

Technical Workshop Report

Natural Grasslands on basalt and fine-textured alluvium of the Brigalow Belt South, Nandewar, western New England Tablelands, northern Sydney Basin and northern Darling Riverine Plains IBRA Bioregions (incorporating the *Austrostipa aristiglumis* Grasslands of the Liverpool Plains in NSW)

**Tamworth NSW
27-28 November 2007**

1. BACKGROUND

Technical workshops are a mechanism to obtain expert opinion on the nature and extent of an ecological community nominated for listing under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). They are attended by biologists, conservation managers and landholders with expertise in the particular ecological community and/or region involved. Workshops should be considered an early step in the nomination assessment process. Considerable additional work is required before the Threatened Species Scientific Committee (the Committee) is in a position to provide the Minister for the Environment, Heritage and the Arts with sound scientific advice on whether or not the nominated ecological community qualifies for listing under the EPBC Act. More information about the nomination assessment process can be obtained at: www.environment.gov.au/biodiversity/threatened/nominations.html

The technical workshop was held on 27-28 November 2007 in Tamworth NSW.

It is important to note that the report on the outcomes from a technical workshop represents the collective views of the workshop participants and reflects one input to the complex nomination assessment process.

Release of this report does not imply endorsement of its contents by the Threatened Species Scientific Committee.

The Committee welcomes the views of experts, stakeholders and the general public on this report to further inform its nomination assessment process. To assist in this matter, the Committee has identified a series of specific questions on which it seeks particular guidance. These are at the end of this report.

2. THE ECOLOGICAL COMMUNITIES UNDER ASSESSMENT

There two components to this assessment.

1. Nomination to list the *Austrostipa aristiglumis* Grasslands of the Liverpool Plains in NSW as an endangered ecological community under the *Environment Protection and Biodiversity Conservation Act 1999*.

This ecological community is characterised as predominantly natural temperate grassland that intergrades with adjacent grassy woodland. The vegetation is associated with deep, self-mulching alluvial cracking black clay soils and soils developed on Tertiary basalt. The grasslands are often dominated by Plains Grass (*A. aristiglumis*) though other grasses are present, including Wallaby Grass (*Austrodanthonia bipartita*), Queensland Blue-grass (*Dichanthium sericeum*), Panic (*Panicum* spp.) and Native Oat-grass (*Themeda avenacea*). The woodland component has an open tree canopy of White Box (*Eucalyptus albens*), Yellow Box (*E. melliodora*) or Bimbil Box (*E. populnea* ssp. *bimbil*).

2. Review of the listed ecological community 'Bluegrass (*Dichanthium* spp.) dominant grasslands of the Brigalow Belt Bioregions (North and South)'.

This review was undertaken at a separate workshop in Toowoomba in November 2006. The workshop recommended that the listed ecological community be redefined as two separate ecological communities, along a north/south division based on climatic drivers. The northern community occurs in the Brigalow Belt North bioregion as well as the Claude River Downs subregion at the northern end of the Brigalow Belt South. The southern ecological community occupies the remainder of the Brigalow Belt South and Nandewar bioregions extending from Queensland into NSW plus adjacent subregions in NSW.

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The workshop also recommended that the description not be limited to grasslands dominated by Bluegrass (*Dichanthium* spp.) but encompass all natural grasslands in the designated regions. Although the review provided a basic description of the southern ecological community, a subsequent workshop was necessary to clarify its definition and extent, particularly in NSW and with regard to the Liverpool Plains component. A technical workshop was held in Tamworth to address these issues.

3. TECHNICAL WORKSHOP OUTCOMES

Definition

Name

Natural grasslands on basalt and fine-textured alluvium of the Brigalow Belt South, Nandewar, western New England Tablelands, northern Sydney Basin and northern Darling Riverine Plains IBRA Bioregions. The name for the revised ecological community was not discussed at the workshop.

Geographic Distribution

The national extent of the ecological community is limited to the following IBRA bioregions or subregions:

- Brigalow Belt South - all subregions except BBS1 (Claude River Downs);
- Nandewar – all subregions;
- Sydney Basin –northern most subregions, SB1 (Kerrabee) and SB2 (Hunter);
- New England Tablelands –westernmost subregions, NET1 (Bundarra Downs), NET7 (Glen Innes-Guyra Basalts), NET16 (Eastern Nandewars) and NET17 (Tingha Plateau); and
- Darling Riverine Plains –north eastern subregions, DRP2 (Warrambool-Moonie) and DRP3 (Castlereagh-Barwon)

Physical Parameters

Soil: Soils are fine textured (often cracking clays) derived from either basalt or alluvium. The clay minerals in these soils are generally expanding i.e. on wetting, water is absorbed into the clay molecular structure and so the clay particles expand. On drying, the water is released and the clay particles contract. This expansion and contraction on wetting and drying, means that these soils are cracking or self-mulching. These soils are very deep and have a high water-holding capacity and so light falls of rain do not penetrate deeply. However, extended rainfall means that the saturation of the soil profile extends below the root zone of the grassland species and so a deep water table develops. The deep cracks that develop as the soil dries and the presence of the water table have been suggested as the reasons for the lack of trees in these communities.

Rainfall: The ecological community is found in a climatic zone that has summer dominant rainfall. It generally lies within the annual rainfall band of 550-750mm. The grasslands of the Moree Plains, within the Darling Riverine Plains, is an exception, with a lower annual rainfall of about 400-550mm.

Slope: Generally flat to low slopes, of no more than 5 percent inclination.

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Vegetation

Where present, trees are of variable species composition but comprise $\leq 10\%$ of projective crown cover.

The ground layer is typically dominated by perennial native grasses and contains 3 or more of the following indicator species:

Aristida leptopoda
Astrelba elymoides
Astrelba lappacea
Astrelba squarrosa
Austrodanthonia bipartita
Austrostipa aristiglumis
Bothriochloa erianthoides
Bothriochloa biloba
Dichanthium sericeum
Digitaria divaricatissima
Elymus plurinervis
Enteropogon acicularis
Eriochloa crebra
Eulalia aurea
Panicum queenslandicum
Panicum decompositum
Paspalum distichum
Poa labillardieri (east)
Thellungia advena
Themeda avenacea
Themeda triandra (synonym. *T. australis*)
Walwhalleya proluta

Note, that in a poor season, the only visible evidence of natural grassland may be scattered tussocks that cannot be identified as any particular species.

Condition Classes

A condition class describes areas of an ecological community that have a similar conservation value. Condition can be determined by factors such as: Numbers and types of native plants and animals present; the level of weed invasion; the size of an area; and distance to the next area of native vegetation. Significantly degraded areas will not be part of the listed ecological community. This means the protection provisions of the EPBC act will be focused on the most valuable elements of Australia's natural environment, while degraded areas, which do not trigger the "significant test" of the EPBC act, will be largely excluded.

Sampling methodology

Where possible, assessments should be undertaken during a good season, allowing for a two month spell after the cessation of disturbance (fire/grazing) **and** within 2 months of effective rain. The assessment should be based on a 0.1 ha quadrat (50mx20m) selected from within the area with the most native perennial grass species.

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Thresholds

The condition thresholds for the ecological community are set out at Table 1 below. The listed ecological community will cover only the highest quality and good quality patches of the ecological community, as identified by the first two columns, both labelled ‘Listed’ in Table 1, below. Degraded patches, whilst not listed, will remain amenable to environmental funding priorities to enable their recovery to a listable state.

Table 1: Condition Classes for the Natural Grasslands on basalt and fine-textured alluvium of the Brigalow Belt South (and adjacent bioregions).		
Listed – Best quality	Listed – Good quality	Not Listed – Poor quality
At least 4 native perennial grass species from the list of indicator species AND	At least 3 native perennial grass species from the list of indicator species AND	Only 1 or 2 native perennial grass species from the list of indicator species OR At least 3 native perennial grass species from the list of indicator species AND
An average of at least 20 native perennial grass tussocks per 100m ² AND	An average of at least 20 native perennial grass tussocks per 100m ² AND	An average of less than 20 native perennial grass tussocks per 100m ² AND
Minimum patch size is at least 0.5ha AND	Minimum patch size is at least 2 ha AND	
Perennial non-woody introduced species is less than 5% of the total projected plant cover AND	Perennial non-woody introduced species is less than 30% of the total projected plant cover AND	Perennial non-woody introduced species is at least 30% of the total projected plant cover AND
Total projected canopy cover of shrubs (i.e. woody plants more than 0.5m tall) is less than 30%	Total projected canopy cover of shrubs (i.e. woody plants more than 0.5m tall) is less than 50%	Total projected canopy cover of shrubs (i.e. woody plants more than 0.5m tall) is at least 50%

Recommended Management Criteria and Actions

The workshop identified a number of key conservation actions to be considered in the preparation of the Conservation Advice for this ecological community. These are set out in table 2, on pages 6 and 7.

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Table 2: Recommended Management Criteria and Actions	
Threats	Management Actions
Physical destruction (cropping, mining, infrastructure, road widening etc)	<ul style="list-style-type: none"> • Avoid clearing remnants. • Road maintenance and related activities <ul style="list-style-type: none"> -Identify and signpost natural grassland remnants and significant flora and fauna sites on public lands to avoid accidental clearing; -Avoid grading, clearing or disturbing grassland remnants where possible- if this is not practical, establish clear limits and signpost appropriately; -Assess areas before utilising them as turn around or stockpile areas; -Minimise the use of side tracks; -Sow local, native grass seeds after disturbance or works; -Avoid 'tidying up' vegetation as it becomes habitat for wildlife; -Avoid pushing graded 'spoil' on to native vegetation; -Avoid grading of diversion drains or if not practical, keep to a minimum; -Slash drains and firebreaks if possible rather than grading and spraying; -Locate fire breaks on already cleared land or private land where possible. • Protect remnants in preference to establishing offset areas. • Provide stewardship payments or other incentives to maintain grasslands.
Burning/slashing	<ul style="list-style-type: none"> • Avoid burning unless there is a clear ecological 'need' for it (e.g. to maintain a particular species or its habitat). • To meet bushfire management objectives to control biomass for asset protection, use intermittent grazing regime in preference to burning. • When using slashing for overland flow, implement appropriate slashing regimes <ul style="list-style-type: none"> -Avoid slashing native grasslands unless it is more appropriate than burning or grazing; -Avoid slashing during peak flowering season from spring to summer; -Remove litter and grass clippings after slashing if possible or use machinery that spreads the clippings; -Where possible, keep slashing distance along road reserves to road verges necessary for safety

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Threats	Management Actions
Total grazing pressure	<ul style="list-style-type: none"> • Implement short, intermittent/rotational grazing that incorporates high intensity (one to seven days at about 500 Dry Sheep Equivalents/ha) but not grazed at the same time each year. <ul style="list-style-type: none"> - Remove livestock before 60% of standing biomass has been consumed. - Do not graze again until the perennial grasses have reached the late vegetative stage. - Perennial grasses should be allowed to set seed at least once every two years. • Avoid heavy grazing on black and grey soils when they are wet. • Provide/promote incentives for good management (e.g. related to building up of soil carbon and the possibility of payment of soil carbon credits). • Manage non-domestic grazing species (e.g. kangaroos, rabbits).
Weeds	<ul style="list-style-type: none"> • Educate road management authorities and contractors on implementing more effective weed-management practices on roadsides (re spraying, mowing/slashing roadsides; road widening etc). • Implement proper hygiene measures for mowing and grading equipment. • Identify and eradicate new weed infestations quickly.
Other feral animals – cats, foxes, house mice etc	<ul style="list-style-type: none"> • Assess level of risk and control appropriately within remnants.
Lack of knowledge	<ul style="list-style-type: none"> • Educate land owners, managers and administrators on appropriate management of these grasslands, including identification of component species. • Address grassland knowledge and research gaps: <ul style="list-style-type: none"> -Accurately identify the location of remnants and assess their condition; -Establish programs to monitor changes in condition; -Species ecology and interactions, community ecosystem function; • Raise public awareness of grasslands and their flora and fauna. • Facilitate and/or support conservation management networks or equivalent. • Educate people about need to avoid introducing new species (e.g. trees).
Drift of herbicides, pesticides & other chemicals	<ul style="list-style-type: none"> • Avoid spray drift, run-off etc [use as per label]. • Provide buffers around remnants.

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Questions

- 1) Do you consider the proposed **name** to be adequate? If not, can you suggest a suitable alternative?
- 2) Do you have any comments on the proposed **definition** and **distribution** of the ecological community as determined above?
- 3) Is this ecological community, as defined by its soil type and list of indicator grass species, able to be **distinguished from other grasslands**?
- 4) Do the distinguishing characteristics of the Natural grasslands on basalt and fine-textured alluvium of the Brigalow Belt South (and adjacent bioregions) **differentiate** it sufficiently from those of the Natural grasslands on basalt and fine-textured alluvium of the Brigalow Belt North?
- 5) Do you have any comments on the proposed **condition classes** for the ecological community?
- 6) Are the **recommended management criteria** or actions, above, appropriate?
- 7) Are the **lists of characteristic plant species** for the ecological community, above, adequate? If not, how should the list be modified?
- 8) The workshop did not consider the **faunal component** of this ecological community. Are you able to provide any information about fauna that are characteristic or of functional importance or otherwise relevant to this ecological community?

We welcome any additional comments or information you can provide to assist us with the assessment of the Natural grasslands on fine-textured alluvium and basalt of the Brigalow Belt South (and adjacent bioregions).

Thank you for your assistance.