Nature's workforce

Biodiversity Series: How To | May 2008 Issue 5 | Produced by Cotton Catchment Communities CRC

"Keep it messy mate!" Diversity in the workplace

For the natural workforce to thrive it needs a diverse and complex work environment composed of different layers of living vegetation as well as rock piles, leaf litter and fallen logs.

Natural River Red Gum bushland on a cotton farm near Pilliga. *Photo: Rhiannon Smith*

In Summary

The science

A recent study on cotton farms has shown native vegetation with a number of vegetation layers, a large variety of plant species and abundant logs and litter on the ground supports a higher number of species.

Helpful hints

- Resist the temptation to 'clean up' standing and fallen dead timber, rocks and shrubby understorey within your vegetation. If you need to clean up fallen or dead standing timber consider putting it into piles and not burning it.
- If possible, keep standing dead trees as hollows provide habitat for many birds, insects, mammals and reptiles.
- Allow regeneration of shrubby species as well as trees and grasses.

Benefits to the farmer

Increased habitat for beneficial insects outside the cropping cycle, helps to keep the natural workers on your farm.

Are I making a difference?

Establish permanent photo points and take a landscape photo each year of the vegetation structure, what condition is your vegetation in?

What does the science say?

Healthy trees provide the seed banks for the next generation of trees. Trees tend to be healthier with an understorey comprising of native shrubs,

Cotton Catchment Communities CRC

mosses and lichens opposed to where there is no understorey or an understorey of exotic pastures and weeds. Soils too are important for tree health, soils low in nitrogen with high organic carbon support healthy trees. Fallen logs and debris assist by providing anchorage sites for mosses and lichens as well as contributing to the organic carbon content of the soil. As the logs slowly decay they release the nutrients back into the soil. Logs provide habitats for many creatures and in some cases animals even use them as "highways' to get across the landscape.

Within riparian zones fallen logs in streams are equally important. The logs help to improve stream bank stability as well as provide habitat and shelter from predators. Murray cod attach their eggs to hard surfaces such as logs or rocks and fish species such as Australian smelt need logs and woody debris to hide from predators. Bacteria and fungi attach to logs and process carbon, nitrogen and phosphorous promoting the recycling of nutrients. Wetland bird species such as Cormorants use logs and dead trees to roost and breed in as it provides protection against land predators such as foxes and cats.

Fallen logs and debris in our rivers form important habitat and food for a variety of fish species including Murray Cod. Günther Schmida

What can you do?

There are some simple management strategies to encourage more species to live in your native vegetation.

- Resist the temptation to 'clean up' standing and fallen timber, rocks and shrubby understorey within your vegetation.
- Spell pastures during the growing season for at least as long as they are grazed, to allow productive palatable forages to recover and soil organisms to multiply.
- Keep trees with hollows (dead or alive) and allow tree seedlings to establish.
- Allow shrubs and the ground layer to regrow by restricting stock and vehicle access and controlling weeds.
- If you do 'clean up' fallen logs keep them in piles rather than burning them so they can be used by animals.

A cautionary note: there are potential hazards in the work place if fallen timber is not removed. To manage this risk you could exclude access to areas with fencing and/or alert staff to the potential hazards.

Are you making a difference?

To monitor whether your actions are improving the condition of your biodiversity establish permanent photo points and take a landscape photo each year of the structure of your vegetation. To ensure you accurately document change, take the photos at the same time of the year, it is also important to take the photo at the same point and use the same distance from the camera to the photo point each time. Setting up permanent markers such as two steel posts will help keep your photo points and distance consistent each time.

To assess what condition your vegetation is in, use the photos on the next page as a guide or Contact your local CMA or NRM body to organise a professional evaluation of your native vegetation using a method like habitat Hectares, Biodiversity Benefits Index or the Bush Tool Kit.

Good Condition

Rhiannon Smith

- Healthy existing vegetation
- Good regeneration of trees and shrubby species
- Good presence of dead standing and fallen timber
- Good groundcover
- Good mix of trees, shrubs and grasses

Moderate Condition

Stacey Spanswick

- Healthy existing vegetation
- Good groundcover
- Limited regeneration of trees and shrubby species
- Limited dead standing and fallen timber

Poor Condition

Rhiannon Smith

- Unhealthy existing vegetation with presence of Tree dieback
- No regeneration of trees and shrubby species
- Limited dead standing and fallen timber
- Dominance of weeds in groundcover

Benefits to the cotton grower

Vegetation diversity and the presence of leaf litter and fallen logs can encourage other insects which can contribute significantly to natural mortality in weed and seed banks and are recognised predators of Helicoverpa spp.

Healthy diverse vegetation helps maintain healthy soils as decaying vegetation provides nutrients for soil organisms as well as organic matter for good soil structure.

Healthy diverse vegetation provides protection for stock, crops and pasture from heat, cold and wind.

Diverse vegetation consisting of trees and perennial deep rooting plants helps minimise the occurrence of dryland salinity by minimising the amount of water entering the water table.

Benefits for biodiversity

- More habitats for more species
- Greater genetic diversity for seed stores
- Improved nutrient recycling
- Diversity allows greater flexibility and adaptation to changing environments

For more Information:

Web pages

http://www.communitysolutions.com.au/gwbw_project/infokit.html

http://live.greeningaustralia.org.au/GA/NAT/TipsAndTools/exchange/

http://members.pcug.org.au/~gianni/farmers.html

http://www.forest.nsw.gov.au/env_services/ess/files/dlwc/bio_users_guide.pdf

http://www.forest.nsw.gov.au/env_services/ess/default.asp

http://www.fs.fed.us/pnw/pubs/gtr526/gtr526A1.pdf

www.dse.vic.gov.au

www.nre.vic.gov.au

Scientific Publications

Lovett, S & Price, P. (2007) Principles for riparian lands management. Land and Water Australia, Canberra

Lovett, S., Price, P. & Lovett, J. (2003) Managing riparian lands in the cotton industry. Cotton Research and Development Corporation

Rencken, I. (2006) An investigation of the importance of native and non-crop vegetation to beneficial generalist predators in Australian cotton agro-ecosystems PhD Thesis. University of New England.

Department of Sustainability and Environment (2004b) Vegetation Quality Assessment Manual-Guidelines for applying the habitat hectares scoring method. Version 1.3 Melbourne Vic.

"Key aspects of photopoint monitoring" Fact Sheet, QLD NR&W, www.nrw.qld.gov.au/monitoring_guide/indicators/photopoints/key_aspects.html

Guides

Platt, S.J., (2002) How to Plan wildlife Landscapes: a guide for community organisations. Department of Natural Resources and Environment, Melbourne

Ford, G & Thompson, N. (2006) Birds on Cotton Farms. Cotton Catchment Communities CRC

Pyke, B.A and Brown, E.H (1996) The cotton pest and beneficial guide. CRDC and CTPM

Namoi CMA

Greening Australia

exchange national vegetation knowledge service

Australian Government
Department of Agriculture, Fisheries and Forestry
National Landcare Programme