

# The Upper Condamine – a frog haven

Article by Dawn Heath, Regional Ecologist QMDC

Thanks to Harry Hines for his assistance and use of photographs.

The rainforests and wet forests of the upper Condamine catchment in southern Queensland provide a vital haven for a number of endangered, vulnerable and rare (EVR) frog species. From the headwaters of the Condamine River near Killarney on the western slopes of the Great Dividing Range, through to the Goomburra Valley in the north, frog ecology research is being undertaken by Senior Conservation Officer Harry Hines, of the Environmental Protection Agency's (EPAs) Threatened Species Branch.

Mr Hines' surveys have established that six EVR species can be found in suitable habitat within this region. These include the tusked frog (*Adelotus brevis*) (Vulnerable); the red-and-yellow mountain-frog (*Kyarranus kundagungan*) (Rare); the black-soled frog (*Lechriodus fletcheri*) (Rare); Fleay's barred-frog (*Mixophyes fleayi*) (Endangered); the cascade treefrog (*Litoria pearsoniana*) (Vulnerable) and the whirring treefrog (*Litoria revelata*) (Rare).



*Litoria pearsoniana*  
HB Hines

This diversity of EVR species highlights the biodiversity values of the riparian zones and adjacent vegetation within the upper Condamine, but their conservation status illustrates that these species have been impacted by past land management practices. The impact of current and future practices lies in the hands of today's land managers.

"Many of these species would have been widespread along the upper Condamine River prior to the extensive clearing and/or heavy grazing," said Harry.

So, if you are lucky enough to be a landholder in one of these areas, what can you do to ensure the ongoing survival of these threatened species? According to Mr Hines, there are a number of actions landholders can take to improve the frog habitat values on their properties.

## Revegetation for habitat

In areas that have been previously cleared, revegetation will not only increase habitat for frogs and a plethora of other native wildlife species, but can also assist in reducing stream bank erosion and improve water quality.

"It is my opinion that some of the frogs would re-establish along more disturbed sections of streams if these could be linked to the remnant patches through revegetation," he said.

It is important to use native endemic species when replanting to ensure the highest biodiversity outcomes are achieved. Ideally, revegetation programs should be undertaken within a landscape scale, so why not see if neighbours are interested in joining up riparian planting schemes to extend and enhance these riparian corridors?

## Livestock control

According to Mr Hines, another important aspect of increasing habitat values is to limit or exclude livestock access to stream banks, which will also reduce impacts such as stream bank erosion and reduced water quality. One option is to fence the creek and install off-stream watering points. Ideally, riparian fencing should be placed away from the watercourse to allow a 'buffer' zone, which will increase the habitat values and provide greater protection of the fence against damaging flood events. Other species such as the platypus and beautiful azure kingfisher will also benefit.

If we can protect the existing valuable frog habitat, while working towards increasing habitat extent within these areas, it is hoped that these frog species will be around for future generations to enjoy.

Previous research undertaken by Mr Hines focused on determining the status of these species following a serious decline in population numbers during the late 1970s and early 1980s. His work also established the key threatening processes, including Amphibian Chitrid fungus and unsympathetic land management activities, that have impacted these species.



*Mixophyes fleayi*  
HB Hines



*Kyarranus kundagungan*  
HB Hines



## Biodiversity values of regrowth and mature brigalow vegetation

Article by Melanie Bradley, CSIRO

The value of regrowth vegetation as a conservation resource is widely acknowledged, but its effective incorporation in agricultural landscapes is not always straightforward. Recent findings from PhD researcher Mel Bradley is helping fill this knowledge gap.

Key issues that Mel considered in the recovery of brigalow ecosystems include: how the biodiversity values of regrowth stands compare to the biodiversity values of mature stands, and how to manage the development of regrowth vegetation to promote the establishment of diverse, resilient native brigalow communities that support a range of plant and animal species.

Mel's research was conducted in brigalow communities in the Tara Shire, where she examined the growth and development of brigalow stands by looking at floristic and structural features (e.g. number and diversity of plant species, vegetation height, tree cover, shrub cover, litter cover). The study surveyed the floristic and structural characteristics of eighteen stands of brigalow that ranged from two years since last disturbed (YSLD) to 100 YSLD. The aim was to assess how the number of woody (tree and shrub) species and the structure of the brigalow vegetation changed over time. The study found:

- The total number of woody species observed in the brigalow stands increased with years since last disturbance.
- Tree cover and litter cover increased with years since last disturbance, while grass cover showed a decrease.
- No relationship was found between years since last disturbance and shrub cover.

Overall, it will take around 90 years before regrowth brigalow stands recover 90 per cent of the floristic and structural characteristics of mature stands.

It is important to recognise that while regrowth vegetation does not have the floristic and structural characteristics of mature vegetation, it still has significant biodiversity value.

Regrowth brigalow provides habitat for flora and fauna and is critical for increasing the extent of native vegetation coverage in heavily-cleared landscapes. Wide stands of regrowth (i.e.  $\geq 100$  m), minimally grazed, will be particularly valuable, as they tend to have a greater range of plant species and more diverse structures. Management practices such as tree thinning and allowing for the accumulation of logs and litter are

recommended for promoting the recovery of woody species diversity and increasing structural variability.

Future research should investigate what impacts brigalow stands might have on adjacent agricultural production. For example, brigalow might support beneficial insect predators and parasitoids. Conversely, it might support or enhance the activities of certain agricultural pest animals (e.g. kangaroos, wallabies, foxes, feral pigs and feral cats). Disadvantages like this need to be accounted for in any whole-of-landscape assessment of biodiversity values.

For more information on the project: "Integrating brigalow vegetation with dryland cropping: A summary for land managers" and details on the full study go to [www.csiro.au/science/Brigalow.html](http://www.csiro.au/science/Brigalow.html)

