range of marsupials, bats and birds, such as cockatoos and galahs.</p> <p>Logs on the ground. Logs provide protection, shelter and habitat for animals, such as lizards, snakes and insects.</p>

In fact, according to the study, the biodiversity and habitat values provided by well managed stands of mature regrowth are equal to those provided by remnant vegetation. These findings have important implications for landholders trying to reach a balance between production and conservation in the management of regrowth vegetation in the Brigalow Belt (see Box 3).

Box 3. Management actions and implications

Management action	Impact
Reduce grazing intensity	Increases ground layer and low shrubs
Fence stands of vegetation	Increases ground layer and low shrubs
Retain or selectively thin mature regrowth	Provides fallen logs for fauna habitat
Exclude fire from vegetation stands	Native vegetation regenerates



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background and method

The study of regrowth management was carried out by Amber Gordon, on behalf of the Queensland Murray Darling Committee (QMDC), in October 2004. The aim was to investigate the impact of grazing practices on the condition of remnant and regrowth vegetation on two properties in southern inland Queensland. This was done by assessing the condition, or 'health', of vegetation stands on the two properties and comparing these results against the management practices applied to those areas.

A 'vegetation condition assessment' methodology was used to measure the relative health of the remnant and regrowth stands. This assessment was developed by QMDC to assess on-farm biodiversity/habitat condition. It evaluates the total condition (structural complexity and influences on condition), landscape context (patch size/shape and connectivity) and land management (grazing intensity and fire management). The majority of information for the assessment was collected through field studies, and the land management history was obtained through interviews with landholders.

mt surprise

Mt Surprise is a 1,821 hectare cattle grazing and cultivation property owned and operated by Neville and Penny Boland. The property is situated south-west of Moonie, in the Southern Brigalow Belt of Queensland.

Mt Surprise contains remnant and regrowth areas of brigalow (*Acacia harpophylla*) and/or belah (*Casuarina cristata*) shrubby open forest on clay plains (regional ecosystem 11.4.3). Grazing is concentrated in one half of the property, with the remainder used for cultivation. Stands of remnant and regrowth are used for shelter and shade and provide ecological services, such as animal habitat and erosion control. Some areas of remnant vegetation have been fenced.

dunkerry south

David and Liz Hill own and operate Dunkerry South, a 2,924 hectare cattle grazing and cultivation property near Thallon in southern Queensland.

Dunkerry South contains remnant and regrowth areas of Coolibah (*Eucalyptus coolabah*) and/or belah (*Casuarina cristata*) open woodland on alluvial plains (regional ecosystem 11.3.28), and poplar box (*Eucalyptus populnea*) woodland on alluvial plains (regional ecosystem 11.3.17). Some sites also contain cypress pine (*Callitris glaucophylla*) and/or silver-leaf ironbark (*Eucalyptus melanophloia*) woodland on alluvial plains (regional ecosystem 11.3.19).

Vegetation corridors have been retained around the perimeter of twelve paddocks for habitat and to provide linkages across the property and sub-catchment. Four of the twelve paddocks are used for grazing. These paddocks and the timbered vegetation corridors are grazed at varying intensities.



findings and recommendations

The case studies showed that healthy, functioning stands of regrowth can provide good habitat for native wildlife. This can be critical in areas where much of the ecosystem has been removed or modified during agricultural development. However, unmanaged grazing of regrowth can limit the quality and extent of the habitat and impact upon ecosystem functions and wildlife populations in bush patches. In order to maximise the production and habitat values of regrowth vegetation, the study identified a number of recommended management practices. These are outlined below.

1. Reduce grazing intensity

The case studies showed that high grazing intensity has a negative impact on the native ground layer and low shrub cover. At the highest levels of grazing intensity, both the low shrub and native ground layer (including herbs, grasses and litter) on Mt Surprise were below the benchmark, or optimum level (refer Picture 1). At sites where the grazing intensity was lower, the ground and shrub layers were in better condition and did reach the benchmark level¹.

A similar result was found on Dunkerry South, where all but one site showed a negative impact on native ground cover as a result of grazing. Unlike Mt Surprise, however, the low shrub layer at all sites, regardless of the grazing intensity, did meet the benchmark level. There was also a link seen on Dunkerry South between grazing intensity and the presence of logs. Generally speaking, areas of regrowth vegetation with higher grazing intensities had fewer logs on the ground, while the areas with low grazing intensity had more.



Picture 1: Mt Surprise regrowth site with high grazing intensity

2. Fence stands of vegetation

The results of the case study indicate that fencing stands of regrowth vegetation can promote regeneration of low shrubs and ground cover. By limiting the duration and intensity of grazing in these fenced areas, the vegetation cover is able to return to benchmark levels. This growth in cover provides increased habitat for native fauna, and ensures greater erosion control and better quality feed. Most importantly, it allows for strategic grazing management by allowing the landholder to choose when and for how long the area is grazed.

¹ A benchmark was determined for each ecosystem type by referring to early ecological survey work in the region. J. Neldner provides vegetation structure and native species present for each community. Sites on the properties that related most closely to these references became the benchmarks for the study. Neldner, J. 1984, Vegetation Survey of Queensland: South Central Queensland, Department of Primary Industries, Brisbane.



An example of this can be seen on Mt Surprise where a stand of remnant vegetation has been divided into two separate grazing paddocks. One half of the stand is fenced off to control grazing and is maintaining the desired benchmark for native ground cover and low shrubs (refer Picture 2). The section of vegetation in the other paddock is not fenced and is subject to a higher grazing intensity. The ground layer cover in this section is below the benchmark, as illustrated in Picture 3.



Picture 2: Fenced portion of remnant on Mt Surprise



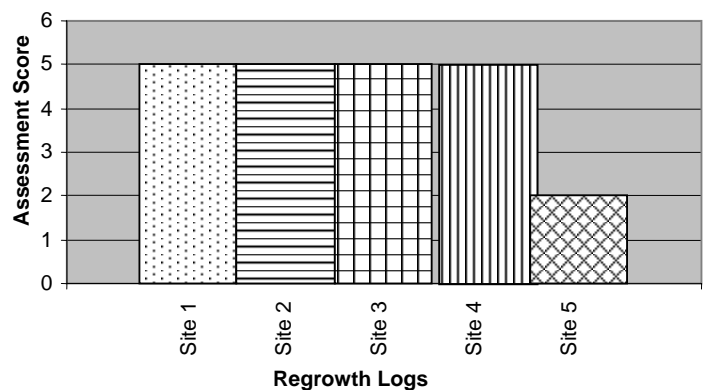
Picture 3: Unfenced portion of remnant on Mt Surprise

3. Retain or selectively thin mature stands of regrowth vegetation

Fallen logs on the ground provide important habitat for ground dwelling fauna, such as lizards, snakes and insects. Not surprisingly, the case study found that younger regrowth provides fewer logs on the ground than mature stands of vegetation.

Figure 1 shows the relative abundance of fallen logs at five regrowth sites on Mt Surprise. Site 5 was cleared in the 1980s, while the other four sites were cleared more than 50 years ago. The assessment score (logs on ground) at site 5 is much lower than the other sites, which shows there is greater habitat value in older regrowth and benefits in maintaining mature trees.

Figure 1: Logs on ground in regrowth on Mt Surprise





The benefit of retaining mature regrowth is also evident on Dunkerry South where areas of regrowth were kept to provide habitat corridors. The management decision to retain strategic areas of mature regrowth is providing important habitat in the logs on the ground (refer Picture 4).

This means any selective thinning should be done in a way that retains sufficient mature trees to provide adequate fallen timber. It should also be done in a way that provides a mix of tree ages within the stand. This will ensure that the stand will not die out but remain a healthy, viable patch of bushland into the future.

Selective thinning offers a number of benefits. From a production perspective, it reduces the competition from trees and improves grass growth and carrying capacity. It can also open up dense stands of vegetation to provide shelter for grazing animals and increase the diversity of plants growing in the area.



Picture 4: Mature regrowth providing logs on ground on Dunkerry South

4. Exclude fire

Given that fire has been excluded from both of the case study properties, it was difficult to determine the effect of fire on the habitat and production values of regrowth. However, fire is known to have a negative impact on brigalow and belah (two dominant species found on the case study properties) as fire affects the plants' ability to survive, regenerate and re-establish.

Given the healthy range of species present at the regrowth study sites on both properties, it would seem that the exclusion of fire has certainly had no negative effect on the habitat values of the sites.

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Information in this case study has been researched and prepared by Amber Gordon from the University of Queensland, Gatton, with assistance from staff at the Queensland Murray-Darling Committee.