



COMMUNITIES FOR COMMUNITIES

Issue 12: February 2010

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From the Ecological Communities Section

Throughout 2009, staff from the Ecological Communities Section continued their work of assessing nominated ecological communities, and producing information guides for ecological communities listed under Australia's national environmental law, the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). This year promises to be just as busy. In this newsletter, we take a more detailed look at some of the ecological communities protected in 2009, as well as highlighting our most recent listings.

Also featured are reports of technical workshops held in the second half of 2009, as both marine and freshwater aquatic ecological communities are considered for the first time. These will be groundbreaking assessments.

Finally, if you are aware of a threatened ecological community which is not already listed under the EPBC Act, or under current assessment, and would like to submit a nomination for the next assessment cycle, you have until 25 March 2010 to do so. Particularly encouraged are nominations that align with this year's conservation themes (see next page).



Call for new nominations

Why list ecological communities?

Ecological communities are unique, naturally occurring groups of plants, animals and other organisms, and are one of eight matters protected under the EPBC Act. Threatened ecological communities are identified through a rigorous process of research and consultation with stakeholders, the public and scientific experts. Advice is also provided to and obtained from the Threatened Species Scientific Committee (TSSC), an independent scientific body that advises the federal environment minister on the conservation status of native species and ecological communities.

Listing will raise awareness of these ecological communities, the threats they face, and the plants and animals for which they provide habitat. Published listing advices, conservation advices and information guides all provide comprehensive information, consolidated from all ecological and management information available at the time each community is listed. Listing also triggers the protection mechanisms of the EPBC Act and makes the communities a priority for funding and management to help with their recovery and conservation.

The Department of the Environment, Water Heritage and the Arts (the department) is now seeking nominations for threatened ecological communities, threatened species and key threatening processes to be listed under the EPBC Act. The current nomination period is for the assessment cycle starting 1 October 2010. Nominations for this assessment cycle must be received by **5pm (AEST) on Thursday 25 March 2010.**

The conservation themes for this assessment period are:

- heathlands and mallee woodlands, and
- terrestrial, estuarine and near-shore environments of Australia's coasts.

Nominations aligning with these themes are particularly encouraged; however nominations outside the themes will also be considered for priority assessment. Electronic submissions are preferred, although hard copy format is also welcome. (An accompanying CD with an electronic version of the submission would be helpful.)

Before you submit a nomination for an ecological community, please check to see if it is already in the current EPBC Act lists. Other references and recommended reading which may be useful in preparing nominations are recent listing and conservation advices, as well as recovery plans for threatened species and ecological communities.

These references and further information about ecological communities, including policy statements (information guides) for currently listed ecological communities, and priority assessments currently underway are also online. Follow the relevant links at www.environment.gov.au/biodiversity/threatened/index.html

Nomination forms and guidelines are online at www.environment.gov.au/biodiversity/threatened/nominations-make.html

The current Finalised Priority Assessment List (FPAL) (started 1 October 2009)

Following last year's annual call for nominations of threatened ecological communities, species, and key threatening processes to be assessed for listing under the EPBC Act, the Finalised Priority Assessment List (FPAL) for the assessment for the period beginning 1 October 2009 has been announced.

The following table outlines the list of ecological communities announced in the most recent FPAL. The assessments of other ecological communities



that began in previous assessment periods are also continuing.

To view the most recent FPAL in full, including threatened species and key threatening processes, and for details of previous FPALs (for the assessment periods starting 1 October 2007 and 1 October 2008), go to www.environment.gov.au/biodiversity/threatened/nominations-fpal.html



Lower River Murray wetland, South Australia. (Murray Darling Basin Natural Resource Management Board)

FINALISED PRIORITY ASSESSMENT LIST FOR THE ASSESSMENT PERIOD STARTING 1 OCTOBER 2009

Item	Australian distribution	Completion times
Ecological communities		
Wetlands of the Darling Basin (nominated as Macquarie Marshes)	NSW	31 March 2012
Giant Kelp Forests of the East and South Coasts of Tasmania	Tasmania	31 March 2012
Lowland Subtropical Rainforest on Basalt Soils and Alluvium in North East New South Wales and South East Queensland	NSW, Qld	30 June 2011
Riffle/Pool/Bar River Community of the South Eastern Queensland Bioregion	NSW, Qld	31 March 2012
Southern Highlands Basalt Forests	NSW	30 June 2011
Any other ecological community nominated by the Committee		30 September 2011

Technical workshop reports

A first for Australian aquatic biodiversity

To date, close to 50 threatened ecological communities have been listed under Australia's national environment law. Most of these are terrestrial vegetation-based systems such as grasslands, woodlands and forests. The exceptions include ecological communities such as mound springs associated with groundwater discharge of the Great Artesian Basin, the aquatic root mat communities comprising various cave faunal associations in the south-west of Western Australia, and the newly listed thrombolite community at Lake Clifton (see below).

The criteria used to determine whether an ecological community is eligible for listing, and the guidelines for how these criteria are interpreted, have not been tested and applied to purely aquatic

environments. Two workshops were held in mid 2009 to look at these issues in relation to freshwater and marine based ecological communities. The outcomes of each workshop are reported below.

Lower River Murray—from the Darling to the Sea Workshop, 1–3 July 2009

For the first time in Australia, a riverine system is being considered for listing as a threatened ecological community—the lower River Murray from its mouth at the Southern Ocean up to the junction with the Darling River. The River Murray assessment offers a unique and timely opportunity to apply, test and adapt the EPBC Act listing process to a dynamic freshwater aquatic system, and should pave the way for other nominations and assessments of this kind.



The region encompassing the Lower Lakes, Coorong and the mouth of the River Murray was nominated for listing as a threatened ecological community under the EPBC Act in March 2008. This region is currently listed under the international Ramsar Convention on wetlands. To achieve a greater and more effective conservation benefit, the TSSC recommended that the nominated region be expanded to include the 'Lower Murray River and associated wetlands, floodplains and groundwater systems from the junction of the Darling River to the sea' (LM-DS). The federal environment minister agreed to place the LM-DS on the 2008 FPAL—the first time a riverine system has made the FPAL. The assessment period for this ecological community runs from 1 October 2008 to 30 September 2011.

To kick off the assessment process, a technical workshop of 65 experts was held from 1 to 3 July 2009 in Adelaide. A scene-setting session of current research provided workshop delegates with a snapshot of current knowledge in key aspects of the river system's ecology and function. Delegates explored aspects important to the assessment process such as: definition of the ecological community; scope of physical parameters and boundaries; functionality and connectivity; and other key characteristics. These were considered in light of four sub-system focus areas: groundwater; river and tributaries; floodplain and wetlands; and biota. A panel session on threats and future trends involved discussion of impacts such as climate change, salinity, acid sulfate soils, flow regulation, invasive species, and land clearing. Finally, the workshop explored how the current assessment criteria (that is, as per the EPBC Act Regulations and TSSC guidelines) may be applied for the first time to such a complex and dynamic aquatic ecosystem. The current assessment criteria were modelled on IUCN species listing criteria which were originally developed for terrestrial species.

Some key outcomes from the workshop included greater clarity on the likely geographic boundaries for the national threatened ecological community.

The region of the LM-DS is considered ecologically different from its parent rivers and a unique system in the national context. Its distinctive nature is reflected by the high degree of physical habitat diversity and associated high and/or unique biodiversity, which can change over relatively short distances. The River Murray holds a special place in the national 'psyche', and importantly, the suggested linear extent of the ecological community—that is, the mouth to the Darling River junction—is a region that has great cultural significance to the Ngarrindjeri traditional owners.

This threatened ecological community is currently under pressure from several threats, most critical of which are climate change, flow regulation (particularly water extraction), acidification and salinisation, with some areas severely degraded. Despite this, workshop experts considered that the majority of the system is recoverable, with the exception of a few highly salinised wetlands and very old trees—for example, river red gum and black box trees that provide complex habitat and would take more than 100 years to achieve the same level of complexity. Currently, both the salinity and acid sulfate soil problems are being tackled through remedial action.

Given the high degree of regulation of the system over the past 87 years, including 10 weirs and several barrages, the workshop experts conceded that the LM-DS ecological community is now largely a 'constructed' system. Achieving enduring connectivity (that is, longitudinally along the river channel, laterally with the floodplain and wetlands, and vertically with groundwater) and temporal variability (for example, wetting/drying cycles, flushing floods, etc.) were identified as the major conservation goals for maintaining the ecological character of the threatened ecological community.

Analysis by the workshop delegates of the listing criteria and their applicability indicated that the



assessment of criteria for freshwater aquatic systems should include a greater emphasis on ecological functionality as compared to geographic/ extent criteria, and should give particular consideration to temporal aspects (as well as spatial). A report of the workshop outcomes will be made available for public comment, and the findings presented to the TSSC in the coming months. Watch this space.

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Soil acidification is a major threat to the Murray-Darling system. The image of Nelwart Lagoon, near Renmark, shows soils which acidified significantly on drying. This meant that when the Lagoon refilled early in 2009, the water became acidic. (Paul Shand, CSIRO)

Marine Ecological Communities Workshop, 7–8 September 2009

Guided by recent public nominations of two marine ecological communities, and recognition that marine environments are under-represented in the list of threatened ecological communities, the TSSC is exploring the potential technical issues associated with assessing threatened marine ecological communities for future listing under the EPBC Act. To initiate this process the TSSC and the department held a high-level expert technical

workshop from 7 to 8 September 2009 in Canberra. The workshop attracted a delegation of 36 marine scientists and other experts from a wide range of disciplines and organisations.

The workshop sought to address a range of issues relating to the assessment of marine ecological communities under the EPBC Act. These included identifying key aspects of defining marine ecological communities, determining the applicability of the current listing criteria and guidelines for assessing them, identifying specific examples of high priority marine ecological communities and general data availability to enable assessment. Three focus groups based on different broad marine environment types were used to explore each of these issues. A session was also held to specifically explore how the listing criteria might be applied to the nominated Giant Kelp Forests of the East and South Coasts of Tasmania ecological community.

The workshop demonstrated that assessing marine ecological communities under the EPBC Act will be a complex task, and it highlighted some future challenges. The department and the TSSC are currently looking at the workshop outcomes, to identify areas of policy and/or process that may need amendment to ensure the threatened marine ecological communities can be adequately assessed for national protection.

In the meantime, nominations for threatened marine ecological communities are encouraged, particularly where they are not adequately protected by existing conservation measures and where good data on national extent and threat impacts are available. The call for nominations period is currently open and closes on 25 March 2010 (see earlier article on page 2).

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New ecological community listings

Update on the uplisting of Cumberland Plain Woodlands (now called Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest)

Following our report on the technical workshop for Cumberland Plains Woodland in our last newsletter, we can now announce that, as of 9 December 2009, this ecological community has been upgraded to the critically endangered category.

The name of the ecological community has changed to 'Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest', as recommended by the TSSC, to clarify and improve consistency with the New South Wales threatened ecological communities that it is related to—Cumberland Plain Woodland in the Sydney Basin Bioregion and the Shale Gravel Transition Forest in the Sydney Basin Bioregion (critically endangered and endangered respectively under the New South Wales *Threatened Species Conservation Act*).

The Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest occurs from the western suburbs of Sydney to the foot of the Blue Mountains, mostly around the local government areas of Auburn, Bankstown, Baulkham Hills, Blacktown, Camden, Campbelltown, Fairfield, Hawkesbury, Holroyd, Liverpool, Parramatta, Penrith and Wollondilly. It displays a woodland to forest structure, with several vegetation layers when in best condition. These are the upper tree canopy, lower tree canopy, shrub layer and ground layer (which in good seasons can display a wide range of native grasses and wildflowers).

This ecological community has great importance in the landscape, being an example of a coastal grassy woodland that is nationally unique. The preservation of woodland remnants will maintain important green corridors that will improve quality of life in an already heavily urbanised area, and provide habitat for

animals moving across the Cumberland Plain and beyond.

Significant new information on this ecological community, including a description, condition thresholds, species list, distribution, map, reasons for listing and priority conservation actions can be found in the new listing advice and conservation advice at www.environment.gov.au/cgi-bin/sprat/public/publiclookupcommunities.pl

An illustrated information guide/policy statement is also due to be published over the coming months.

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Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest, Mount Annan Botanic Gardens, NSW. (R. Purdie)



Thrombolite (microbialite) Community of a Coastal Brackish Lake (Lake Clifton)

The Thrombolite (microbialite) Community of a Coastal Brackish Lake (Lake Clifton) was listed as a critically endangered ecological community under the EPBC Act on 7 January 2010. The TSSC concluded that this ecological community merited listing because:

1. its geographic distribution is very restricted and it is subject to ongoing threats
2. the loss and decline of functionally important species is very severe
3. the reduction in integrity of critical ecological processes is very severe, and
4. the rate of continuing detrimental change is severe and projected to continue in the immediate future.

Lake Clifton thrombolites are restricted to Lake Clifton, on the Swan Coastal Plain of Western Australia, south of Perth. Lake Clifton is situated within the Yalgorup National Park, and is the northernmost lake in the Peel-Yalgorup Lakes System.

Microbialites are discrete organosedimentary structures formed by the activities of specific microbial communities that occur at the bottom (benthic stratum) of certain aqueous ecosystems. Cyanobacteria and eukaryotic microalgae photosynthesise and precipitate calcium carbonate (limestone) from the surrounding water, leading to the formation of rock-like structures. Although microbialites have the appearance of rocks, they are in fact living ecosystems similar to coral reefs. Unlike corals, however, the hard carbonate structures of microbialites are not skeletal, but are instead the result of mineralisation in the biochemical environment. Microbialite construction is a passive process, unlike coral skeletal formation, which is an active and controlled precipitation of calcium carbonate by the coral tissues.

Thrombolites are a particular type of microbialite. They are distinguished from other microbialites, such as stromatolites, by the internal structure of their calcareous deposits. Stromatolites are finely layered, whereas thrombolites are not layered, and have a clotted internal structure with fenestrae. Thrombolites are formed by the interactions of a complex association of photosynthetic prokaryotes, eukaryotic microalgae and true bacteria. They require access to a carbonate-rich water supply and sunlight for their growth and survival. The photosynthetic action of the microbes causes the precipitation of calcium carbonate as aragonite from fresh groundwater seeping up from underground aquifers.

The dominant type of microbe present in this ecological community are photosynthetic cyanobacteria. Historically, the dominant microbe for thrombolite formation is the cyanobacterium *Scytonema* sp., which grows in fresh to brackish waters with low nutrient levels, although recent investigations suggests that levels of *Scytonema* in Lake Clifton are declining. Other cyanobacteria found in the Lake Clifton thrombolites include the genera *Oscillatoria*, *Dichothrix*, *Chlorococcus*, *Gloeocapsa*, *Johannesbaptistia*, *Spirulina* and *Gomphosphaeria*, as well as numerous species of diatoms.

The main known occurrence of the ecological community is a reef-like formation about 15 kilometres long and up to 15 metres wide along the north-eastern shoreline of Lake Clifton. Other smaller clusters of thrombolites are known to occur at the northern end of the Lake Clifton. The thrombolites cover a total area of about four square kilometres.



Worldwide, living thrombolites are extremely rare. They are one of the oldest lifeforms on Earth, and as such their survival is of particular scientific importance. They play an important role in research and form part of our geo-heritage. Threats to the Lake Clifton thrombolite community include groundwater extraction, increased salinity levels, eutrophication, changes to surrounding vegetation and the introduction of fish species that are not native to the Lake Clifton environment.

Further information on this ecological community, including a detailed description, distribution map, reasons for listing and priority conservation actions can be found in the new listing advice and conservation advice at

www.environment.gov.au/cgi-bin/sprat/public/publiclookupcommunities.pl

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New threatened species and key threatening processes listings

Towards the end of 2009, the Species Listing Section oversaw the listing of a further seven species and two key threatening processes (see table below), in addition to those tabled in the last newsletter.

Along with these FPAL items, the Species Listing team has also had decisions on 39 species through species information partnerships with state and territory governments. This included eight species endemic to South Australia, 24 species endemic to Western Australia, 6 species endemic to Tasmania, and 1 species endemic to Victoria. Of particular note were the listing of the woylie (*Bettongia penicillata ogilbyi*) as endangered and the listing of the forest red-tailed black cockatoo (*Calyptorhynchus banksii naso*) as vulnerable.

Species	Category
<i>Prasophyllum atratum</i> (three hummock leek-orchid)	Listed as critically endangered
<i>Prasophyllum limnetes</i> (marsh leek-orchid)	Listed as critically endangered
<i>Prasophyllum</i> sp. Wybong (C. Phelps ORG 5269) (an orchid)	Listed as critically endangered
<i>Thalassarche chrysostoma</i> (grey-headed albatross)	Listed as endangered
<i>Cyclodomorphus praealtus</i> (alpine sheoak skink)	Listed as endangered
<i>Pristis clavata</i> (dwarf sawfish)	Listed as vulnerable
<i>Litoria myola</i> (Kuranda tree frog)	Listed as endangered

Key threatening processes

Ecosystem degradation, habitat loss and species decline due to invasion of northern Australia by introduced gamba grass (*Andropogon gayanus*), para grass (*Urochloa mutica*), olive hymenachne (*Hymenachne amplexicaulis*), mission grass (*Pennisetum polystachion*) and annual mission grass (*Pennisetum pedicellatum*)

Loss and degradation of native plant and animal habitat by invasion of escaped garden plants, including aquatic plants.



Listing and conservation advices for the species mentioned above can be downloaded from: www.environment.gov.au/cgi-bin/sprat/public/sprat.pl. The conservation advice provides guidance on immediate recovery and threat abatement activities that can be done to help conserve the species.

The listing advices for the key threatening processes can be downloaded from: www.environment.gov.au/cgi-bin/sprat/public/publicgetkeythreats.pl.

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More recent ecological community listings

This section contains profiles of several ecological communities listed during 2009: the Gippsland Red Gum Grassy Woodland and Associated Native Grassland, the Grassy Eucalypt Woodland of the Victorian Volcanic Plain, and two grassland communities of northern New South Wales and Queensland. For all of these ecological communities:

- most remaining areas tend to be relatively small and fragmented
- protecting what remains can provide benefits to the long-term protection of native biodiversity and helps to retain essential ecosystem services, and
- farmers are encouraged to investigate techniques such as strategic grazing that allows production to continue with minimal impacts to biodiversity and regeneration of native vegetation.

Gippsland Red Gum (*Eucalyptus tereticornis* subsp. *mediana*) Grassy Woodland and Associated Native Grassland

The Gippsland Red Gum (*Eucalyptus tereticornis* subsp. *mediana*) Grassy Woodland and Associated Native Grassland was listed as a critically endangered ecological community under national environment law on 7 January 2009.

On the basis of the available scientific evidence, the TSSC considered that the Gippsland Red Gum Grassy Woodland and Associated Native Grassland ecological community merited listing because:

1. it has undergone a very severe decline in its extent
2. its present geographic distribution is very restricted
3. it is subject to ongoing threats, and
4. its integrity has reduced severely across its range.

The Gippsland Red Gum Grassy Woodland and Associated Native Grassland is limited to the central Gippsland Plain in Victoria, between Morwell and Swan Reach. It was formerly extensive across the plain, but most remaining areas now tend to be relatively small, fragmented and/or degraded. It occurs within the Gippsland Plain and East Gippsland Lowlands Victorian bioregions (which are equivalent to the Interim Biogeographic Regionalisation of Australia (IBRA) subregions of the same name), and within the West Gippsland and East Gippsland Catchment Management Authorities.

The ecological community occurs in two forms: a grassy woodland and a grassland. The grassy woodland form has a tree canopy dominated by Gippsland Red Gum (*Eucalyptus tereticornis* subsp. *mediana*), and varies from an open woodland with widely spaced, mature trees to regrowth stands where trees are thinner and more closely spaced. Localised pockets dominated by drooping sheoke or black sheoke (*Allocasuarina verticillata* and *A. littoralis* respectively) may occur, and are included as part of the ecological community. In the grassland form, trees are absent to scattered, with no more than five per cent projective foliage cover. The understorey of both forms comprises several native grasses and/or grass-like plants, such as



sedges or *Lomandra* species. Wildflowers, including orchids and daisies, can occur among the tussocks, especially in better quality remnants.

The grassland and grassy woodland forms originated from the same open grassy woodland vegetation that formerly covered much of the central Gippsland Plain. However, management histories differed—fire was a key management tool for grasslands while woodlands were grazed. This means the two forms now retain a different mix of native flora species. Consequently, it is important that their separate management regimes continue so that the full biodiversity of the region is protected.

The ongoing threats to the ecological community include:

- vegetation clearing, and fragmentation into small and scattered remnants
- weed invasion, including serrated tussock-grass (*Nassella trichotoma*), Chilean needle-grass (*Nassella neesiana*) and African love-grass (*Eragrostis curvula*), and
- inappropriate grazing and fire regimes (for example, overgrazing the grassy ground layer of remnants, or abandoning the controlled fire regime used to manage biomass in many roadside grassland remnants in favour of cheaper but more destructive practices such as herbicide use).

Some remnants also are being encroached by native shrubs, notably burghan (*Kunzea ericoides*), which can form thickets that crowd out the native grassy understorey. Although native shrub encroachment is to some extent a natural process, it may be caused by prior disturbance, and requires management to retain the biodiversity values of native grassy remnants. Rural tree dieback also is a significant problem in the region.

Protecting what remains of this ecological community helps the long-term protection of native biodiversity, and helps to retain essential ecosystem services. Farmers are encouraged to

investigate techniques, such as strategic grazing, so that production can continue with minimal impacts to biodiversity and the regeneration of native vegetation.

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Woodland form of the Gippsland Red Gum Grassy Woodland and Associated Native Grassland ecological community at Fernbank Recreation Reserve, Victoria. (R. Purdie)

Grassy Eucalypt Woodland of the Victorian Volcanic Plain

The Grassy Eucalypt Woodland of the Victorian Volcanic Plain was listed as a critically endangered ecological community under national environment law on 25 June 2009.

Having considered the scientific evidence, the TSSC concluded that the Grassy Eucalypt Woodland of the Victorian Volcanic Plain merited listing as critically endangered because:

1. it has undergone a very severe decline in its extent
2. its present geographic distribution is very restricted
3. it is subject to ongoing threats, and
4. its integrity has reduced very severely across its range.



This ecological community is limited to south-western Victoria, and extends from western Melbourne to the Hamilton region. It is associated with quaternary basalt soils in the Victorian Volcanic Plain bioregion, and is closely associated with the Natural Temperate Grassland of the Victorian Volcanic Plain, which is also nationally listed as critically endangered. Both the grassland and woodland were formerly extensive across the volcanic plain but are now limited to mostly small, fragmented and degraded remnants. The woodland occurs within the Port Phillip and Westernport, Corangamite and Glenelg-Hopkins Catchment Management Authorities.

The Grassy Eucalypt Woodland of the Victorian Volcanic Plain ecological community has a tree canopy that is typically dominated by river red gum (*Eucalyptus camaldulensis*) and an understorey of native grasses and other herbs with scattered larger shrubs. At higher rainfall sites, river red gum may be replaced by swamp gum (*E. ovata*) or manna gum (*E. viminalis*). At drier sites, river red gum may grade into grassy woodlands dominated by grey box (*E. microcarpa*) or yellow box (*E. melliodora*).

However, the driest sites—where buloke (*Allocasuarina luehmannii*), yellow gum (*E. leucoxydon*) or chenopod shrubs occur with grey box—are not part of the Grassy Eucalypt Woodland of the Victorian Volcanic Plain ecological community. The presence of buloke, yellow gum and chenopods in association with a grey box overstorey indicates these sites may be part of the Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-Eastern Australia ecological community, presently under assessment.

The Grassy Eucalypt Woodland of the Victorian Volcanic Plain ecological community also includes localised patches of stony knoll shrubland that occur on stony and rocky outcrops within or next to the woodland. The woodland on these outcrops is locally replaced with a shrubland of *Acacia*,

Allocasuarina, *Bursaria* and/or *Meliccytus* over a similar understorey of grasses and other herbs.

To distinguish the woodland ecological community from native grassland and forest communities, the crown cover of mature trees for the woodland must be at least 5 per cent, up to 30 per cent. The woodland listing does include derived grasslands, where the tree canopy was removed and the understorey remains, but only where there is clear evidence from the site, historical records or vegetation modelling that woodland previously occupied the site. The listing also allows for the presence of smaller, regenerating trees that may temporarily result in a tree crown cover of more than 30 per cent.



Grassy Eucalypt Woodland of the Victorian Volcanic Plain, north of Melbourne, Victoria. (P. Komidar)

The ongoing threats to the ecological community include: vegetation clearing for agriculture and for urban development; fragmentation into small and scattered remnants; weed invasion, including serious weeds such as serrated tussock-grass (*Nassella trichotoma*) and African box-thorn (*Lycium ferocissimum*); and inappropriate management regimes, such as overgrazing.

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Two new grassland listings supersede the Queensland Bluegrass ecological community listing

Grasslands and grassy woodlands are among the most threatened ecosystems in Australia. In 2001, the Bluegrass (*Dichanthium* spp.) Dominant Grassland of the Brigalow Belt Bioregions (North and South) ecological community was listed as endangered under national environment law.

A review of this listing done in 2006–07 included technical workshops and discussions with scientific experts. These concluded that two distinct ecological communities should replace the current listing because of climatic, geographic and floristic differences. The review also recommended that the definition of the ecological communities should not be limited to grasslands dominated only by bluegrasses.

The following two listings supersede the listing of the Bluegrass (*Dichanthium* spp.) Dominant Grassland of the Brigalow Belt Bioregions (North and South) ecological community which has now been removed from the list of threatened ecological communities.

The Natural Grasslands of the Queensland Central Highlands and the Northern Fitzroy Basin was listed as an endangered ecological community under the EPBC Act on 7 January 2009. The Natural Grasslands on Basalt and Fine-Textured Alluvial Plains of Northern New South Wales and Southern Queensland was listed as a critically endangered ecological community at the same time.

Major threats to these two listed ecological communities are conversion of native pastures to improved pastures and cropping and overgrazing by stock. Other threats include ploughing, grading, weed invasion, salinity, herbicide and fertiliser spraying, overgrazing by native herbivores, trampling and inappropriate management regimes (for example, mowing, burning and tree planting). Climate change is also a threat to these ecological communities.

More information on each of these communities can be found in the articles below, as well as by viewing the listing advice and conservation advice online at: www.environment.gov.au/cgi-bin/sprat/public/publiclookupcommunities.pl.

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Natural Grasslands of the Queensland Central Highlands and the Northern Fitzroy Basin

The Natural Grasslands of the Queensland Central Highlands and the Northern Fitzroy Basin is endemic to Queensland. It broadly occurs where the Fitzroy River Basin and the Brigalow Belt North coincide. It extends from Collinsville in the north to Carnarvon National Park in the south. It is bounded to the south by the Expedition, Carnarvon, Great Dividing, Drummond and Narrien ranges, and to the north by the Clark, Denham, Connors and Broadsound ranges. The ecological community mostly occurs within the Fitzroy River Basin, but its distribution does extend part way into adjoining catchments.

The ecological community usually occurs on flat ground or gently undulating rises. It occurs on soils that have formed either in situ on the fresh basalt, or on fine-grained sedimentary rocks, or where this material has been transported to form extensive alluvial plains along ancient and flood-prone watercourses. The soils are fine textured vertosols (cracking clay), often deep and dark in colour, although soils may be shallower on ridges or sloping land.

The grasslands of the Queensland Central Highlands are mostly dominated by bluegrasses (*Dichanthium* spp.), with tropical three-awned grasses (*Aristida* spp.) and panic grasses (*Panicum* spp.) also a major component. Drier sites of





Natural grasslands of the Queensland Central Highlands and the Northern Fitzroy Basin. Previously cultivated grassland, Albinia Downs, near Springsure, Queensland. (Don Butler)

the ecological community may include a higher proportion of Mitchell grasses (*Astrelba* spp.).

As well as several perennial native grasses, the Natural Grasslands of the Queensland Central Highlands and the Northern Fitzroy Basin also typically include a mixture of forbs (that is, wildflowers that are broad-leaved and not grass-like). While shrub cover is usually a minor component of the grassland, in some areas the cover of shrubs, such as Sally wattle (*Acacia salicina*) and mimosa (*Acacia farnesiana*) can be more extensive. There is usually no tree canopy. Where there are trees, they are of variable species composition, and projective crown cover is less than 10 per cent.

Natural Grasslands on Basalt and Fine-Textured Alluvial Plains of Northern New South Wales and Southern Queensland

The Natural Grasslands on Basalt and Fine-Textured Alluvial Plains of Northern New South Wales and Southern Queensland ecological community occurs in a band extending from Chinchilla, Queensland to Dubbo, New South Wales. It predominantly occurs within the Brigalow Belt South IBRA bioregion, but patches extend into adjacent bioregions.

The ecological community is mostly concentrated in three areas where climate, soils and landform are conducive to the development of tussock grasslands: the Darling Downs west of Toowoomba, Queensland, the Liverpool Plains around Gunnedah, New South Wales, and the Moree Plains north-west of Moree, New South Wales. Small patches occur outside of these areas as well.

The ecological community relies strongly on soil type, as it is associated with fine textured, often cracking clays derived from either basalt or quaternary alluvium. The ecological community generally occurs on flat to low slopes.

Native grasslands are dynamic ecosystems where species composition can change yearly and seasonally in response to rainfall, temperature, fire, grazing pressure and management. Temperate grasslands are typically dominated by tussock grasses in the genera *Austrodanthonia*, *Austrostipa*, *Bothriochloa*, *Chloris*, *Enteropogon*, or *Themeda*. Representatives of these genera, as well as temperate grassland forbs, are present to some extent throughout the ecological community. The presence of a temperate component is one feature that distinguishes this ecological community from the related, truly tropical native grasslands in the Queensland Central Highlands.

It is important to note that native grasslands comprise not only the more obvious grass species, but also a great diversity of other herbaceous plants such as native daisies, orchids, lilies and other wildflowers. Many of these plants are only easily seen in the spring. The native grassland flora also includes herbaceous legumes such as *Desmodium*, *Glycine*, *Lotus* and *Rhynchosia*, which have an important role in fixing soil nitrogen. The native legumes of grasslands on the Liverpool Plains are now mainly restricted to sites that have not





Natural Grasslands on Basalt and Fine - Textured Alluvial Plains of Northern New South Wales and South Queensland, near Tamworth, NSW.

been heavily degraded by past land management practices.

The shrub cover is typically a very minor component of the grassland; although in some areas, such as Kirramingly (south of Moree), the cover of shrubs like mimosa (*Acacia farnesiana*) can be thick. Other shrubs that may be present include *Pittosporum phylliraeoides*, *Pimelea* spp. and *Sclerolaena* spp. There usually is no tree canopy, but where trees are present, they are of variable species composition and comprise less than 10 per cent of projective crown cover.

Conferences and events in 2010

2010: **The International Year of Biodiversity**—established by the United Nations to increase worldwide awareness of biodiversity and its importance, and to engage more people in its conservation.

www.cbd.int/2010/welcome/

26 September–1 October: **13th International Behavioural Ecology Congress**, Perth, Western Australia. (www.isbep Perth2010.com/index.html)

28 September–1 October: **8th National Conference Australian Network for Plant Conservation Inc**, Perth, Western Australia. www.anbg.gov.au/anpc/

27–29 October: **Environment Institute of Australia and New Zealand (EIANZ) Conference**, Wellington, New Zealand. The conference theme is From Discovery to Delivery: Science, Policy, Leadership, Action. Call for papers, program and registrations will be announced in upcoming months. www.eianz.org/eventsplus

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BIO88.0210

