KIT 6
MANAGEMENT GUIDELINES

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Acknowledgments

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This kit incorporates information and knowledge gained from recent studies in the Brigalow and Mulga Lands bioregions, as well as from a number of other studies conducted in northern Australia on grazing land management strategies to conserve biodiversity.

The way the land is used and managed has implications for biodiversity conservation. Management practices, land use and other pressures that are known to have an impact include:

- Woodland clearing and fragmentation.
- Total grazing pressure (stock, feral and native herbivores).
- Feral animals and native animals 'out of balance' (eg too many or just in the wrong place).
- Weeds and introduced pasture plants.
- Fire management.
- Increased densities of waterpoints.

In the grazed lands of southern Queensland, biodiversity and grazing production need not be mutually exclusive concepts. Properties with productive grazing land management can have rich and abundant biodiversity. In turn, biodiversity helps maintain sustainable productive enterprises, by contributing to ecosystem function and resilience of the land to recover from undesirable change. The following guidelines have been developed to assist in the protection of biodiversity as a component of a productive grazing enterprise.

TOP 10 GUIDELINES:
GRAZING LAND MANAGEMENT FOR BIODIVERSITY

1. Maximise and **maintain grazing land condition** in woodlands and native pasturelands.
2. **Maintain keystone habitat features** throughout the property.
3. **Manage impacts on key biodiversity areas,** such as water remote and BioCondition class '1' areas, creating refuges.
4. **Control feral grazing animals and feral predators** (eg pigs, foxes and cats).
5. If possible, **restrict the extent of introduced pasture** cover to 30%.
6. In fragmented landscapes, **increase and connect woodlands** to at least 30% of the landscape.
7. **Maintain the property as a mosaic of pasture and retained vegetation in good condition**.
8. **Get to know the local plants and animals,** and keep an eye out for increaser and decreaser species.
9. **Use your local experts,** NRM and Landcare groups, government agencies and extension officers.
10. **Have a property plan** that integrates biodiversity and production values.

1. MAXIMISE AND MAINTAIN GRAZING LAND CONDITION IN WOODLANDS AND NATIVE PASTURELANDS

Woodlands and native pasturelands in good grazing land condition are of great benefit for biodiversity (see Kit 4). Strategic fencing, management of water points and balancing stocking rates helps ensure good grazing land condition.

IMPROVING GRAZING LAND CONDITION CAN BE ACHIEVED BY:

- **Fencing off landtypes that are more sensitive to grazing impacts.** Fencing to land type can enable periodic spelling or exclusion of stock from more sensitive areas, maintaining land condition and promoting the retention of key features for biodiversity (see Kit 2).
- **Creating artificial water points away from more sensitive riparian and wetland areas**, and fence off to maintain water quality by protecting against soil erosion and excess nutrients.
- Undertaking monitoring of pasture and ground cover to help **manage stocking rates and maintain ground cover**. Use 'Stocktake' to assess paddock pasture condition and manage stocking rates accordingly (http://www.futurebeef.com.au/resources/workshops/sustainable-grazing-workshops/stocktake-balancing-supply-and-demand/).
- Maintaining pastures by using tactical grazing at strategic times to allow for grass species to set seed. **Use wet season spelling** to allow pastures to recover and maintain ground cover, and spell large areas. Turn off water in spelled paddocks to reduce total grazing pressure (from native and feral herbivores).
- Keeping stocking rates in check to help **maintain some areas of bare ground with a biological soil** (cryptogammic) **crust**, which protects soil and provides basking sites and foraging ground for many species of reptiles.
- **Encouraging growth of native pastures and perennial plants** as they are drought-tolerant, low-input, and nutritious (see guideline 5). Large perennial plant tussocks provide essential habitat and foraging resources for a vast array of native animals.

CRYPTOGAMIC SOIL CRUSTS PROTECT SOIL AND PROVIDE GOOD BASKING SITES FOR DRAGONS AND SKINKS

2. MAINTAIN KEYSTONE HABITAT FEATURES THROUGHOUT THE PROPERTY

Habitat is the physical part of the environment in which plants grow and animals feed, breed and shelter. It includes trees, shrubs, grass tussocks, logs, organic litter, soil, and rocks. Some habitat features are particularly important for a range of species, and also tend to be impacted upon by management. These key features for biodiversity are particularly important for decreaser species that have specialist habitat requirements (see Kit 5).

STEPS TO TAKE TO MAINTAIN KEY HABITAT FEATURES INCLUDE:

Conservation of woody debris within remnants can be enhanced by the preservation and even movement of pieces that are in unsuitable locations, eg trees that fall across roads, areas cleared for dams or water points, to within woodland areas or wetlands.

Minimising the severity and repetition of fires within woodland areas can also help conserve valuable woody material. Avoid stick-raking and burning stick-raked piles; rather leave logs in situ to retain organic matter on the soil surface, adding to soil fertility, reducing soil moisture loss and erosion and providing critical habitat for many species.

PASTURES CAN SUPPORT BIODIVERSITY

In pastures, consider retaining small clumps of trees and leave some logs and branches on the ground as **islands of habitat**.

Paddocks with more scattered trees, shrubs and increased ground cover support more diversity and abundance of native animals.

2. MAINTAIN KEYSTONE HABITAT FEATURES THROUGHOUT THE PROPERTY CONT.

MAINTAIN LARGE TREES WITH HOLLOWS WHEREVER POSSIBLE.

Large trees with hollows take a long time to develop and are critical habitat for many mammal, bird, reptile and frog species, which would disappear from the landscape if these trees weren't available. Retaining as little as 1 to 6 large trees per hectare within a paddock will significantly increase the habitat value for reptile and bird species.

The abundance and diversity of shrubs is an important habitat component, recognised as having a positive correlation with the abundance and diversity of many fauna groups. Ground dwelling mammals, invertebrates, reptiles and bird species, particularly the small passerine (perching) birds, rely on shrubs for foraging and protection. **In remnant vegetation allow a mosaic of shrubs to develop by implementing careful fire management**. However, an overabundance of shrubs (>10%) within cleared pasturelands of the mulga lands, often a result of overgrazing, can reduce grass cover and ground habitat for ground foraging reptiles and birds.

SHRUBS AS FODDER

Many native shrub species, as well as having biodiversity benefits, are used as fodder and can provide an additional food source for stock, particularly in times of drought.

WILD ORANGE *(Capparis mitchellii)* IS AN EXCELLENT FODDER TREE, READILY EATEN BY SHEEP AND CATTLE.

> **"The abundance and diversity of shrubs is an important habitat component"**

3. MANAGE IMPACTS ON KEY BIODIVERSITY AREAS, SUCH AS WATER REMOTE AND/OR CLASS 1 BIOCONDITION AREAS, CREATING REFUGES

Some areas are more important in the landscape for biodiversity and may require special management attention in order to preserve their unique and important values. Areas that are water remote, class '1' BioCondition, rocky outcrops, riparian areas, woodlands with shrubby understoreys, 'endangered' and 'of concern' ecosystems, grasslands and wetlands are elements in the landscape that are known to be important for a suite of species not catered for elsewhere. Government assistance for the conservation management of these areas may be provided, eg nature assist, or caring for country funding (See Guideline 9).

- Areas that are at least 6km away from water points are considered water remote and are usually subject to little or no grazing. **Use fencing to maintain some water remote areas** in order to cater for those species that are sensitive to grazing.
- **Protect rocky outcrops** as they can attract a diverse range of reptiles and other fauna, such as microbats, rock wallabies and quolls that use the outcrops to shelter and forage in. They are particularly vulnerable to overgrazing, especially by goats, so extra goat-control efforts can be helpful in these habitats (see Guideline 4).

> "Government assistance for the conservation management of these areas may be provided."

3. MANAGE IMPACTS ON KEY BIODIVERSITY AREAS, SUCH AS WATER REMOTE AND/OR CLASS 1 BIOCONDITION AREAS, CREATING REFUGES

- Of particular importance are **areas in Class '1' BioCondition** as they provide habitat for more species (See Kit 3).
- **Protect riparian and wetland areas** which are home to a unique suite of species and are important refuges for many animals and plants in times of drought. Rivers and creeks also act as corridors to allow movement of species across the landscape. An alternative to fencing riparian areas specifically is to apply the concept of a riparian paddock, which is of a sufficient size to be financially viable and can be selectively utilised. In critical times such as dry periods, and/or seeding or nesting times these paddocks can then be spelled.
- **Try to maintain connectivity between wetland and riparian areas**. Linking remnants to riparian areas creates a network of retained bushland throughout a catchment.
- The flow-on areas between permanent and semi-permanent wetlands are vital for all sorts of plants and animals.

  See www.epa.qld.gov.au/wetlandinfo/site/ManagementTools.html for further information about care and management of wetlands. Wetland management can include managing nutrients, erosion and sediment.
- Consider using wildlife-friendly fencing designs around areas of particular significance for wildlife, such as breeding areas for waterbirds. Wildlife-friendly fencing designs may involve replacing the top strand of barbed wire with plain wire.

"The flow-on areas between permanent and semi-permanent wetlands are vital for all sorts of plants and animals"

4. CONTROL FERAL GRAZING ANIMALS AND FERAL PREDATORS (FOXES AND CATS)

Managing and controlling pest animals can have significant benefits for biodiversity. Pigs, goats, rabbits, horses, donkeys and camels all contribute to total grazing pressure and to the incidence of soil erosion and nitrification. Foxes and cats are known to have a significant impact through predation of small mammals (and are linked to the extinction of 20 Australian species), and in the case of reptiles and birds, predation of the eggs, young and adults. For more information on the impacts and control of feral animals see www.environment.gov.au/biodiversity/invasive/ferals/index.html.

ADDITIONAL STEPS TO REDUCE THE IMPACT OF FERAL ANIMALS INCLUDE:

- **Maintain good ground cover** to reduce the effect of fox and cat hunting, as they hunt by sight.
- **Baiting and control programs** are more effective if entered into with adjoining properties; seek guidance from local state government personnel for assistance and/or information on what is happening in your local area. Information specific to the control of different pest species can be found at www.dpi.qld.gov.au/4790_8262.htm. Information on the code of practice for animal welfare when undertaking any control program is available at http://www.dpi.qld.gov.au/4790_125.htm.

FOXES AND CATS

Information on baiting can be found at www.dpi.qld.gov.au/4790_9160.htm. In addition you can request that commercial kangaroo harvesters shoot foxes and cats opportunistically.

GOATS

Although a pest that contributes to total grazing pressure, rangeland goats can be a resource as export industries are now established in Queensland. A management strategy that can include harvesting and/or control needs to be developed where goats are an issue. Goats leaving a property must now comply with NLIS requirements. See www.dpi.qld.gov.au/30_7002.htm.

PIGS

Destroy habitat and displace species by direct predation and by competition for food and water. In particular, pigs can have a detrimental effect on wetlands and riparian areas. A combination of measures is an effective management strategy for pig control.
See www.dpi.qld.gov.au/4790_13165.htm.

5. IF POSSIBLE, RESTRICT THE EXTENT OF INTRODUCED PASTURE SPECIES COVER TO 30%

Some exotic pasture species tend to dominate areas, leading to the exclusion of native species and 'escape' into non-target areas, resulting in changes to the ecology of those areas. Areas dominated by exotic pasture species tend to be susceptible to more intense fires, due to the density at which they grow, leading to a reduction in the availability of other features known to be important for biodiversity, such as fallen logs and shrubs.

- **Where local 3P (perennial, productive and palatable) native species with equivalent forage value are available make use of them in preference to exotic species.** The major advantage of native plants is their adaptation to local environmental conditions such as low rainfall and infertile soils. Information on suitable native pasture species by land type can be found at www.dpi.qld.gov.au/27_13350.htm.

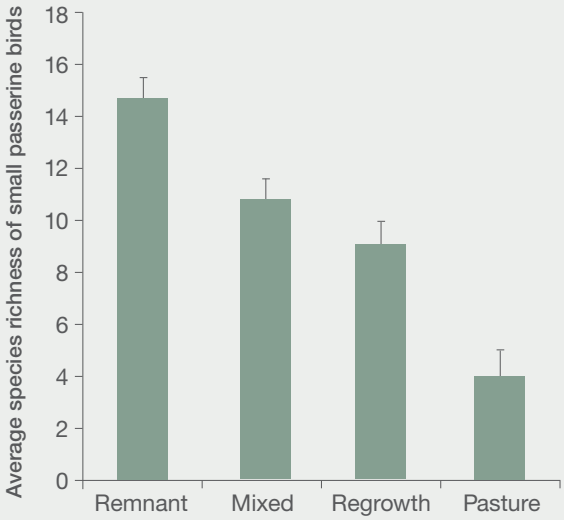
6. IN FRAGMENTED LANDSCAPES, INCREASE AND CONNECT WOODLANDS TO AT LEAST 30% OF THE LANDSCAPE

Wooded habitats are valuable for the shade, shelter and nutrient cycling they provide; and also for their biodiversity values. Remnant vegetation provides refuge for many species of wildlife that only live within remnants. These species provide valuable ecosystem services which help to maintain the health of properties (see Guideline 8) and are therefore important to protect. Although there is no simple answer for the amount of vegetation that should be retained to cater for the requirements of all species, landscapes with greater than 30% cover appear to support sustainable populations of most species.

- In highly fragmented landscapes, it may be worth working with neighbouring properties to strategically maintain or **regrow patches of vegetation, to form corridors between remnants.** Corridors maintain natural connectivity between patches and allow species to disperse through the landscape, whilst also providing valuable wind breaks, shade and shelter lines for cattle.
- In retained vegetation on brigalow scrub and poplar box land types, minimise grazing pressure and burning in some areas to ensure the availability of shrubs, ground cover and woody debris as habitat.

SMALL PASSERINES (PERCHING BIRDS)

Small passerines are 'perching' birds whose head to tail length is smaller than 25cm.
A number of species of small passerine are known to be declining in many parts of Australia. These small birds tend to rely on the shelter and protection provided by remnants, particularly ones with a shrubby understorey.



The diversity of small passerine birds is greatest in landscapes dominated by remnant vegetation.

Here, 'mixed' refers to a landscape of remnant patches amongst pastures, 'regrowth' is landscape of regrowth patches within pasture land and 'pasture' is a landscape dominated by cleared open country.

CHESTNUT-RUMPED THORNBILL

RED CAPPED ROBIN

RUFOUS WHISTLER

"...rely on shelter and protection provided by remnants..."

7. MAINTAIN THE PROPERTY AS A MOSAIC OF PASTURE AND RETAINED VEGETATION IN GOOD CONDITION

Broadly, rural landscapes are a mosaic of pasture land and retained vegetation of various land types that are either regrowth or remnant woodland. The extent and arrangement of these elements in the landscape influences the diversity and abundance of species, which all use the landscape in different ways.

Animals can be described as **woodland dependant** (species that shelter and forage only within retained patches of woodland), **woodland associated** (species that can use all elements of the landscape for foraging or nesting) or **pasture land associated** (species most typically found within grassy pastures). Some species – predominantly small passerine birds – are also very reliant upon patches of shrubby vegetation in the landscape.

- Across the property (and neighbouring properties), is there a mix of woodland patches, open pasture with scattered habitat features, and regrowth patches? Having a mix, or mosaic, of landscape elements in the local region in good condition will maximise the biodiversity.
- For biodiversity, retained vegetation in good biodiversity condition (See Kit 3) is particularly important to maintain, as these areas usually provide refuge for decreaser species.

Woodland dependant species are found within forests and woodlands and can be habitat specialists or rely on a combination of particular key habitat features for their living requirements. Many of these species will not cross cleared land and require corridors to move through the landscape to find breeding partners and foraging resources.

THE SUGAR GLIDER *(Petaurus brevipes)* MAKES LEAF NESTS IN HOLLOWS OF TREES AND FORAGES IN EUCALYPT AND ACACIA TREES AND SHRUBS FOR INSECTS, NECTAR, POLLEN AND SAP. SUGAR GLIDERS ARE THREATENED BY CATS, CLEARING AND BARBED WIRE FENCES. SEE http://www.wildlifefriendlyfencing.com/WFF/Home.html FOR WILDLIFE FRIENDLY FENCING SOLUTIONS.

7. MAINTAIN THE PROPERTY AS A MOSAIC OF PASTURE AND RETAINED VEGETATION IN GOOD CONDITION CONT.

Woodland associated species are those species that utilise features both inside and outside woodlands. Magpies nest within trees but forage in open country for insects. Some insectivorous bats shelter in tree hollows and behind the bark of trees, emerging at night to forage in open country.

THE WHITE-STRIPED FREETAIL BAT ROOSTS IN HOLLOWS IN TREES BUT VENTURES INTO OPEN COUNTRY TO CONSUME LARGE VOLUMES OF BEETLES, GRASSHOPPERS AND MOTHS AT NIGHT.

Pasture land species are those adapted to, or tolerant of, open areas and now take advantage of open paddocks. Animals often found living in paddocks include; pipits, songlarks, bustards and species that favour grass tussocks and soil cracks to shelter in, such as dunnarts and shingleback lizards.

A WESTERN BEARDED DRAGON LIKES OPEN COUNTRY AND HERE USES THIS FENCE POST AS A VANTAGE POINT TO BASK AND 'SIGNAL' TO OTHER BEARDED DRAGONS.

8. GET TO KNOW THE LOCALS, AND KEEP AN EYE OUT FOR INCREASER AND DECREASER SPECIES

Some species are known to increase in abundance under certain types of management, while others may decline (increasers and decreasers, see Kit 5). Being aware of any changes in biodiversity may indicate that something is happening in the system (Are some species becoming more common? Are some species becoming harder to find?). The changes may be due to seasonal fluctuations, but may also reflect a change in management that is benefitting some species, but not others.

Becoming familiar with some of the local decreaser species, and keeping an eye on their presence and abundance, can help validate management changes to conserve biodiversity.

- If possible, keep records of biodiversity observations – is there a pattern of change reflecting annual or seasonal fluctuations?
- Seek expert advice from local DERM Parks and Wildlife officers or NRM groups on species in need of special management attention in your region.

9. USE LOCAL EXPERTS, NRM AND LANDCARE GROUPS, GOVERNMENT AGENCIES AND EXTENSION OFFICERS

Local staff from Natural Resource management groups such as Desert Channels and South-west NRM, Landcare groups or government offices can be an invaluable source of assistance for natural resource management issues. They have access to resources and information and are a good way to access information about incentive schemes and funding for natural resource and conservation management.

- **Ask extension staff or NRM groups about incentive schemes** to assist with better outcomes for productive properties and biodiversity (eg nature assist, caring for country funding). www.derm.qld.gov.au/wildlife-ecosystems/nature_refuges/index.html#natureassist_funding and www.nrm.gov.au/

10. HAVE A PROPERTY PLAN THAT INTEGRATES BIODIVERSITY AND PRODUCTION VALUES

Having a clear objective for how you want to manage your property can make the job of integrating biodiversity and production more achievable.

- In the plan, try to address the above issues that are relevant to your property and aim to integrate property grazing land management systems, condition assessments and monitoring with biodiversity management.
- The plan will help clarify a grazing management strategy for improving condition for grazing land management and biodiversity at the property scale.

“...make the job... more achievable”

STEPS TO TAKE DURING A PLANNING PROCESS

1. Set objectives for property management
2. Make an inventory of current resources
    a. Current stocking rates
    b. Paddock boundaries
    c. Location of waterpoints
    d. Land type distribution
    e. Remnant vegetation distribution (www.derm.qld.gov.au/wildlife-ecosystems/biodiversity/regional_ecosystems/introduction_and_status/regional_ecosystem_maps/)
    f. Regrowth vegetation distribution and regional ecosystem mapping (www.derm.qld.gov.au/services_resources/item_details.php?item_id=33142)
    g. Land condition
    h. Weeds
    i. Which pastures are native and which have introduced grasses
    j. Estimates of long-term carrying capacity
    k. Location of special habitat areas
    l. Look beyond the property boundaries, can others in the sub-catchment be part of the plan (eg EDGE*network*® planscapes)
3. Assess the resource data and formulate alternative options
4. Assess the costs and benefits of the selected options
5. Draw up an action plan for implementation
    a. Include a monitoring and recording system for grazing land management and biodiversity
    b. Management options – fire, grazing, fencing, water
6. Review and revise the plan
    a. Get some opinions from neighbours, local extension officers etc.
7. Implement the plan
    a. All plans can be adaptive, meaning they can be altered to accommodate changes in the objectives of property management.

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