



Biodiversity
Conservation
Trust

Biodiversity Conservation Trust

Livestock grazing guidelines

for private land conservation | November 2021

Objective

The NSW Biodiversity Conservation Trust (BCT) works in partnership with landholders to establish private land conservation agreements to conserve and manage high-value biodiversity on private land. Private land conservation agreements include biodiversity stewardship agreements, conservation agreements and wildlife refuge agreements. Biodiversity values in conservation areas are maintained, enhanced or restored using a range of management actions. Grazing livestock can be used to achieve biodiversity conservation goals in some circumstances, when implemented appropriately.

These guidelines have been developed for landholders with private land conservation agreements to help understand the circumstances where grazing may be an appropriate conservation tool and develop grazing strategies that conserve and enhance biodiversity in native grassland and grassy woodland ecosystems.

Grazing to achieve biodiversity conservation is different from grazing for production so it is important to understand the practical implications of grazing for biodiversity conservation on your property.

Acknowledging that each paddock and the associated farming operation present unique circumstances, these guidelines are principles-based rather than prescriptive and should be used as a framework that can then be tailored to a variety of situations. Regular monitoring, as part of a long-term strategy for evaluating conservation outcomes from grazing, will be essential to help guide decision making.

Contents

Objective	1
Principles of grazing in conservation areas	3
Grazing framework.....	4
Stage 1 – Is grazing appropriate for my conservation area?	5
Stage 2 – Establish the site context	5
Stage 3 – Set a conservation objective	5
Stage 4 – Choose a grazing strategy	6
Stage 5 – Monitoring and adaptive management	8
Minimising the impact of grazing in private land conservation agreements	10
FAQs	12
Further reading.....	14
List of relevant literature	15
Glossary	17
Appendix A – Healthy Condition thresholds and indicators	19
Appendix B – Example grazing diary (stock monitoring form)	21

Principles of grazing in conservation areas

Livestock grazing in a private land conservation agreement must only be used as a management tool to achieve biodiversity conservation goals and are guided by the following principles:

1. Livestock grazing is confined to appropriate grassy ecosystems to promote biodiversity values rather than production goals.
2. Rest periods (no grazing) to allow native species to flower, set seed and germinate in order encourage greater diversity.
3. Total Grazing Pressure is managed to ensure ground cover is in *Healthy Condition*. Thresholds for *Healthy Condition* are based on regional rainfall (annual averages) and the dominant species present. This threshold includes any grazing by feral and native herbivores and considers the prevailing climatic conditions at the time.
4. The grazing of livestock is most useful as a conservation management tool when least desired plants (e.g. exotic grasses and forbs) are most susceptible (just prior to flowering and seed) and when desired native species are least susceptible (post seed set and dispersal) to the impacts of grazing. The timing of this will inform the *Grazing window*.
5. Grazing regimes are flexible and responsive to seasonality within the boundaries of demonstrating *Healthy Condition* and the *Grazing window*.
6. Vegetation condition is regularly monitored by landholders and management is adjusted to proactively meet conservation objectives.

Grazing framework

The BCT has developed an overarching framework for livestock grazing in private land conservation agreements to ensure that management leads to biodiversity conservation and is tailored and flexible for landholders. This framework outlines five stages to help guide landholders in developing a grazing strategy specific to their property. More detailed information about each stage is provided below. BCT regional staff can support landholders in working through this framework.

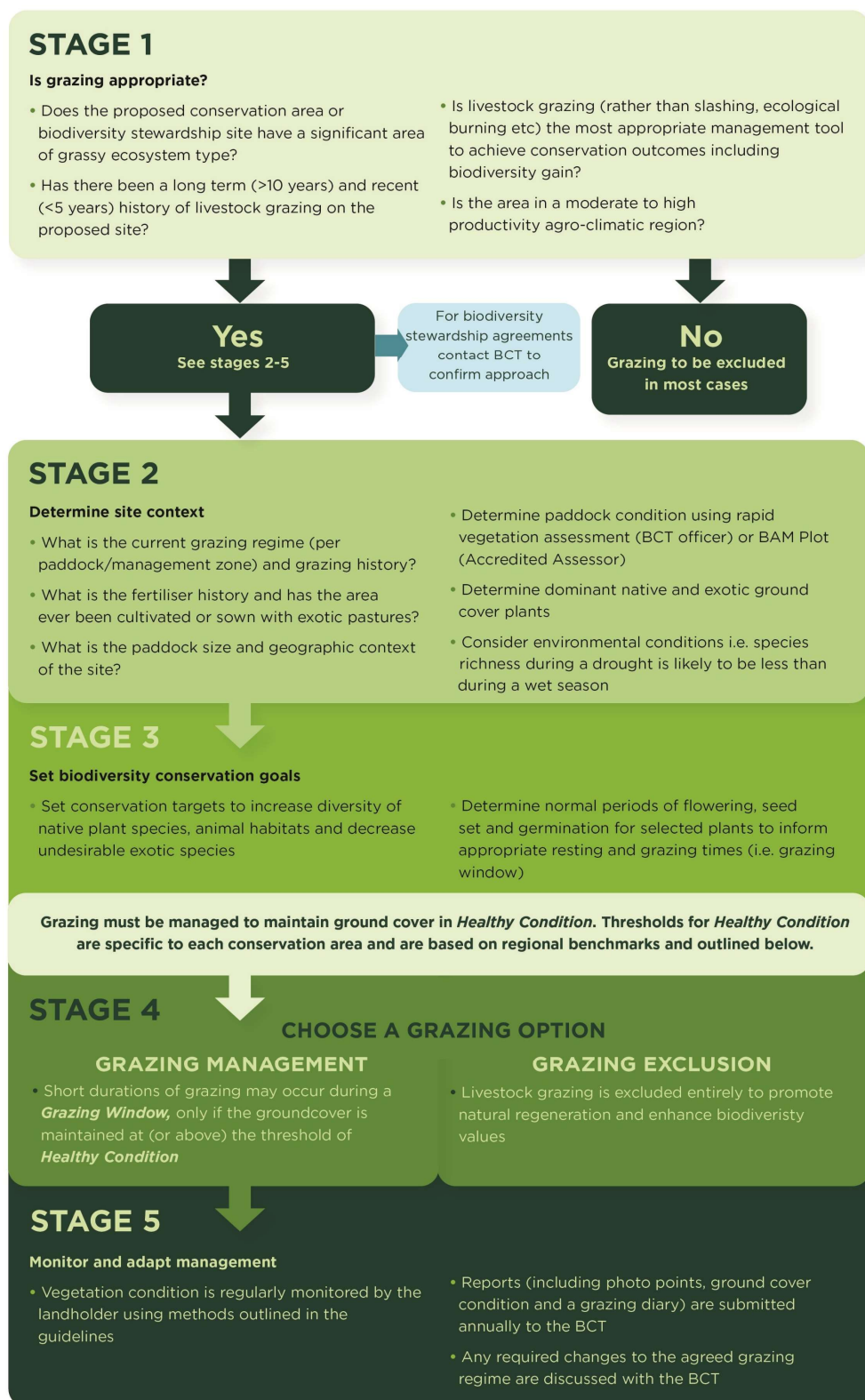


Figure 1 Framework for livestock grazing in private land conservation agreements

Stage 1 – Is grazing appropriate for my conservation area?

Establishing whether grazing is an appropriate management tool for the agreement area is an important first step. Grazing in a private land conservation agreement must be for the purpose of biodiversity conservation. Exclusion of grazing by livestock will be appropriate in most circumstances. The BCT recommends that grazing be confined to grassy or grazing tolerant ecosystems and should generally be excluded from 'wet areas' or previously ungrazed areas that are more ecologically sensitive to grazing.

In grassy ecosystems, establishing whether grazing is appropriate is dependent on a range of factors, including the climate, soils, landscape context and species present on site as well as the current total grazing pressure from domestic, feral and native species (see Figure 1). For example, grazing is rarely useful as a management tool for conservation in dry, infertile or relatively intact, uninvaded ecosystems on unproductive soils. Where such ecosystems are deemed to require some weed control and/or biomass reduction, other management tools such as slashing, mowing, burning or herbicide treatment may be more appropriate. BCT staff will assist in establishing whether grazing is appropriate for your conservation area.

For proposed biodiversity stewardship agreements, the BCT should be consulted early in the development of your management plan to establish whether grazing is a suitable management action for your agreement.

Stage 2 – Establish the site context

Gathering information specific to the proposed area is essential to help to understand how grazing can be used as a conservation tool. This includes the history of grazing, fertiliser use and cultivation of the paddock, its geographical context (e.g. rainfall, soil productivity, topography etc), seasonal vegetation condition and paddock size. This information may identify areas that could benefit from being fenced separately to the remainder of the paddock, such as creek lines, rocky outcrops, or other sensitive areas. Key dominant native and exotic plants are recorded for each management zone, as part of an assessment of ecological site condition. This information will help inform an appropriate grazing strategy, including the timing of the grazing window. The assessment establishes a baseline of site condition to record changes over time.

Stage 3 – Set a conservation objective

Establishing conservation goals

The main objective of these guidelines is to assist landholders to develop grazing regimes that promote native plant species' diversity and cover by encouraging grazing sensitive species to increase in abundance and distribution over time. For conservation agreements, the goal is to conserve or improve the biodiversity values from the time the conservation agreement is established.

For biodiversity stewardship agreements, the goal is to improve the vegetation condition so that it will meet predicted gains in vegetation integrity. For this reason, livestock grazing should be discussed with the BCT before you submit an application for a BSA to ensure grazing management is the agreed best method to achieve biodiversity gains. Justification for how this gain will be achieved and

why grazing is the most suitable management option will need to be outlined in your Biodiversity Stewardship Site Assessment Report that you provide with your application to the BCT.

Specific targets may also be set for: (1) increasing the cover of desirable species; (2) decreasing the cover of undesirable species; (3) increasing the abundance of desirable species. Thresholds for *Healthy Condition* of ground cover should be identified at this stage to indicate when livestock are to be introduced and removed.

Identifying a grazing window

Suitable resting and grazing times to meet the specific conservation goal will vary depending on factors such as the site's land-use history and climate. Ideal resting times are when native ground cover plants actively grow, set and disperse seed or during specific parts of a species life cycle e.g. breeding events of specific fauna. Ideal grazing times are generally considered outside of these events, and ideally when the dominant exotic species present actively grow and develop seed. This information will be used to identify the grazing window available for each management zone.

In addition to adhering to the grazing window, and before introducing livestock to graze, landholders must consider whether grazing at a point in time will support the conservation goals of the site. For example, grazing immediately following a large flood, despite occurring within the grazing window, may impact recruitment of flood responsive native species and so may not be appropriate.

Stage 4 – Choose a grazing strategy

Grazing strategies that provide resting periods at appropriate times are important for the persistence and recovery of native grassy ecosystems in agricultural landscapes. Where grazing by livestock is determined to be appropriate, choosing an appropriate grazing strategy depends on a combination of factors including: the condition of the grassy ecosystem on site; the sites' climate; soil productivity; paddock size; and the established conservation objective (Figure 2).

The BCT offers two grazing strategies:

A. Grazing management:

Grazing by livestock for up to 28 days limited to events no longer than 14 days with extended periods of rest between events. The grazing regime including the number of grazing days will be reflected in the agreement management plan. Grazing is excluded for long rest periods to promote native perennial ground cover development and associated ecological function. Grazing may occur during an agreed *grazing window*, only if the ground cover is maintained at (or above) the threshold of *Healthy Condition*. This option may include several years of rest before commencing the grazing regime.

B. Grazing exclusion:

Livestock grazing is entirely excluded to promote natural regeneration and enhance biodiversity values.

These strategies may be subject to variation under special circumstances, for example allowing for requirements for a threatened species or where there is a clear conservation benefit.

Guidance for setting appropriate management options for stock grazing in private land conservation agreements

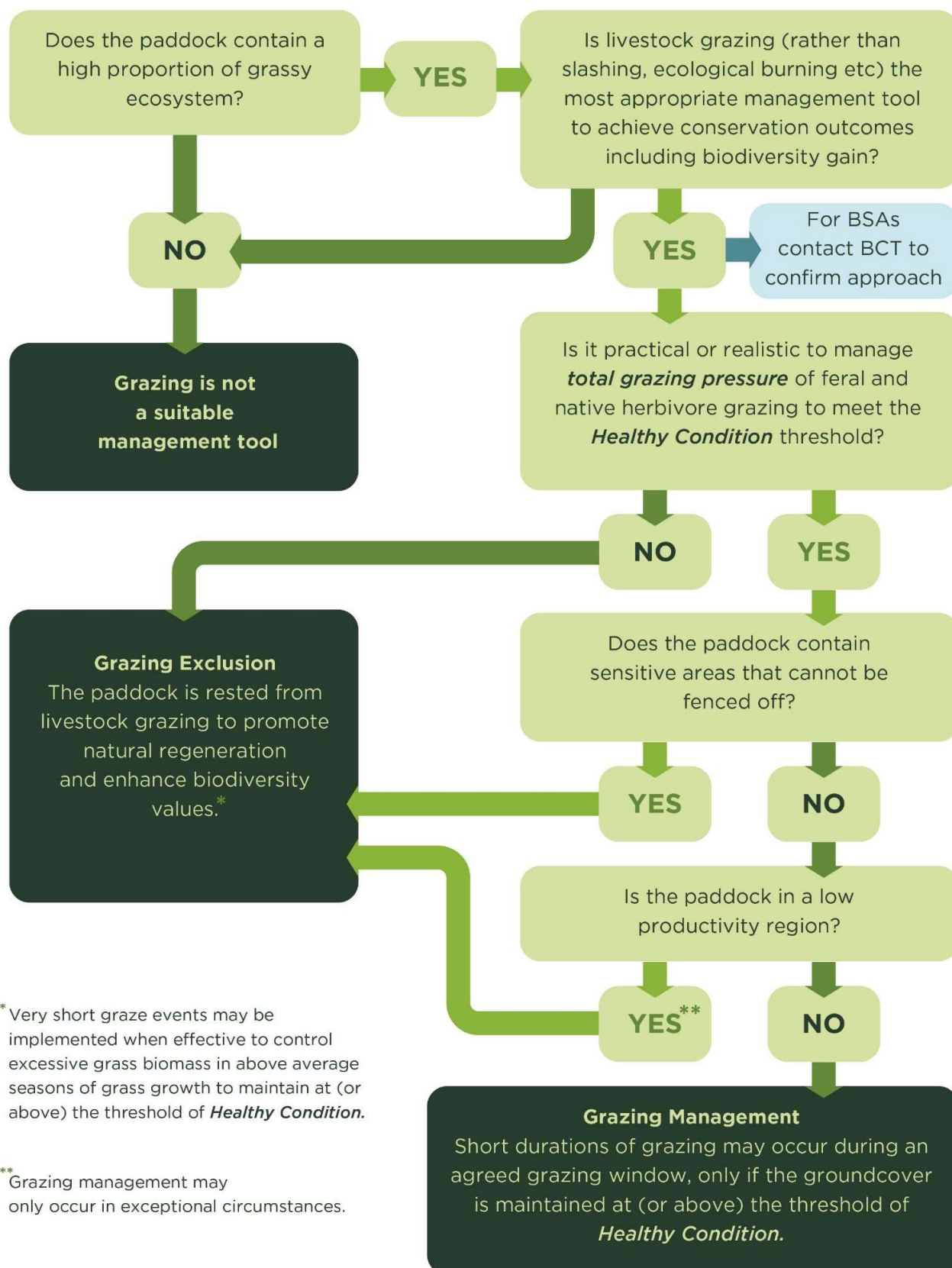


Figure 2 Flowchart to guide appropriate management options for stock grazing in a private land conservation agreement

Stage 5 – Monitoring and adaptive management

For any management strategy to be successful, clear goals, ongoing monitoring and adaptive management are required to ensure conservation outcomes are being met. Monitoring of all agreements will be undertaken in accordance with the BCT's [Ecological Monitoring Module](#).

Landholder monitoring

Landholders are an important part of the monitoring process and will be required to monitor key condition indicators on a regular basis. Monitoring will include measurements of the per cent ground cover and average bulk grass sward height (Figure 3) to ensure ground cover supports the *Healthy Condition* thresholds for that site.

Regular monitoring by the landholder is crucial for ensuring that *Healthy Condition* is demonstrated (**Appendix A**). Reports (including photo points, simple ground cover condition assessment and a grazing diary) are submitted annually to the BCT. It is important that landholders can identify the dominant native species on their site, as these will be used as an indicator to determine when to remove livestock. Landholders will be assisted by the BCT in developing these skills through the landholder support program.

Should the condition fall below the required threshold, livestock must be removed from the paddock in a timely manner and the paddock rested for an extended period until the vegetation meets or exceeds the *Healthy Condition* thresholds. If a paddock becomes further degraded (**see Appendix A**) then the landholder should, in consultation with the BCT, consider the need for a long-term adjustment to the grazing regime or other strategies to assist the paddock regain ground cover that meets the *Healthy Condition* threshold.

Select up to three dominant grass species, determine whether they are a short, medium or tall tussock grass and maintain the height of the corresponding threshold.

Note: one paddock may have more than one threshold.

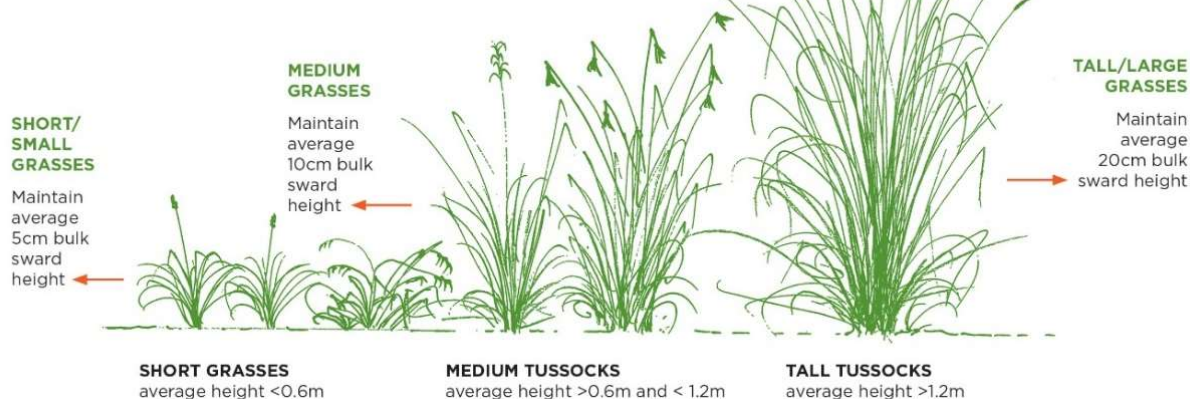


Figure 3 Healthy Condition thresholds for average bulk grass sward height

Ecological Monitoring

Funded conservation agreements that contain grazing as a management action will be monitored by BCT staff as part of the BCT's Ecological Monitoring Module (EMM). Biodiversity stewardship agreements will be monitored by consultant ecologists engaged by the landholder and funded through the annual management payments made by the BCT to the landholder. This monitoring will measure

vegetation condition, soil function and biomass to ensure that the observed grazing pressure is consistent with the expected outcome of the approved grazing regime. This will inform evaluation and reporting of ecological outcomes at the site, enable evaluation of management effectiveness, and allow for adaptive management.

When applying for a biodiversity stewardship agreement, landholders and Accredited Assessors should consider the resources that will be involved in monitoring grazing consistent with the [BCT EMM Operational Manual](#). Sites that fall into higher risk grazing categories should include more intensive monitoring.

Risk based approach to grazing as a management tool

These guidelines provide flexibility to adjust the grazing regime based on the risk of adverse ecological effects resulting from grazing. This is influenced by several factors including the net primary productivity (reflecting the annual rainfall received and soil fertility), historical land use, site condition, ecosystem capacity to benefit from light grazing, and landholder experience in using grazing to improve conservation and biodiversity values. Figure 4 summarises how the risk of grazing increases across vegetation formations and agro-climatic region. Productivity gradient associated with agro-climatic regions are based on Hutchinson et al 2005. The EMM provides further guidance on the monitoring requirements associated with higher risk grazing scenarios.

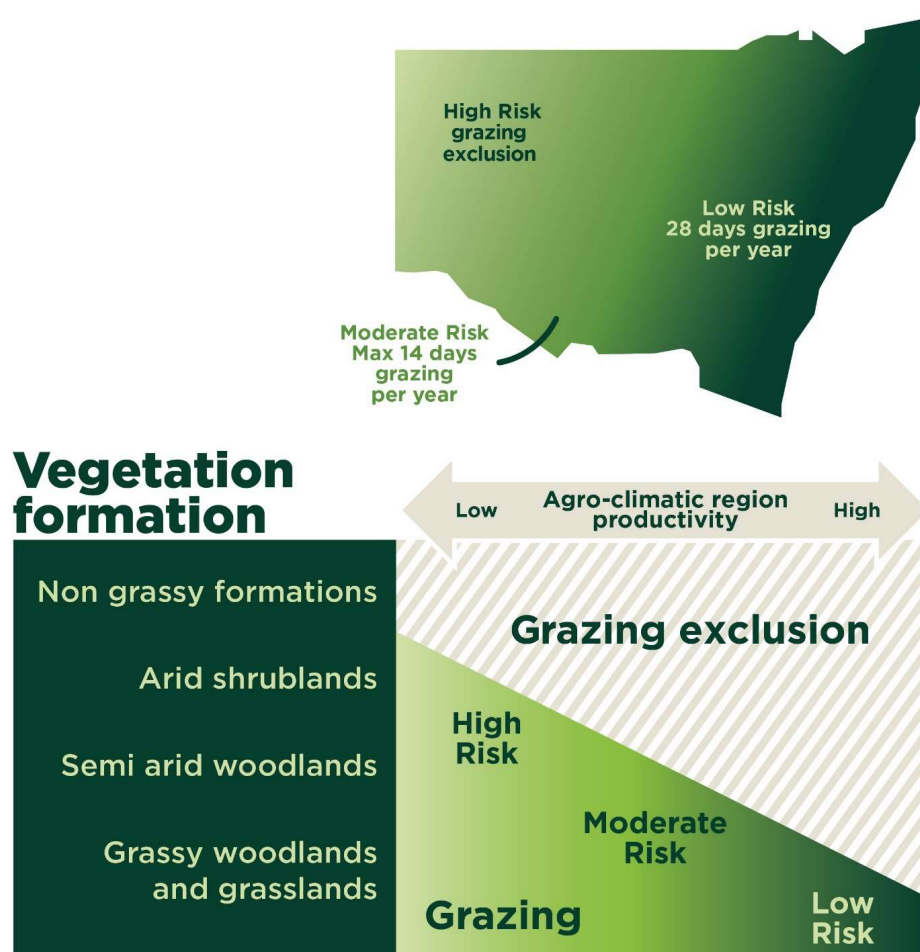


Figure 4 Risk based approach to grazing for biodiversity conservation across agroclimatic regions and vegetation formations

Minimising the impact of grazing in private land conservation agreements

Grazing and prolonged dry periods

It is essential from a conservation grazing management perspective that droughts are factored into planning. Grazing during drought will generally reduce ground cover of vegetation significantly and may take several years to recover. An early reduction in livestock numbers, and as much rest from grazing as possible, are essential drought management techniques. Livestock must be removed from the paddock if ground cover falls below the *Healthy Condition* threshold. Should this occur, livestock must not be reintroduced until ground cover meets, or exceeds, the *Healthy Condition* threshold, and only if it is within the *grazing window*.

Grazing and sheep weather warnings

Landholders will not be able to use the conservation area for stock management during sheep-weather warnings if they fall outside the *grazing window*. If a warning is issued by the Bureau of Meteorology during the period when grazing is allowed, additional livestock are allowed in the agreement area provided the *Healthy Condition* threshold is maintained. This must be noted in the grazing diary.

Grazing impacts by feral herbivores

The *Healthy Condition* threshold incorporates total grazing pressure, including grazing from feral and native herbivores. Grazing by livestock cannot occur if total grazing pressure has, or is likely to, reduce ground cover below the *Healthy Condition* threshold.

Feral herbivores (including pigs, goats and rabbits) must be managed as a priority before stock grazing can occur and *Healthy Condition* thresholds met. The control of feral species is identified as a separate management action in the management plan. Some management strategies include:

- using appropriate standard fencing
- decommissioning/destruction of watering points
- co-ordination of feral pig baiting programs
- management of rabbit warrens
- mustering, trapping, shooting or poisoning as appropriate (in accordance with appropriate licenses/authorisations from the relevant authority).

Supplementary feeding

Many of the adverse impacts on biodiversity of livestock grazing in production areas are caused by activities commonly associated with grazing. Areas for supplementary feeding create a sacrifice area in the immediate to intermediate vicinity due to high stock numbers and intense trampling. This leads

to compaction and soil surface pulverisation. Supplementary feeding must not be undertaken in conservation areas.

Weed hygiene

Controlled grazing must include measures to ensure adequate weed hygiene of livestock to minimise spread of weeds to, and within, the conservation area. Livestock should not enter any paddock within a conservation area, until any weed seeds ingested in other paddocks have passed through their systems.

Grazing by native herbivores

The BCT recognises that grazing pressure from native herbivores may be great enough to impede a paddock from achieving *Healthy Condition*. Whilst landholders are not required to manage kangaroo grazing, grazing from livestock cannot occur if ground cover is reduced to below the *Healthy Condition* threshold by native herbivores. The [Managing Overabundant Kangaroo Guidelines¹](#) for private land conservation agreements provides landholders with options for managing grazing by kangaroos to support biodiversity conservation on their land.

Grazing and fire

Following a fire, livestock should be excluded from the burnt area until the ground cover has returned to *Healthy Condition*. Grazing too soon after fire can result in poor seedling establishment and can stunt the development of surviving plants.

Grazing and restoration activities

Grazing must be excluded from areas of active restoration, such as areas of revegetation or supplementary planting. Grazing areas being actively restored can prevent these activities from achieving the intended improvement in vegetation or biodiversity condition.

¹ Managing overabundant kangaroo guidelines for private land conservation agreements BCT 2020 www.bct.nsw.gov.au

FAQs

What animals can I graze in my conservation area?

The use of the term 'livestock' in these guidelines generally refers to sheep and cattle grazing. Grazing of other livestock species increases the risks to biodiversity associated with grazing and would only be considered in circumstances that can demonstrate a clear biodiversity conservation outcome.

Can I divide my conservation area into paddocks?

Conservation areas can be divided into manageable units based on differences in landscape context, plant communities and site condition. Where practical, fencing should be aligned with management zones. If re-fencing is not practical, then paddocks should be wholly identified as a single zone of the type most important for conservation and a grazing regime implemented appropriate to the objectives of that zone. Note that paddock variability is an important principle for larger conservation areas, (i.e. areas with multiple paddocks should try to avoid the same graze/rest periods). Landholders should take individual paddock characteristics (such as dominant grass sward and sensitive target species) into account when considering paddock sub-division.

What stocking rate/s should I be using?

These guidelines are deliberately non-prescriptive regarding specific parameters for grazing such as stocking rates, focussing instead on timing of grazing and the desired outcomes for biodiversity (*Healthy Condition* thresholds – see Appendix A). Landholders may wish to seek external advice on what stocking rates are most likely to achieve these thresholds of the paddock being grazed.

I currently use a low density set stock grazing regime, can I continue?

The BCT's grazing guidelines focus on intermittent grazing strategies that provide strategic resting periods at appropriate times for native species recovery. It is preferred to graze with more animals for a shorter time rather than less animals for a longer time. This reduces grazing selectivity and allows longer rest periods for desired species to recover. Therefore, the NSW BCT will not permit prolonged grazing in conservation areas.

What if I have threatened species in my conservation area that have specific grazing requirements?

These grazing guidelines are subject to variation in consultation with the BCT under special circumstances where this meets a specific biodiversity conservation objective.

Can I graze a biodiversity stewardship agreement?

The purpose of a biodiversity stewardship agreement is to conserve biodiversity and improve the condition of biodiversity through management. Biodiversity stewardship agreements can be grazed in accordance with these grazing guidelines only where it is demonstrated that grazing is the most effective management tool to achieve the predicted improvement in biodiversity condition and there is effective fencing and infrastructure for managing stock in place. The BCT would need to agree that

grazing is the most suitable management tool. Where grazing is being considered for a BSA the landholder should contact the BCT to discuss prior to submission of the BSA application.

Grazing in biodiversity stewardship agreements should not occur in areas undergoing active restoration management actions such as supplementary planting.

For biodiversity stewardship sites that are not yet receiving annual management payments, grazing may occur in accordance with these guidelines provided there is no decline in biodiversity condition and there is effective fencing and infrastructure for managing stock in place.

Further reading

Many additional resources are available from a range of sources and contain information specific to different regions and environments. The NSW BCT does not necessarily endorse all opinions or ideas found in these resources.

For further guidance on grazing for biodiversity conservation and/or pasture management

- Barlow, T and Thorburn, R (ed.) (2000), Balancing conservation and production in Grassy landscapes. Proceedings of the Bushcare Grassy Landscapes Conference.
- Commonwealth of Australia (2010) 'A Guide to Managing Box Gum Grassy Woodlands'
- CSIRO Ecosystem Services (2012) 'Managing Native Pastures for Agriculture and Conservation'
- Department of Environment, Land, Water and Planning (2016). Managing grazing on riparian land - Field Companion. Victorian Government, East Melbourne, Victoria.
- Department of Primary Industries (2011). A Guide to Native Pasture Management. Victorian Government, Department of Primary Industries, Future Farming Systems Research, Hamilton, Victoria.
- Dorrough, J., Stol, J. and McIntyre, S. (2008) Biodiversity in the Paddock – a land manager's guide. Future Farm Industries CRC.
- Evergraze <https://www.evergraze.com.au/>
- Grassy Box Woodlands Conservation Management Network www.gbwcmm.net.au
- NSW Agriculture (2000) Glove Box Guide to tactical grazing management for semi-arid woodlands
- NSW Agriculture (2003) The Grazier's guide to Pastures
- NSW DPI Guidelines for grazing in the Gwydir wetlands and Macquarie Marshes
- Prograze profitable sustainable grazing
- Tasmanian Land, Water and Wool Managing Tasmanian Native Pastures
- The State of Queensland Department of Employment, Economic Development and Innovation (2011) Guidelines for managing coastal wetlands in grazing systems.
- The State of Victoria Department of Environment, Land, Water and Planning (2016) Managing grassy woodlands and grasslands of northern Victoria. Victorian Government, East Melbourne, Victoria
- Western Local Land Services. Grazing Management – Ten practical ways to sustainably manage land for production in the Western Local Region

List of relevant literature

These guidelines rely on extensive published material. This information has been used to identify, support and highlight the current understanding of best practice grazing management in NSW. The NSW BCT does not necessarily endorse all opinions or ideas contained within these references.

Altieri MA (1999) The ecological role of biodiversity in agroecosystems. *Agriculture Ecosystems and Environment* 74, 19–31. [Access online](#)

Borer, E. T., et al. (2014) Herbivores and nutrients control grassland plant diversity via light limitation. *Nature* 508:517–520. [Access online](#)

Cingolani, A. M., I. Noy-Meir, and S. Díaz. (2005) Grazing effects on rangeland diversity: a synthesis of contemporary models. *Ecological Applications* 15:757–773. [Access online](#)

Cole, I., Prober, S., Lunt, I. and Koen, T. (2017) Establishment of native grasses and their impact on exotic annuals in degraded box gum woodlands. *Austral Ecology*, 42: 632-642. [Access online](#)

Cole, I. A., Prober, S., Lunt, I., and Koen, T. B. (2016) Nutrient versus seed bank depletion approaches to controlling exotic annuals in threatened Box Gum woodlands. *Austral Ecology*, 41: 40–52. [Access online](#)

Dorrough J., Yen A., Turner V., Clark S. G., Crosthwaite J. Hirth J. R. (2004) Livestock grazing management and biodiversity conservation in Australian temperate grassy landscapes. *Crop and Pasture Science* 55, 279-295. [Access online](#)

Dorrough J (2012) How do different levels of grazing and fertilisation affect vegetation composition in temperate Australian grassy ecosystems? Systematic review and meta-analysis. Final unpublished report to Victorian Department of Sustainability and Environment. [Access online](#)

Duru, M., Therond, O., Martin, G. et al. (2015) How to implement biodiversity-based agriculture to enhance ecosystem services: a review *Agron. Sustain. Dev.* 35: 1259. [Access online](#)

Eldridge, D.J.(1998) Trampling of microphytic crusts on calcareous soils, and its impact on erosion under rain-impacted flow. *Catena*, 33, pp.221-239. [Access online](#)

Eldridge, D. J., Delgado-Baquerizo, M., Travers, S. K., Val, J., Oliver, I. and Kardol, P. (2017) Do grazing intensity and herbivore type affect soil health? Insights from a semi-arid productivity gradient. *J Appl Ecol*, 54: 976-985. [Access online](#)

Hutchinson, M. F., S. McIntyre, R. J. Hobbs, J. L. Stein, S. Garnett, and J. Kinloch. (2005) Integrating a global agro-climatic classification with bioregional boundaries in Australia. *Global Ecology and Biogeography* 14:197-212. [Access online](#)

Hacker R. B., Jessop P. J., Smith W. J., Melville G. J. (2010) A ground cover-based incentive approach to enhancing resilience in rangelands viewed as complex adaptive systems. *The Rangeland Journal* 32, 283-291. [Access online](#)

Jansen, A., & Robertson, A. (2001). Relationships between livestock management and the ecological condition of riparian habitats along an Australian floodplain river. *Journal of Applied Ecology*, 38, 63-75. [Access online](#)

Kay, G. M., Mortelliti, A., Tulloch, A., Barton, P., Florance, D., Cunningham, S. A., & Lindenmayer, D. B. (2016). Effects of past and present livestock grazing on herpetofauna in a landscape-scale experiment. *Conservation Biology*, 31(2), 446–458. [Access online](#)

- Keith, D.A. (2004) From ocean shores to desert dunes: the vegetation of New South Wales and the ACT (Department of Environment and Conservation NSW: Hurstville). [Access online](#)
- Kemp DR, Dowling PM (2000). Towards sustainable perennial pastures. *Australian Journal of Experimental Agriculture* 40, 125–132. [Access online](#)
- Kemp DR, Michalk D, Virgona JM (2000) Towards more sustainable pastures: lessons learnt. *Australian Journal of Experimental Agriculture* 40, 343–356. [Access online](#)
- Loeser MR, TD Sisk, TE Crews. (2007) Impact of Grazing Intensity during Drought in an Arizona Grassland. *Conservation Biology*, 21, 87-97. [Access online](#)
- Lunt, I.D. (2005) Technical Report 18. Effects of Stock Grazing on Biodiversity Values in Temperate Native Grasslands and Grassy Woodlands in SE Australia: A Literature Review. Environment ACT, Canberra. [Access online](#)
- Lunt, I.D., Eldridge, D.J., Morgan, J.W. and Will, G.B. (2007). A framework to predict the effects of livestock grazing and grazing exclusion on conservation values in natural ecosystems in Australia. *Australian Journal of Botany* 55, 401-415. [Access online](#)
- Mavromihalis J. A., Dorrough J., Clark S. G., Turner V., Moxham C. (2013) Manipulating livestock grazing to enhance native plant diversity and cover in native grasslands. *The Rangeland Journal* 35, 95-108. [Access online](#)
- Moss J., Sinden J., Stayner R. (2012) Estimating the cost of protecting ground cover on privately managed properties in the Australian rangelands: the case of the West 2000 Plus Enterprise-Based Conservation scheme. *The Rangeland Journal* 34, 75-87. [Access online](#)
- Schultz, N. L., Morgan, J. W., and Lunt, I. D. (2011) Effects of grazing exclusion on plant species richness and phytomass accumulation vary across a regional productivity gradient. *Journal of Vegetation Science* 22, 130–142. [Access online](#)
- Simpson P, Langford C (1996) Whole-farm management of grazing systems based on native and introduced species. *New Zealand Journal of Agricultural*. [Access online](#)
- Travers S. K, Eldridge D.J, Koen T.B, Val J, Oliver I. (2020) Livestock and kangaroo grazing have little effect on biomass and fuel hazard in semi-arid woodlands. *Forest Ecology and Management* 467,
- Williams, R., et al. (2002) Agro-ecological regions of Australia - methodologies for their derivation and key issues in resource management. CSIRO Land and Water
- Wilson, G. A. (1997). Factors influencing farmer participation in the Environmentally Sensitive Areas scheme. *Journal of Environmental Management* 50, 67–93. [Access online](#)
- Yates C.I, D.A. Norton, R.J Hobbs. (2008). Grazing effects on plant cover, soil and microclimate in fragmented woodlands in south-western Australia: implications for restoration. *Austral Ecology*, 25, 36-47. [Access online](#)

Glossary

Term	Meaning
Accredited Assessor	Accredited person: has the same meaning as in the BC Act, referred to in the Biodiversity Assessment Method as 'assessor', i.e. in relation to the preparation of biodiversity assessment reports, means a person accredited under section 6.10 (of the Biodiversity Conservation Act 2016 (BC Act)) to prepare those reports in accordance with the biodiversity assessment method.
Agro-climatic region	A land resource mapping unit, defined in terms of climate, landform and soils, and/or land cover, and production potential (Hutchinson et al 2005).
Average bulk grass sward height	Method used to measure plant biomass. Using this method, the height of the grass sward is measured at the point where the same amount of grass biomass is above and below the average height.
Biodiversity stewardship agreement	Biodiversity stewardship agreement means a biodiversity stewardship agreement made under Division 2 of Part 5 of the BC Act. An in-perpetuity agreement registered on the property title. The land is protected and managed to achieve an improvement in biodiversity values. This generates 'biodiversity credits' which can be sold to offset the impacts of approved developments elsewhere.
Conservation agreement	A joint agreement between the landholder and the BCT to conserve and manage biodiversity on an area of land.
Conservation area	An area of land covered by the conservation agreement.
Exotic plant	An introduced plant species not native to NSW.
Grassy ecosystem	Native grassland or grassy woodland as defined by the NSW Map Unit Vegetation Classes in Keith (2004).
Grazing window	An agreed period set out in the management plan in which livestock grazing can occur within a management zone/s of the conservation area. The period is based on key sensitive ecological times e.g. growth and seeding times for the palatable native forbs, grasses and exotic plants.
Healthy Condition threshold	A minimum condition of ground cover required (by region) using % ground cover and an average native grass sward height as set out in Appendix A.
High threat weeds	A <u>list</u> ² of vascular plants not native to Australia that, if not controlled, will invade and outcompete native plant species.
Livestock	The term 'livestock' in these guidelines generally refers to sheep and cattle.

² High threat weeds list <https://www.lmbc.nsw.gov.au/bamcalc>

Term	Meaning
Management plan	Refers to the management plan included in the conservation agreement. This plan identifies the conservation management actions required to be undertaken on the conservation area.
Management zone	Areas subject to the same management actions and objectives. Management zones do not need to be continuous across the landscape and may include multiple fenced areas where the vegetation and management is the same. A management zone could be a paddock or a group of paddocks with the same management actions and objectives.
Native plant	Any plant indigenous to the area.
Rapid vegetation assessment	A simplified assessment used by the BCT to collect vegetation condition data in the field based on the Biodiversity Assessment Method 2017 (BAM).
Sensitive areas	Areas sensitive to livestock grazing include areas of high condition threatened ecological communities, sapling regeneration or areas prone to erosion such as wetlands, creeks and riparian corridors.
Site productivity	Influenced by climate, water availability, land use history, soil characteristics and fertility.
Soil fertility	The ability to supply essential plant nutrients and water in adequate amounts and proportions for plant growth and reproduction.
Total grazing pressure	The combined grazing pressure exerted by all grazing animals (domestic, native and feral) on the vegetation, soil and water resources.
Vegetation integrity	The condition of native vegetation assessed for each vegetation zone against the benchmark for the PCT.
Wet areas	Wet areas are those that are prone to prolonged inundation post flood or rainfall, e.g. drainage depressions, swamps, flood runners, gilgai, saline areas, etc. These areas are particularly prone to compaction and pugging caused by livestock.
% Ground cover	Ground cover is the amount of plant material (dead or alive) that covers the soil surface. It is expressed as a percentage - including living vegetation, dry litter, coarse woody debris (logs), mosses and lichens, excluding bare ground surface and rock.

Appendix A – Healthy Condition thresholds and indicators

Condition	Thresholds	Other Indicators	Action
Native grassy vegetation is considered in Healthy Condition if:	<ul style="list-style-type: none"> • % Ground cover is maintained at or above the minimum threshold for the region (Table 1) • Average bulk sward height of dominant native grass species is maintained at or above the minimum threshold (Table 2) 	<ul style="list-style-type: none"> • All Vegetation Integrity attributes are at or close to benchmark • During spring and summer, a range of native wildflowers should be visible along with evidence that following suitable climatic conditions the native grasses have successfully flowered & set seed • Soils should be intact – the bare areas are usually covered by lichen, moss, an algal crust or leaf litter • There should be little or no cover of High Threat Weeds and those present are being actively suppressed (<1% summed foliage cover) • Open spaces between the taller grass tussocks should be maintained for a diversity of native plants and fauna habitat <p>Additionally In grassy woodlands:</p> <ul style="list-style-type: none"> • There may be evidence of tree and shrub recruitment • Vegetation Integrity function attributes at or close to benchmark <p>Where wetlands, marshes, streams and soaks are present:</p> <ul style="list-style-type: none"> • Little or no evidence of soil pugging and bank erosion or browsing on unpalatable species • Little or no evidence of water contamination and turbidity caused by livestock and livestock faeces 	Regular monitoring to ensure condition is maintained and/or further improved towards benchmark for all Vegetation Integrity attributes and target groundcover maintained at or above threshold
Native grassy vegetation is considered in Deteriorated Condition if:	<ul style="list-style-type: none"> • % Ground cover falls below the minimum threshold for the region (Table 1) • Average leaf height of dominant native grass species falls below the minimum threshold (Table 2) 	<ul style="list-style-type: none"> • Many Vegetation Integrity attributes are below benchmark • Soil crust may not be intact and evidence that some surface litter are transported (indicating poor resource conservation and potential soil erosion). • Increased browsing by livestock of plants that are normally less preferred becomes evident • Erosion, soil pugging and water contamination in wetlands, marshes, streams and soaks may be evident <p>Additionally In grassy woodlands:</p> <ul style="list-style-type: none"> • Vegetation Integrity function attributes below benchmark • Lack of tree and shrub recruitment (noting episodic nature of recruitment) <p>Where wetlands, marshes, streams and soaks are present:</p> <ul style="list-style-type: none"> • Soil erosion, soil pugging and water contamination in wetlands, marshes, streams and soaks is being caused by grazing livestock 	<p>Livestock must be removed from paddock and it rested for an extended period, usually until the next grazing window</p> <p>Livestock should not be reintroduced until the vegetation meets or exceed the healthy condition thresholds</p> <p>If a paddock becomes degraded then the Landholder should consult the BCT to consider the need for a longterm adjustment to the grazing regime or other strategies to prevent these circumstances from repeating</p>
% Ground cover - including living vegetation, dry litter, coarse woody debris (logs), mosses and lichens, excluding bare ground surface and rock			

Table 1 Ground cover thresholds and monitoring requirements per region

IBRA Region	Agro-climatic Description	Rainfall (mm)*	Healthy Condition Threshold (% Ground cover)
Australian Alps	Cold Winters, summers short	1025	80
Brigalow Belt South	winters mild, even growth throughout year	644	80
Broken Hill Complex	Semi-arid, moisture highest in winter	206	50-60
Channel Country	Desert, water limited	175	50-60
Cobar Penplain	Semi-arid, moisture highest in winter	379	50-70
Darling Riverine Plains	Semi-arid, moisture highest in winter	379	50-60
Mulga Lands	Semi-arid, moisture highest in winter	297	50-60
Murray Darling Depression	Semi-arid, moisture highest in winter	254	50-60
Nandewar	Summer moisture limiting, winters cool	721	80
New England Tablelands	Max moisture availability winter-spring	824	80
NSW North Coast	Warm and wet	1104	80
NSW South Western Slopes	Summer moisture limiting, winters cool	595	80
Riverina	Dry cool winters	327	70-80
Simpson Strzelecki Dunefields	Desert, water limited	149	50-60
South East Corner	Temperate wet	807	80
South Eastern Highlands	Max moisture availability winter-spring	682	80
South Eastern Queensland	Warm and wet	1297	80
Sydney Basin	Temperate wet	881	80

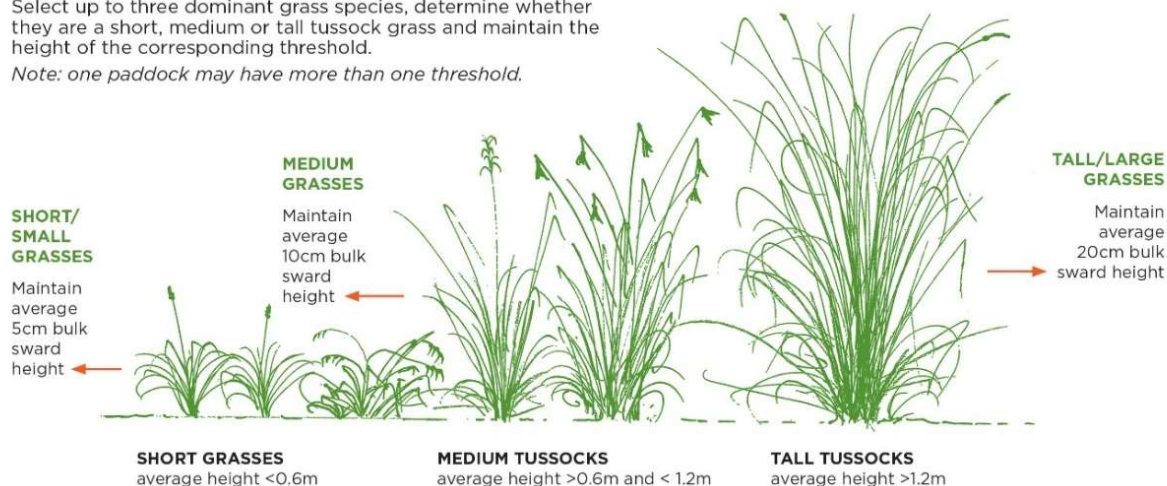
% Ground cover - includes living vegetation, dry litter, coarse woody debris (logs), mosses and lichens, excluding exposed bare ground surface rock

*Where a range is specified, use rainfall gradient to determine appropriate threshold

Table 2 Healthy Condition thresholds for average bulk grass sward height

Select up to three dominant grass species, determine whether they are a short, medium or tall tussock grass and maintain the height of the corresponding threshold.

Note: one paddock may have more than one threshold.



Appendix B – Example grazing diary (stock monitoring form)

2022 Grazing Diary (Jan – Dec)



Biodiversity
Conservation
Trust

Instructions for use: Please fill in the **grazing dates**, **livestock number or DSE/ha** and mark if **Healthy Condition** was maintained for that month. Grazing dates can be marked with a cross or shaded in the appropriate box.

Landholder Name: _____ Agreement Name/No: _____

Management Zone: _____ **Please complete one sheet for every Management Zone**

Example:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Healthy Condition maintained
JAN (cross or shade out dates)																																<input checked="" type="checkbox"/>
Stock type and weight (if known):	400kg 90 kgs 320 ewes																															

2021	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Healthy Condition maintained
JAN (cross or shade out dates)																																<input type="checkbox"/>
Livestock Number or DSE/ha:																																
Stock type and weight (if known):																																
FEB																																<input type="checkbox"/>
Livestock Number or DSE/ha:																																
Stock type and weight (if known):																																
MAR																																<input type="checkbox"/>
Livestock Number or DSE/ha:																																
Stock type and weight (if known):																																
APR																																<input type="checkbox"/>
Livestock Number or DSE/ha:																																
Stock type and weight (if known):																																
MAY																																<input type="checkbox"/>
Livestock Number or DSE/ha:																																
Stock type and weight (if known):																																
JUN																																<input type="checkbox"/>
Livestock Number or DSE/ha:																																
Stock type and weight (if known):																																
JUL																																<input type="checkbox"/>
Livestock Number or DSE/ha:																																
Stock type and weight (if known):																																
AUG																																<input type="checkbox"/>
Livestock Number or DSE/ha:																																
Stock type and weight (if known):																																
SEP																																<input type="checkbox"/>
Livestock Number or DSE/ha:																																
Stock type and weight (if known):																																
OCT																																<input type="checkbox"/>
Livestock Number or DSE/ha:																																
Stock type and weight (if known):																																
NOV																																<input type="checkbox"/>
Livestock Number or DSE/ha:																																
Stock type and weight (if known):																																
DEC																																<input type="checkbox"/>
Livestock Number or DSE/ha:																																
Stock type and weight (if known):																																

Comments