Common Name: Poplar Box - Belah woodland on clay-loam soils on alluvial plains of north-central NSW

Scientific Name: Eucalyptus populnea subsp. bimbil - Casuarina cristata - Geijera parviflora - Alectryon oleifolius subsp. canescens - Rhagodia spinescens - Sclerolaena birchii - Chloris truncata - Einadia nutans subsp. nutans - Enteropogon acicularis - Oxalis chnoodes

Veg. Comm. ID.: 56

Original Entry: John Benson 31/12/2005

Photo 1: ID56a_BBS NOV 2007 0073.jpg
Eucalyptus populnea - Casuarina cristata woodland on alluvial plains, Croppa Road north-east of Moree, [AGD66 29°14'49.1"S 150°11'22.7"E], 13/11/2008, Jaime Plaza.

Photo 2: ID56b_dsc_1773.jpg
Eucalyptus populnea - Casuarina cristata woodland, Merri Merri Creek, [AGD66 31°14'46"S 148°13'10"E], 17/8/03, Jaime Plaza.

Characteristic Vegetation: (Quantitative Data)

Trees: Eucalyptus populnea subsp. bimbil; Casuarina cristata; Allocasuarina huehmannii; Calitris glauccophylla; Eucalyptus microcarpa; Atlalya hemiglaucia; Corymbia tessellaris.

Shrubs/Vines/Epiphytes: Geijera parviflora; Alectryon oleifolius subsp. canescens; Rhagodia spinescens; Sclerolaena birchii; Sclerolaena muriaca; Capparis mitchelli; Enchyela tomentosa; Myoporum montanum; Alectryon oleifolius subsp. elongatus; Apophyllum anomalum; Capparis lasiantha; Santalum acuminatum; Abutilon oxyacarpum; Citrus glauca; Maireana decalvans; Eremophila desertii; Notelaea microcarpa var. microcarpa.

Ground Cover: Chloris truncata; Einadia nutans subsp. nutans; Enteropogon acicularis; Oxalis chnoodes; Austrostipa scabra subsp. scabra; Dichanthium sericeum subsp. sericeum; Aristida jerichoensis var. jerichoensis; Tetragnia moorei; Austrostipa verticillata; Aristida bethriana; Bulbinia alata; Erodium cicutarium; Wahlenberga flavinalis; Brachyscome heterodonta var. heterodonta; Galium gaudichaudii; Diplachne muellerii; Pycnosorus globosus; Goodenia fascicularis; Phlotus exaltatus var. exaltatus; Calcephalus sonderi; Sida filiformis; Thellungiella advena; Pratia concolor; Velleia paradoxo; Phyllanthus virgatus; Ajuga australis; Malvastrum coromandelianum; Eragrostis leptostachya; Vittadinia sulcata; Wahlenbergia communis; Eragrostis elongata; Cyperus betchei subsp. betchei; Atriplex leptocephra; Sporobolus actinoclados; Maireana decalvans; Sclerolaena stelligera; Sclerolaena tricuspis; Maireana coronata; Lomandra multiflora subsp. multiflora; Brunonella australis; Wahlenbergia gracilis.

Weed Species: Rapistrum rugosum; Erodium cicutarium; Medicago polymorpha.

Weediness: Medium (5-15%) with <10% cover.

Threatened Plants: Not assessed.

Threatened Fauna: Not assessed.

Mean Species Richness: 16 (20 x 20 plots in floristic group 200 in RACAC 2004).

Rainforest Structure (Webb): Not applicable.

Structure (WH): Woodland; Open Woodland.
Vegetation Description: Tall to mid-high woodland dominated by Poplar Box (Eucalyptus populnea subsp. bimbil) and Belah (Casuarina cristata) commonly with the small tree Western Rosewood (Alectryon oleifolius). Tall shrubs are sparse and include Wilga (Geijera pavilloria), Warrior Bush (Appophyllum anomalum), Capparis spp., Citrus glauca and Thorny Rhagodia (Rhagodia spinescens). Low shrubs include Galvanised Burr (Sclerolaena birchii), Black Roly Poly (Sclerolaena munciata), other copperburs, Maireana coronata, Maireana decalvans and Enchyelaena tomentosa. The ground cover is sparse during dry times but mid-dense after rain and includes grasses such as Chloris truncata, Enteropogon acicularis and Austrostipa scabra subsp. scabra. Forb species include Einaida nutans subsp. nutans, Oxalis chnoodes, Bulbine alata, Erodium crenatum, Wahlenbergia fluminalis and Brachyscome heterodonta. Generally occurring on pink to brown loamy sand or light clay in the transition zone between the floodplain and the peneplain in the central and northern plains of the NSW wheatbelt in the temperate (no dry season - hot summer) and dry sub-tropical climate zones with annual precipitation between 300 and 550 mm. As of 2008, more than half of this community had been cleared. On-going threats include clearing, weed invasion and lack of recruitment of some species due to grazing pressure.

Level of Classification: Association. 
Classification Confidence Level: Medium.

Formation Group: Eucalyptus (Mostly Grassy) Box Woodlands of the Inland Plains.

State Veg Map (Keith 2004): Floodplain Transition Woodlands.


NVIS Major Veg Sub-Groups: Eucalyptus woodlands with a grassy understorey.

Forest Type (RN 17): 212 - Belah (P); 203 - Western Box (P).


IBRA Bioregion (v6): Brigalow Belt South (1-30%); Cobar Peneplain (1-30%); Darling Riverine Plains (30-70%); NSW South-western Slopes (1-30%).

IBRA Sub-Region: Bogan-Macquarie (1-30%); Castlereagh-Barwon (30-70%); Lower Slopes (1-30%); Moonie - Barwon Interfluve, Collarenebri Interfluve (1-30%); Nymagee (1-30%); Pilliga Outwash (1-30%); Warrambool-Moonie (1-30%); Northern Outwash (1-30%).

Botanical Division: North Western Plains (NWP) (>70%); South Western Plains (SWP) (1-30%).

Local Govt. Areas: 
Bogon (1-30%); Coonamble (1-30%); Dubbo (1-30%); Forbes (1-30%); Gilgandra (1-30%); Lachlan (1-30%); Moree Plains (1-30%); Narrabri (1-30%); Narromine (1-30%); Parkes (1-30%); Walgett (1-30%); Warren (1-30%).

CMAs: Border Rivers-Gwydir (30-70%); Central West (30-70%); Lachlan (1-30%); Namoi (1-30%); Western (1-30%).

MD Basin: Yes.

Substrate Mass: Alluvium.

Lithology: Alluvial loams and clays.

Great Soil Group: Grey clay; Grey earth; Red earth; Solodized solonetz.

Soil Texture: Clay loam; Clay loam, sandy; Heavy clay; Light medium clay.

Landform Patterns: Alluvial plain.

Landform Elements: Drainage depression; Plain.

Land Use: Cropping and Horticulture; Grazing.

Impacts of European Settlement: Major alteration of species composition; Major reduction (>70%) in extent and/or range.

Pre-European Extent: 450000 ha ±60%. Estimated based on maps of current vegetation.

Pre-European Extent Comments: Estimate based on maps and pre-European vegetation maps.

Current Extent: 100000 ha ±30% or 22% ± 80% of pre-European extent remaining.


Conservation Reserves: Boronga NR (E3); Macquarie Marshes NR 200 (M); Boomi NR 5 (E3); Boomi West NR 10 (E2); Gamilaroi NR 4 (M); Bobbiwaa CCAZ 50 (M); Killarney CCAZ 20 (E2).

No. Representatives in Secure Area: 7


Secure Property Agreements: None.

No. Representatives in Secure Property Agreements: 0

Protected Current Extent: 0.29% 299 ha ± 30%.

No. Representatives in Protected Areas: 7

Protected Pre-European Extent: 0.06% which is inadequately protected across distribution.

Common in 1750: Code 5a: <1% of pre-European extent in protected areas (>10,000 ha).

Key Sites for Protection: Investigate recent vegetation maps and follow up with property agreements or nature reserves after checking condition. Currently very poorly protected. Marra Marra Creek may be one area of importance.

Degree of Fragmentation: Human induced fragmented stands with <60% >30% extent remaining and moderate edge to area ratio.

Recoverability: Poor health as structure and/or composition significantly altered. But sufficient biota remain for natural regeneration if...
causal factors and their secondary impacts removed and dynamic processes reinstated.

**Variation & Disturbance:** Floristic changes from north to south with Coolabah being more common in the north. Eastern outliers in the BBS Bioregion contain different some different shrubs and ground cover.

**Fire Regime:** Most remnants are now rarely burnt due to their isolation. Pre-European fire regime is unknown.

**Adjoining Communities:** Grades into Belah (ID55) along drainage lines and on heavier soils, and into Coolabah Box/Black Box (ID37, 39, 40) on floodplains on heavier clay soils. Often adjoins and intergrades with Acacia pendula low woodland (ID27) or Poplar Box grassy woodland (ID44). In BBS Bioregion grades into Pilliga Box woodland or White Cypress Pine dominated woodlands.

**Threatening Processes:** Clearing for cropping in the wheatbelt has reduced this community substantially over the last few decades and this is continuing. Weed invasion and continuous grazing also continues to be a threat.

**Threatening Process List:** Age class of woody vegetation; Clearing for agriculture; Dryland cropping; Soil erosion; Unsustainable grazing and trampling by stock; Weed (exotic) invasion; Woody shrub (native) invasion.

**Threat Category:** Vulnerable. **Threat/Protected Area Code:** V/5a **Threat Criteria:** 1; 4.

**Planning Controls:** Requires protection under relevant catchment plans and to be better sampled under property agreements.

**Listed Under Legislation:** None.

**Recovery Plan:** Doesn't exist, but required.

**Reference List:**

White Cypress Pine woodland on sandy loams in central NSW wheatbelt

**Scientific Name:** Callitris glaucophylla / Acacia deanei subsp. deanei - Dodonaea viscosa - Maireana enchylaenoides - Geijera parviflora / Einadia nutans subsp. nutans - Austrostipa scabra subsp. scabra - Austrodanthonia eriantha - Sida corrugata

**Veg. Comm. ID.:** 70  **Original Entry:** John Benson 31/12/2005

**Photo 1:** ID70a_img141pc.jpg Callitris glaucophylla woodland, Hillston-Rankins Springs Rd, [AGD66 33° 42'30.3"S 146° 02'36.0"E], 18/4/02, Jaime Plaza.

**Photo 2:** ID70b_img152pc.jpg Callitris glaucophylla/Acacia deanei subsp. deanei woodland Back Creek State Forest, [AGD66 33°52'24.8"S 147°21'46.6"E], 19/4/02, Jaime Plaza.

**Characteristic Vegetation:** (Quantitative Data)

**Trees:** Callitris glaucophylla; Eucalyptus populnea subsp. bimbil; Eucalyptus microcarpa; Casuarina cristata; Allocasuarina luehmannii; Brachychiton populneus subsp. populneus; Alstonia constricata; Alectryon oleifolius subsp. canescens.

**Shrubs/Vines/Epiphytes:** Acacia deanei subsp. deanei; Dodonaea viscosa; Maireana enchylaenoides; Rhagodia spinescens; Geijera parviflora; Hakea tephroperma; Myoporum montanum; Senna form taxon 'liliifolia'; Senna form taxon 'artemisioides'; Apophyllum anomalum; Calytrix tetragona; Parsonsia eucalyptophylla; Acacia decora.

**Ground Cover:** Einadia nutans subsp. nutans; Austrostipa scabra subsp. scabra; Austrodanthonia eriantha; Austrostipa verticillata; Chlions trancata; Aristida jerichoensis var. subspinulifera; Scleroaena birchi; Atriplex spinibracteae; Calotis cuneifolia; Sida corrugata; Oxalis chnoodes; Cheilanthes austrotenuifolia; Elymus scaber var. scaber; Enteropogon acicularis; Vittadinia dissecta var. dissecta.

**Weed Species:** Echium plantagineum; Sisymbrium irio; Pentaschistis airoides; Aria caryophyllea; Arctotheca calendula; Cerastium glomeratum; Hypochaeris radicata.

**Weediness:** Medium (5-15%) with <10% cover.

**Threatened Plants:** Diuris tricolor.

**Threatened Fauna:** Not assessed.

**Mean Species Richness:** Not assessed.

**Rainforest Structure (Webb):** Not applicable.

**Structure (WH):** Woodland; Open Woodland.

**Height Class (WH):** Mid-High; Tall.

**Vegetation Description:** Tall or mid-high woodland to about 18 m high dominated by White Cypress Pine (Callitris glaucophylla) that may occupy >90% of the canopy cover. The canopy structure alters depending on degree of clearing, thinning or regrowth. Various box...
eucalypts may be present including Poplar Box (Eucalyptus populnea) and Western Grey Box (Eucalyptus microcarpa). Small trees may include Buloke (Allocasuarina leuehmanni) or Belah (Casuarina cristata). Shrubs are sparse and include Deane's Wattle (Acacia deanei subsp. deanei), Wilga (Geijera parviflora), hopbush (Dodonaea viscosa), Maireana enchyraeoides, Thorny Saltbush (Rhagodia spinescens) and Senna spp. The ground cover is sparse dominated by grasses such as Austrostipa scabra subsp. scabra, Enteropogon acicularis, Thryridolepis mitcelllli, Austrodonanthia eriantha, Austrodonanthia setacea, Enteropogon acicularis and Erargotis lacunaria. Forb species include Calotis cuneifolia, Sida cunninghamii, Oxalis perennans, Goodenia cycloptera, Xerochrysum bracteatum and Chrysophalum apiculatum. The rock fern Cheilanthe sieberi subsp. sieberi is often present. In dry times the ground may be nearly bare. Occurs on red, brown or yellow sandy or loamy soils on flats and rises on alluvial plains. Vegetation structure varies depending on the history of disturbance including logging. Dense regrowth of young Pines may be present. Distributed in central NSW, generally with annual rainfall between 400 and 600 mm. Mainly in the NSW South-western Slopes and Darling Riverine Plain Bioregions. A significant proportion of this community has been cleared as it occurs in the wheatbelt. Remnants occur in state forests, other public lands and on leasehold and private land. This community grades into Pine Box or Western Grey Box woodlands in the mid-central and south and Poplar Box and Coolabah woodlands in the north that occur on finer texture soils. Grades into White Cypress Pine-Poplar Box community (ID72) in the Cobar Penepale Bioregion.

Level of Classification: Alliance / Sub-formation. Classification Confidence Level: Medium.


State Veg Map (Keith 2004): Floodplain Transition Woodlands.


NVIS Major Veg Sub-Groups: Callitris forests and woodlands.

Forest Type (RN 17): 193 - White Cypress Pine-Box (P).


Intermediate Equivalent(s): None.


Climate Zone: Dry subtropical; moderately dry winter; Temperate: no dry season (hot summer); Semi-arid: hot (persistently dry).

IBRA Bioregion (v6): Brigalow Belt South (1-30%); Cobar Penepale (1-30%); Darling Riverine Plains (1-30%); Murray-Darling Depression (1-30%); NSW South-Western Slopes (30-70%).

IBRA Sub-Region: Bogon-Macquarie (1-30%); Castlereagh-Barwon (1-30%); Darling Depression (1-30%); Lower Slopes (30-70%);

Botanical Division: Central Western Slopes (CWS) (30-70%); North Western Plains (NWP) (1-30%); North Western Slopes (NWS) (1-30%); South Western Plains (SWP) (1-30%).

Local Govt. Areas: Bland (1-30%); Bogon (1-30%); Cabonne (1-30%); Cobar (1-30%); Dubbo (1-30%); Forbes (1-30%); Gilgandra (1-30%); Lachlan (1-30%); Narronme (1-30%); Parkes (1-30%); Warren (1-30%).

CMAs: Central West (30-70%); Lachlan (30-70%); Namoi (1-30%).

MD Basin: Yes.

Substrate Mass: Alluvium.

Lithology: Alluvial sand; Eolian sand or loam.

Great Soil Group: Red earth; Red-brown earth.

Soil Texture: Sandy clay loam; Sandy loam.

Landform Patterns: Penplain; Plain.

Landform Elements: Footslope; Plain; Valley flat.

Land Use: Cropping and Horticulture; Grazing; Timber Production.

Impacts of European Settlement: Major alteration of species composition; Medium reduction (30-70%) in extent and/or range; Younger age class over most of distribution.

Pre-European Extent: 200000 ha ±50%. Estimated from extant vegetation maps: part range.

Pre-European Extent Comments: Estimate only.

Current Extent: 70000 ha ±50% or 35% ± 80% of pre-European extent remaining.

Current Extent Comments: (Estimated from mapped extant vegetation: part range). About 53000 mapped as P6 in Sivertsen & Metcalfe (1995) and Sivertsen & Metcalfe (2001) covering the NSW wheatbelt. Large areas have been cleared in Central Division.

Conservation Reserves: Strahorn FR 40 (E2).

Reserves Total Area: 40 ha.

No. Representatives in Reserves: 1

Protected Area Explanation: Strahorn Flora Reserve from Forestry Commission (1989a) which states pure Pine and a Western Grey Box - Pine woodland (ID82) are in the reserve.

Secure Property Agreements: None.

Secure PAs Total Area: 0 ha.

No. Representatives in Secure Property Agreements: 0

Protected Current Extent: 0.05% 40 ha ± 30%.

No. Representatives in Protected Areas: 1

Protected Pre-European Extent: 0.02% which is inadequately protected across distribution.

Common in 1750: Code 5a: <1% of pre-European extent in protected areas (>10,000 ha).

Key Sites for Protection: State forests in central western NSW (e.g. see Bos & Lockwood 1996) for example Backyamma SF. Some remnants on private or leasehold lands.

Degree of Fragmentation: Human induced fragmented stands with <60% >30% extent remaining and moderate edge to area ratio.

Recoverability: Poor health as structure and/or composition significantly altered. But sufficient biota remain for natural regeneration if causal factors and their secondary impacts removed and dynamic processes reinstated.

Variation & Disturbance: Structure alters depending on logging and grazing history. Young tree regrowth may be present in areas that have been logged or cleared in the past. In other areas where grazing is severe, regrowth may be rare and trees may be senescing.
Occurs over a large geographical area in the central NSW and there is considerable variation in the associated species across its range.

**Fire Regime:** Unknown but now uncommon. Intense crown fire may kill Calitris.

**Adjoining Communities:** Grades into Western Grey Box woodland (ID76, ID82) on the southern plains. Grades into Poplar Box (ID244, ID105 or ID98) or Coolabah (ID40) woodland on central and northern plains and into Pine-Poplar Box (ID72) woodlands on in the Cobar Peneplain.

**Threatening Processes:** Clearing for agriculture and logging has affected its abundance and structure particularly in the Central Division. The understorey has been affected by stock and feral animal grazing. Because this community occurs on sandy loam soils it has been cleared less than other wheatbelt communities that occur on finer texture soils. Considered to be Vulnerable due to current extent and lack of sampling in protected areas.

**Threatening Process List:** Clearing for agriculture; Dryland cropping; Forestry activities including logging; Soil erosion; Unsustainable grazing and trampling by stock; Unsustainable grazing by introduced animals; Weed (exotic) invasion; Woody shrub (native) invasion.

**Threat Category:** Vulnerable.

**Planning Controls:** Requires protection under catchment plans as the soils are erodable and careful management in state forests. Clearing in the Central Division, overlogging and continuous grazing are the main threats.

**Planning and Management:**

**Listed Under Legislation:** None.

**Recovery Plan:** Doesn’t exist and not required.

**NSW Vegetation Classification - Vegetation ID**

**Vegetation Community ID 74**

**Common Name:** Yellow Box - River Red Gum tall grassy riverine woodland of NSW South West Slopes and Riverina Bioregions

**Scientific Name:**

Eucalyptus melliodora - Eucalyptus camaldulensis / Acacia deanei subsp. deanei - Acacia stenophylla / Monachather paradoxus - Elymus scaber var. scaber - Dichondra sp. A - Juncus filicaulis

**Veg. Comm. ID.:** 74  
**Original Entry:** John Benson 31/12/2005

**Photo 1:** ID74a_img031pc.jpg Eucalyptus melliodora-E.camaldulensis woodland, Millewa State Forest, [AGD66 35° 47'28.0"S 145° 01'47.9"E], 10/4/02, Jaime Plaza.

**Photo 2:** ID74b_img032pc.jpg Eucalyptus melliodora-E.camaldulensis woodland, Millewa State Forest, [AGD66 35° 47'28.0"S 145° 01'47.9"E], 10/4/02, Jaime Plaza.

**Photo 3:** ID74c_img381ps.jpg Eucalyptus melliodora woodland with the exotic grass Bromus diandrus dominating the ground. Northern side of Lake Mulwala, approx.7 km east of Mulwala; 17/11/1987, Peter Smith.

**Characteristic Vegetation:** (Quantitative Data)

**Trees:** Eucalyptus melliodora; Eucalyptus camaldulensis; Eucalyptus microcarpa; Eucalyptus populnea subsp.
**Ground Cover:**
- Monachather paradoxus
- Panicum effusum
- Austrostipa scabra subsp. scabra
- Lachnagrostis bidens
- Contosia caesipetala
- Muehlenbeckia florulenta

**Weed Species:**
- Vulpia myuros
- Echium plantagineum
- Onopordum acanthium subsp. acanthium
- Cirsium vulgare
- Heliotropium europaeum
- Trifolium arvense
- Trifolium campestre
- Trifolium glomeratum
- Carthamus lanatus
- Paspalum dilatatum
- Petrorhagia nanteuilii
- Aster
- Heliotropium europaeum
- Lolium perenne
- Lolium rigidum
- Avena ludoviciana
- Bromus catharticus
- Bromus hordeaceus
- Bromus diandrus
- Salvia subulatus

**Cropping and Horticulture:**

**Vegetation Description:**
A broad-leaved shrub community with a tall, open canopy dominated by hard-leaved eucalypts. Shrubs are mostly in the mid to tall height class. The ground cover is dominated by grasses and forbs with a high weed content. The community is found on the NSW South-Western Slopes and Riverina Bioregions.

**Interstate Equivalent(s):**
Victoria: similar to EVC803 Plains Woodland or EVC 67 Alluvial Terrace Herb-rich Woodland.

**Pre-European Extent:**
Remnants often contain aging trees and there is a lack of tree regeneration as the ground cover has been grazed and it is often heavily infested with weeds. A threatened plant community that is very poorly represented in protected areas as of 2005.

**Climate Zone:**
Temperate: no dry season (hot summer); Semi-arid: warm (winter rain).

**MD Basin:**
Yes.

**Substrate Mass:**
Alluvium; Eolian sediment.

**Lithology:**
Alluvial loams and clays.

**Great Soil Group:**
Alluvial soil; Black earth; Grey clay.

**Soil Texture:**
Clay loam; Clay loam, sandy; Light clay; Loam; Silty clay loam; Silty loam.

**Landform Patterns:**
Flood plain; Meander plain.

**Land Use:**
Cropping and Horticulture; Grazing.

**Impacts of European Settlement:**
Dieback due to disease or senescence; Major alteration of species composition; Major reduction (>70%) in extent and/or range; Older age class over most of distribution.

**Pre-European Extent:**
30000 ha ±30%. Estimated from extant vegetation maps part range.

**Pre-European Extent Comments:**
Estimate based on general reduction of box woodlands in this part of NSW. This community would have...
occurred as patches on river flats over a large distribution of the southern wheatbelt of NSW and on flats adjoining large rivers of the eastern Riverina Bioregion.

**Current Extent:** 8000 ha ±30% or 27% ± 50% of pre-European extent remaining.

**Current Extent Comments:** (Estimated from mapped extant vegetation: part range). 2150 ha mapped by Sivertsen & Metcalfe (1995) for the Forbes-Cargelligo region. Probably about half of the approximately 6000 ha mapped along Murray River as Mixed Box Woodland in Margules & Partners (1990). It is part of the broad map unit FLP1 in Lewer et al. (2003) along the Lachlan River. It is known from the Murray River to just west of Deniliquin. It is considered that little remains compared to pre-European extent because it occurs on fertile floodplain soils that have mainly been cleared. Austin et al. (2000) predict that 2600 ha (10%) remains of pre-European extent in the central Lachlan region.

**Conservation Reserves:** Narrandera NR 8 (E2); Sanddune Pine FR 3 (E3); Toupna Creek FR 13 (E3).

**Reserves Total Area:** 24 ha.  
**No. Representatives in Reserves:** 3


**Secure Property Agreements:** DE9906 PA 3 (M).

**Secure PAs Total Area:** 3 ha.  
**No. Representatives in Secure Property Agreements:** 1

**Protected Current Extent:** 0.33% 27 ha ± 30%.  
**No. Representatives in Protected Areas:** 4

**Protected Pre-European Extent:** 0.09% which is inadequately protected across distribution.

**Common in 1750:** Code 5a: <1% of pre-European extent in protected areas (>10,000 ha).

**Key Sites for Protection:** Requires a targeted survey over full range. Northern additions to Narrandera Nature Reserve. Sites along the Murray, Murrumbidgee and Lachlan Rivers and their tributaries. Stands of mature woodland near Mulwala, west of Corowa, may be worth investigating for protection under a property agreement.

**Degree of Fragmentation:** Human induced highly fragmented small stands with <30% extent remaining and high edge to area ratio.

**Recoverability:** Poor health as structure and/or composition significantly altered. But sufficient biota remain for natural regeneration if causal factors and their secondary impacts removed and dynamic processes reinstated.

**Variation & Disturbance:** Occasionally flooded and ground cover varies depending on flooding regime. A kind of ecotonal community between true River Red Gum forest and outer plains box woodlands.

**Fire Regime:** Unknown. Rare today. During pre-European times this community was possibly subjected to patch burns by Aborigines but few fires occur now due to fragmentation.

**Adjoining Communities:** May adjoin Riverine Western Grey Box woodland (ID237) on silty-clay soil along inland rivers. Grades into various River Red Gum forests on lower parts of the floodplain that are subject to more frequent flooding.

**Threatening Processes:** Further clearing of remnants, dieback of old trees, lack of regeneration of trees, weed domination of the ground cover, fertilizers, continuous heavy grazing and in some locations salinity.

**Threatening Process List:** Age class of woody vegetation; Clearing for agriculture; Dryland cropping; Irrigated cropping (incl. horticulture); Chemical pollution (incl. herbicides, pesticides); Nutrient changes through fertilizers or runoff; Hydrology (drainage); Forestry activities including logging; Salinity; Unsustainable grazing and trampling by stock; Weed (exotic) invasion.

**Threat Category:** Endangered.  
**Threat/Protected Area Code:** E/5a  
**Threat Criteria:** 1; 4; 5.

**Planning Controls:**

**Planning and Management:** May be protected from clearing under the Murray Valley Regional Environmental Plan but not protected to the north. Protected in some state forests along the Murray River. Requires active restoration management including fencing off areas. Requires more detailed survey to identify key sites. Remaining areas should be protected under appropriate catchment plans and selected sites under secure property agreements.

**Listed Under Legislation:** None.

**Recovery Plan:** Doesn't exist, but required.

NSW Vegetation Classification - Vegetation ID

Vegetation Community ID 76

Common Name: Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions

Scientific Name: Eucalyptus microcarpa / Dodonaea viscosa subsp. cuneata - Acacia buxifolia subsp. buxifolia / Austrodeleanthus caespitosus - Austrostipa scabra subsp. falcata - Chlora truncata - Sida corrugata

Veg. Comm. ID.: 76 Original Entry: John Benson 31/12/2005

Photo 1: ID76a_PC248-9.jpg Eucalyptus microcarpa - Callitris glaucophylla tall woodland, Parkes to Wellington Road near Hervey Range, [AGD66 32°59'47"S 148°21'19"E], 04/05/2005, Jaime Plaza.

Photo 2: ID76b_benson.jpg Eucalyptus microcarpa tall woodland grazed in drought, Morangarell Road near Narraburra north of Temora [AGD66 34°15.568'S 147°47.251'E], 14/2/2007, J.S. Benson.

Photo 3: ID76c_img295pc.jpg Eucalyptus microcarpa grassy tall woodland on loamy clay, Bimbi Road TSR South of Grenfell, [AGD66 34°01'09"S 147°50'13"E], 12/10/02, Jaime Plaza.
Characteristic Vegetation: (Qualitative Estimate)

**Trees:**
- *Eucalyptus microcarpa*
- *Eucalyptus melliodora*
- *Callitris glaucophylla*
- *Allocaurinae leuhamnii*

**Shrubs/Vines/Epiphytes:**
- *Donodaea viscosa* subsp. *cuneata*
- *Acacia buxifolia* subsp. *buxifolia*
- *Bursaria spinosa* subsp. *spinosa*
- *Acacia oswaldii*
- *Acacia pycnantha*
- *Acacia hakeoides*
- *Acacia brachybotrya*
- *Santalum acuminatum*
- *Acacia homalophylla*
- *Templetonia cinerea*

**Ground Cover:**
- *Australanthodium caespitosum*
- *Chloris truncata*
- *Sida corrigata*
- *Austrostipa scabra* subsp. *falcata*

- *Wahlenbergia gracilis*
- *Eunadia nutans* subsp. *nutans*
- *Paspalidium constrictum*

**Weed Species:**
- *Heliotropium europaeum*
- *Echium plantagineum*
- *Medicago minima*
- *Vulpia myuros*
- *Schinus areira*
- *Medicago panaetioides*
- *Podolepis jaceoides*
- *Atriplex semibaccata.*

**Height Class (WH):** Tall; Very Tall.

**Vegetation Description:** Tall woodland to 25 m high dominated by Western Grey Box (*Eucalyptus microcarpa*) often as the only tree species often occupying 90% of the canopy cover but other trees may include Yellow Box (*Eucalyptus melliodora*), White Cypress Pine (*Callitris glaucophylla*) and minor Buloke. The shrub layer is absent or sparse and includes *Donodaea viscosa* subsp. *cuneata*, *Acacia buxifolia*, *Acacia acinacea*, *Acacia hakeoides*, *Bursaria spinosa*. Grazing has eliminated shrubs these in many places. A mid-dense or dense grass ground cover is present composed of *Australanthodium caespitosum*, *Australanthodium setacea*, *Austrostipa scabra* subsp. *falcata*, *Paspalidium constrictum*, *Themeda australis*, *Austrostipa aristiglumis*, *Artemisia leucophylla* and *Elymus scaber* var. *scaber*. Scabers along with introduced grass species such as *Bromus* spp., *Vulpia* spp. and *Hordeum leucopodium*. The small scrambler *Eunadia nutans* subsp. *nutans* is usually present. Native forbs include *Sida corrigata*, *Wahlenbergia gracilis*, *V Wittadinia gracilis*, *Dianella parviflora*, *Oxalis perennans* and *Chamaesyce drummondii*. Occurs on texture contrast red or brown earths or grey clay soils (that may be glicaiada) on undulating alluvial plains in the predominantly winter rainfall belt of south-central western NSW with an average annual rainfall between 550 and 450 mm. Mainly restricted to the eastern section of the Riverina Bioregion and the western section of the NSW South-Western Slopes Bioregion. Distributed distributed from north of Forbes in the north to near Albury in the north extending into north-central Victoria. It has lost its original shrub layer in many locations where grazing has been intense. Grades into the more shrubby Western Grey Box-White Cypress Pine - Buloke community (ID80) on loamy-sand soils and grades into White Box (*Eucalyptus albens*) on podzolic soils to the east on the western slopes. Grades into a riverine Western Grey Box community ID237 along the floodplains of the Murrumbidgee and Murray Rivers. Due to its occurrence on arable soils, this community has largely been cleared. Much of its remaining extent is threatened by grazing and weed invasion. It is a critically endangered community.

**Level of Classification:** Alliance / Sub-formation.

**State Veg Map (Keith 2004):** Floodplain Transition Woodlands.

**State Landscape (Mitchell 2002):** Not Assessed.

**NVIS Major Veg Sub-Groups:** *Eucalyptus woodlands with a grassy understorey.*

**Forest Type (RN 17):** 174 - White Box-Western boxes (P).

**Authority(s):** (Combination of Expert Opinion and Quantitative Data). A broadly classified community where Western Grey Box is a very dominant canopy species on clay to loam soils. Beadle (1981) separates Western Grey Box communities from the north to the south based on rainfall regimes. Moore (1953a) lists four associations of "Eucalyptus woollsiana" woodland on south-western NSW. This community equates to his "Eucalyptus woollsiana association" on red-earth and clay soils. Part of the broad Grassly Box Woodland map unit in Moore (2001) for the Murray Catchment. Includes community C.1 in Box & Lockwood (1996) is grouped under major vegetation unit 9 in Draft Western Riverina RVM Plan (WRVRC 2001). May include a small part of vegetation community 24 mapped in Porteners (1993) on the southern Hay Plain, equivalent to part of Western Grey Box community in the Mid-Lachlan area (Mid-Lachlan RVC 1999), probably includes community 12 in Austin et al. (2000) for central Lachlan area. May overlap with part of map units P3 and P4 in Sivertsen & Metcalfe (1995). It is equivalent to plant associations 2.4.1 (*Eucalyptus microcarpa*) and 2.4.2 in Brickhill (1984). Includes Biolandscape SouA25se and part of Biolandscapes SouA255a, SouA25c, SouA25d and UlaV25a in Priday (2006). modelled and surveyed in Priday (2004) for Wagga Wagga region. Recorded along roadsides in the Corowa Shire (Mulham 1994). Some similarities to the shrubby Western Grey Box woodland (ID80) that occurs on sandier soils over a similar distribution and the riverine Western Grey Box woodland (ID237) that occurs along rivers.

**State Equivalent(s):** Victoria: similar to Floristic Community 55-06 in EVC803 Plains Woodlands..

**Mapped/Modelled:** Current extent and pre-European extent mapped or modelled as part of a broader plot sampling. A broadly classified community where Western Grey Box is a very dominant canopy species on clay to loam soils. Beadle (1981) separates Western Grey Box communities from the north to the south based on rainfall regimes. Moore (1953a) lists four associations of "Eucalyptus woollsiana" woodland on south-western NSW. This community equates to his "Eucalyptus woollsiana association" on red-earth and clay soils. Part of the broad Grassly Box Woodland map unit in Moore (2001) for the Murray Catchment. Includes community C.1 in Box & Lockwood (1996) is grouped under major vegetation unit 9 in Draft Western Riverina RVM Plan (WRVRC 2001). May include a small part of vegetation community 24 mapped in Porteners (1993) on the southern Hay Plain, equivalent to part of Western Grey Box community in the Mid-Lachlan area (Mid-Lachlan RVC 1999), probably includes community 12 in Austin et al. (2000) for central Lachlan area. May overlap with part of map units P3 and P4 in Sivertsen & Metcalfe (1995). It is equivalent to plant associations 2.4.1 (*Eucalyptus microcarpa*) and 2.4.2 in Brickhill (1984). Includes Biolandscape SouA25se and part of Biolandscapes SouA255a, SouA25c, SouA25d and UlaV25a in Priday (2006), modelled and surveyed in Priday (2004) for Wagga Wagga region. Recorded along roadsides in the Corowa Shire (Mulham 1994). Some similarities to the shrubby Western Grey Box woodland (ID80) that occurs on sandier soils over a similar distribution and the riverine Western Grey Box woodland (ID237) that occurs along rivers.

**IBRA Bioregion (v6):** NSW South-Western Slopes (30-70%); Riverina (1-30%).

**IBRA Sub-Region:** Lower Slopes (30-70%); Murray Fans (1-30%); Murrumbidgee (1-30%).

**Botanical Division:** South Western Plains (SWP) (30-70%); South Western Slopes (SWS) (1-30%).

**MD Basin:** Yes.
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Murray Roadside Vegetation Management Group: Deniliquin); Norris, E.H. & Thomas, J. (1991) Vegetation on rocky outcrops and ranges
Group Inc.: Albury); Moore, C.W.E. (1953a) The vegetation of the south-eastern Riverina, New South Wales 1: the climax communities.
Albury); Brickhill, J. (1978a) Information sheet on Flagstaff Memorial Nature Reserve. RN 39. (NSW National Parks and Wildlife Service:
west slopes biogeographic region, NSW. Report No. 59, Johnson Centre of Parks, Recreation and Heritage. (Charles Sturt University:
NSW. (Royal Botanic Gardens and Domain Trust: Sydney); Bos, D. & Lockwood, M. (1996) Flora, fauna and other features of the south

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**Degree of Fragmentation:** Human induced highly fragmented small stands with <30% extent remaining and high edge to area ratio.

**Recoverability:** Poor health as structure and/or composition significantly altered. But sufficient biota remain for natural regeneration if
causal factors and their secondary impacts removed and dynamic processes reinstated.

**Fire Regime:** Unknown, highly fragmented so most patches are rarely burnt.

**Adjoining Communities:** Grades into Western Grey Box-White Cypress Pine-Buloke (ID80) on sandier soils and into White Box
(Eucalyptus albens) (ID266) on texture contrast soils to the east. Grades into Poplar Box (Eucalyptus populnea subsp. bimbil) woodlands
to the northwest. Grades into Grey Box - Callicl air ondichelici (Black Cypress Pine) - Eucalyptus sideroxylon community (ID110) upslope
on rocky outcrops southern-central NSW. Grades into ID237 a riverine form of Western Grey Box along the Murray and Murrumbidgee
Rivers and into River Red Gum - Blakely's Red Gum riparian woodland on the western slopes (ID79).

**Threatening Processes:** Mainly cleared in the past for grazing and crops. The shrub understory of remnants has been largely eliminated
by grazing by stock and rabbits. Annual weeds invade the ground cover including Heliotropium europaeum. Salinity is likely to increasingly
affect some areas in the Riverina.

**Threat Process List:** Clearing for agriculture; Dryland cropping; Irrigated cropping (incl. horticulture); Salinity; Unsustainable grazing
and trampling by stock; Unsustainable grazing by introduced animals; Weed (exotic) invasion.

**Threat Category:** Critically Endangered. **Threat/Protected Area Code:** CE/5a **Threat Criteria:** 1; 4; 5.

**Planning Controls:** Other

**Planning and Management:** Requires detailed survey and protection of what remains under Murray, Murrumbidgee and Lachlan
Catchment Management Plans. May be protected in the Murray Catchment under the Murray Valley Regional Environmental Plan. Should
be listed as an endangered ecological community.

**Listed Under Legislation:** Listed TSC Act, E: Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobargoodale,
Nandewar and Brigalow Belt South Bioregions (Part); Listed EPBC Act, E: Grey Box (Eucalyptus microcarpa) Grassy Woodlands and
Derived Native Grasslands of South-eastern Australia (Part).

**Recovery Plan:** Doesn’t exist, but required.

**Reference List:** (185; 3; 308; 17; 301; 67; 246; 166; 178; 154; 322; 153; 14; 316; 34; 146; 356), Austin, M.P., Cawsey, E.M., Baker, B.L.,
NSW. (Royal Botanic Gardens and Domain Trust; Sydney); Bos, D. & Lockwood, M. (1996) Flora, fauna and other features of the south
west slopes biogeographic region, NSW. Report No. 59, Johnson Centre of Parks, Recreation and Heritage. (Charles Sturt University:
Albury); Brickhill, J. (1978a) Information sheet on Flagstaff Memorial Nature Reserve. RN 39. (NSW National Parks and Wildlife Service:
Group Inc.: Albury); Moore, C.W.E. (1953a) The vegetation of the south-eastern Riverina, New South Wales 1: the climax communities.
Murray Roadside Vegetation Management Group: Deniliquin); Norris, E.H. & Thomas, J. (1991) Vegetation on rocky outcrops and ranges
Common Name: Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South-western Slopes and Riverina Bioregions

Scientific Name: Eucalyptus microcarpa - Callitris glaucophylla - Allocasuarina luehmannii / Maireana microphylla - Acacia deanei subsp. deanei / Austrostipa scabra subsp. scabra - Austrodanthonia setacea - Calotis cuneifolia

Veg. Comm. ID.: 80  Original Entry: John Benson 31/12/2005

Photo 1: ID80a_PC247-12.jpg Eucalyptus microcarpa - Callitris glaucophylla woodland, Backyamma State Forest, [AGD66 33°19'28.3"S 148°12'56.2"E], 03/05/2005, Jaime Plaza.

Photo 2: ID80b_SWS0507342.jpg Western Grey Box (Eucalyptus microcarpa) with (Callitris glaucophylla) and Buloke (Allocasuarina luehmannii) in Clear Ridge State Forest north of Wyalong, [AGD66 33°45.220"S 147°18.992"E], 31/5/2007, Jaime Plaza.

Photo 3: ID80c_img009pc.jpg Eucalyptus microcarpa - Callitris glaucophylla woodland, Buckingbong Flora Reserve, [AGD66 34°59'12.9"S 146°28'59.4"E], 09/4/02, Jaime Plaza.
Characteristic Vegetation: (Combination of Quantitative Data and Qualitative Estimate)

Trees: Eucalyptus microcarpa; Callitris glaucophylla; Eucalyptus melliodora; Allocasuarina luehmannii; Pittosporum angustifoliolium; Brachychiton populneus subsp. populneus; Eucalyptus bleakleyi.

Shrubs/Vines/Epiphytes: Maireana microphylla; Acacia deanei subsp. deanei; Dodonaea viscosa subsp. cuneata; Acacia hakeoides; Myoporum desertii; Senna artemisioides; Alectryon oleifolius subsp. canescens; Geijera parviflora; Acacia oswaldii; Acacia salicina; Exocarpos aphyllus; Cassinia adunca; Cassinia laevis; Acacia brachybotrya; Acacia verniciflua; Acacia biloba subsp. biloba; Solanum ferrugineum; Acacia lineare.

Ground Cover: Austrostipa scabra subsp. falcata; Austrodanthonia setacea; Calotis cuneifolia; Sida corinifolia; Sida arvensis; Sturtia muelleri; Austrostipa caespitosa; Oxalis perennis; Calotis lappulacea; Crassula sieberiana subsp. sieberiana; Vittadinia gracilis; Daucus glochidiatus; Chrysophyllum apiculatum; Einadia nutans subsp. nutans; Eremophila debilis; Lomandra filiformis subsp. filiformis; Carex inversa; Dichondra sp. A; Arthropodium minus; Rumex brownii; Goodenia pinnatifida; Wurmbea dioica subsp. dioica; Elymus scaber var. scaber; Aristida behriana; Aristida ramosa; Eragrostis lanacina; Glycine tabacina; Vittadinia pterochaetia; Wahlenbergia communis; Hydrocotyle laxiflora; Bulbine semibracteata; Bulbine bulbosa; Plantago debilis; Tricoryne elatior.

Weeds: Echium plantagineum; Hypochaeris glabra; Trifolium campestre; Trifolium arvense; Trifolium glomeratum; Glottiphyllum laxiflorum; Arctotheca calendula; Carthamus lanatus; Marrubium vulgare; Sisymbrium orientale.

Weediness: Medium (5-15%) with 10-30% cover.

Threatened Plants: Diuris tricolor (Vulnerable, TSC Act); Prasophyllum campestrum.

Threatened Fauna: Not assessed.

Mean Species Richness: 50-53 (floristic group 12 in Lewer et al. 2002 in 20x20 m plots); 44±2 (floristic group 38 in Lewer et al. 2002 in 20x20 m plots).

Rainforest Structure (Webb): Not assessed.

Structure (WH): Woodland; Open Woodland.

Height Class (WH): Tall.

Vegetation Description: Tall woodland up to 25 m high but averaging about 20m co-dominated by Western Grey Box (Eucalyptus microcarpa) and White Cypress Pine (Callitris glaucophylla) with the pine tending to be shorter than the eucalypts. Other trees may include Eucalyptus melliodora; Buloke (Allocasuarina luehmannii); Callitris glauca subsp. glauca; Pittosporum angustifolium and Kurrajong (Brachychiton populneus). A sparse layer of shrubs may be present however they may be absent where grazing has been intense or the understorey has been cleared. Tall shrub species may include Wilga (Geijera parviflora), Eremophila desertii, Quandong (Santalum acuminatum) and wattles such as Einadia nutans subsp. deanei, Acacia hakeoides, Acacia brachybotrya and Acacia biloba. The low shrub Maireana microphylla is often the most common shrub present when tall shrubs have been eliminated. A sparse to mid-density ground cover includes short shrubs such as Einadia nutans subsp. nutans and Eremophila deblis with grass species such as Austrostipa scabra subsp. scabra, Austrodanthonia setacea and Austrodanthonia fulva, Elymus scaber subsp. scaber, Enteropogon acicularis and Aristida ramosa. Forb species include Calotis cuneifolia, Sida corinifolia, Dichondra sp. A, Daucus glochidiatus, Oxalis perennis, Arctophorum minus, Bulbine spp. and Goodenia pinnatifida. The tall fern Cheilanthus sieberi subsp. sieberi is common along with the graminoid Lomandra filiformis. Occurs on sandy-loam to clay-loam soils on alluvial or stagnant alluvial plains in the predominantly winter rainfall belt of southern-central NSW with an average annual rainfall of between 400 to 550 mm. Mainly restricted to the eastern section of the Riverina Bioregion and the western section of the NSW South-western Slopes Bioregion. Most of this community has been cleared for grazing or crops but some sizable patches remain in state forests that have been managed for White Cypress Pine. Much of its remaining extent is threatened by grazing and weed invasion. Grades into Yellow Box - Pine community (ID75) on sandier soils e.g. from Narrandra to Urana. This community is endangered and very poorly conserved as of 2007.


Formation Group: Eucalyptus ( Mostly Grassby) Box Woodlands of the Inland Plains.

State Veg Map (Keith 2004): Floodplain Transition Woodlands.


NVIS Major Veg Sub-Groups: Eucalyptus woodlands with a shrubby understorey.

Forest Type (RN 17): 203 - Western Box (P).

Authority(s): (Combination of Expert Opinion and Quantitative Data). Includes the “Eucalyptus woollisciana - Callitris glauca” association described on page 508 of Moore (1953a). It is the most widespread of the Western Grey Box associations ranging from near Dubbo to near the Murray River. Includes most of floristic group 12 being part of map units PN52 and PN35 and floristic group 38 being map unit AL52 in Lewer et al. (2003). Includes community C3.2 and probably C3.3 in Box & Lockwood (1996). Mapped for Murray Region as part of broad Western Grey Box type (Miles 2001) and comprises much of the mapped Western Grey Box in Western Riverina Regional Vegetation community descriptions (2001). Part of map unit 24 in Porteners (1993). Some of the broad woodland types in map units P4 and P7 in Sivertsen & Metcalfe (1995) and mentioned as an association in Mid-Lachlan Regional Vegetation Committee (1999). Probably community 6 in (Priday 2004) for western Wagga Shire and part of Biolandscapes LacM25b, EastR25d and SouA25a in Priday (2006). Similar to community D9 in Seddon et al. (2002) for Little River. Part of BVT 74 in DEC (2006, 2006a). Eastern limit near Grenfell on the NSW SW Slopes (J Benson pers. obs). May be similar to the Western Grey Box - Buloke community described as community 10 in Sluiter et al. (1997) in Victoria and along the Murray in NSW. Part of BVT 20 in DEC (2006a).

Intermediate Equivalent(s): Victoria: similar to Floristic Community 55-06 in EVC803 Plains Woodland.

Mapped/Modelled: Current extent and pre-European extent mapped or modelled as part of a broader FloraMapping: Inadequate.

Mapping Info: Moore (1953a) mapped this association as part of a broad Western Grey Box complex as does the Murray Catchment Trust (2001) for the Murray Catchment. Sivertsen & Metcalfe (1995) grouped this into a broader woodland type. Other southern areas classified as floristic group 12 and mapped in map units AL52, PN52 and PN35 in Lewer et al. (2003). Needs more plot sampling in southern areas as of 2007.

Climate Zone: Temperate: no dry season (hot summer); Semi-arid: warm (winter rain).

IBRA Bioregion (v6): NSW South-western Slopes (1-30%); Riverina (30-70%).

IBRA Sub-Region: Lachlan (1-30%); Lower Slopes (30-70%); Murray Fans (1-30%); Murrumbidgee (1-30%); Upper Slopes (1-30%).

Botanical Division: Central Western Slopes (CWS) (1-30%); South Western Plains (SWP) (30-70%); South Western Slopes (SWS) (1-30%).

Local Govt. Areas: Bland (1-30%); Cadell (1-30%); Conargo (1-30%); Coolamon (1-30%); Greater Hume (1-30%); Forbes (1-30%); Griffith (1-30%); Jerilderie (1-30%); Lachlan (1-30%); Leeton (1-30%); Lockhart (1-30%); Murrumbidgee (1-30%); Narrandra (1-30%); Parkes (1-30%); Urana (1-30%); Wellington (1-30%).

CMAs: Lachlan (1-30%); Murray (1-30%); Murrumbidgee (1-30%).

MD Basin: Yes.

Friday, 27 January 2012
Human induced highly fragmented small stands with <30% extent remaining and high edge to area ratio.

140000 ha ±30% or 18% ± 50% of pre-European extent remaining.

**Common Name:** Western Grey Box - Poplar Box - White Cypress Pine tall woodland on red loams mainly of the eastern Cobar Peneplain Bioregion

**Scientific Name:** Eucalyptus microcarpa - Eucalyptus populnea subsp. bimbil - Callitris glaucophylla / Acacia deanei subsp. paucijuga - Dodonaea viscosa subsp. spatulata - Pimelea microcephala subsp. microcephala - Eremophila mitchelli / Monachather paradoxus - Calotis cuneifolia - Austrostipa scabra subsp. scabra - Einadia nutans subsp. nutans

**Photo 1:** ID82a_SWS0507400.jpg  Poplar Box (Eucalyptus populnea) - Western Grey Box (Eucalyptus microcarpa) - White Cypress Pine (Callitris glaucophylla) open woodland on red loam soil west of Lake Cowal, central NSW, [AGD66 33°33.270'S 147°22.272'E], 31/5/2007, Jaime Plaza.

**Photo 2:** ID82b_img143pc.jpg  Eucalyptus microcarpa - Callitris glaucophylla woodland, north of Rankins Springs, [AGD66 33°48'41.4"S 146°17'57.2"E], 18/4/02, Jaime Plaza.

**Photo 3:** ID82c_Ballestrin.jpg  Eucalyptus microcarpa - E.populnea - Callitris glaucophylla woodland, Woolshed section of Cocoparra National Park, 21/10/2004, M. Ballestrin.
Characteristic Vegetation: (Quantitative Data)

Trees: Eucalyptus microcarpa; Eucalyptus populnea subsp. bimbil; Callitris glaucaefolia; Allocasuarina luemhannii; Pittosporum angustifolium; Brachychiton populnea subsp. populnea.

Shrubs/Vines/Epiphytes: Dodonaea viscosa subsp. spatulata; Geijera parviflora; Acacia deanei subsp. paucijuga; Pimelea microcephala subsp. microcephala; Eremophila mitchellii; Myoporum montanum; Apophyllum anomalum; Eremophila glabra subsp. glabra; Parsonsia eucalyptophylla; Bertha cunninghambi; Acacia montana; Olearia pimeleoides; Myoporum montanum; Maireana aphylla; Acacia hakeoides; Eremophila longifolia; Senna form taxon "zygophylla"; Abutilon fraseri; Pittolus obovatus.

Ground Cover: Monachather paradoxus; Calotis cuneifolia; Austrostipa scabra subsp. scabra; Erodium nutans subsp. nutans; Enteropogon accicularis; Eragrostis lacerunda; Scleroaena bicorns var. bicorns; Walhallaeya subveropolium; Anistida jerichoensis var. subspinulifera; Austrostipa caespitosa; Pasalidium constrictum; Scleroaena dicancha; Scleroaena birchii; Chenoepodium desertorum subsp. desertorum; Cheilanthes sieberi subsp. sieberi; Austrostipa verticillata; Dichondra repens; Goodenia hederaecea subsp. hederaecia; Vittadinia cuneata var. hirsuta; Elymus scaber var. scaber; Carex inversa; Glycine tabacina; Oxalis perennans; Rostellulania adscendens var. adscendens; Sida corrugata; Wahlenbergia communis; Digitaria brownii; Calotis lappulacea; Sida cunninghambi; Solanum ellipticum; Dianella porracea.

Weed Species: Lycium ferocissimum; Carthamus lanatus; Hypochaera radicata; Hypochaera radicata; Sonchus oleraceus; Echium plantagineum.

Weediness: Medium (5-15%) with <10% cover.

Threatened Plants: Pterostylis hamata; Capparisloranthifolia var. loranthifolia; Diuris sheffalliana; Swainsona sericea.

Threatened Fauna: Australian Bustard; Bush Stone-curlew; Major Mitchell's Cockatoo; Red-tailed Black-Cockatoo; Glossy Black-Cockatoo; Pied Honeyeater; Little Pied Bat; Chestnut Quail-thrush; Grey Falcon; Squatter Pigeon; Painted Honeyeater; Broilga; Square-tailed Kite; Hooded Robin (south-eastern form); Black-chinned Honeyeater (eastern subspecies); Barking Owl; Eastern Long-eared Bat; Australian Bustard; Bush Stone-curlew; Major Mitchell's Cockatoo; Red-tailed Black-Cockatoo; Grey-crowned Babbler (south-eastern form); Grey-crowned Babbler (eastern subspecies); Speckled Warbler; Yellow-bellied Sheath-tailed-bat; Diamond Firetail; Masked Owl; Hairy-nosed freetail bat.

Mean Species Richness: 31 (Porteners 2001 in 20x20 m plots); 50±2 (floristic group 10 in Lever et al. 2002 in 20x20 m plots).

Rainforest Structure (Webb): Not applicable.

Structure: (WH): woodland.

Height Class (WH): Tall.

Vegetation Description: Tall woodland between 12 and 25 m high dominated by Western Grey Box (Eucalyptus microcarpa), Poplar Box (Eucalyptus populnea subsp. bimbil) and White Cypress Pine (Callitris glaucaefolia). Kurrajong (Brachychiton populnea) and Buloke (Allocasuarina luemhannii) may be present. Shrubs are sparse and include Deanes Wattie (Acacia deanei), Shrubby Rice Flower (Pimelea microcephala subsp. microcephala), Budda (Eremophila mitchellii), Wilga (Geijera parviflora), hop bush (Dodonaea viscosa subsp. spatulata), Tar Bush (Eremophila glabra subsp. glabra) and daisy bush Olearia pimeleoides. The ground cover is sparse and contains forbs such as Purple Burr Daisy (Calotis cuneifolia), Yellow Burr Daisy (Calotis lappulacea), Oxalis perennans, fuzzweed (Vittadinia cuneata) and kidney weed (Dichondra repens). Grass species include Austrostipa scabra subsp. scabra, Monachather paradoxus, Walhallaeya subveropolium, Eragrostis lacerunda, Enteropogon accicularis and Austrostipa caespitosa. Occurs on red-brown earths soils comprising Quaternary alluvium often as terraces on old alluvial plains or undulating penepale landforms overlying a range of underlying rock types including sandstone. Distributed in central western NSW mostly in the eastern section of the Cobar Penepale Bioregion near Nymagee, Tottenham and Boona and extending southwards Griffith. Most of this community has been cleared for agriculture and remaining areas are threatened. As of 2005 it was poorly sampled in protected areas.


Formation Group: Eucalyptus (Mostly Grassly) Box Woodlands of the Inland Plains.

State Veg Map (Keith 2004): Floodplain Transition Woodlands.


NVIS Major Veg Sub-Groups: Eucalyptus woodlands with a shrubby understorey.

Forest Type (RN 17): 203 - Western Box (P).


 Interstate Equivalent(s): None known.

Mapped/Modelled: Current extent partly mapped or modelled. Map Sampling: Inadequate.


Climate Zone: Temperate: no dry season (hot summer); Semi-arid: warm (winter rain).

IBRA Bioregion (v6): Cobar Penepale (30-70%); Murray-Darling Depression (1-30%); NSW South-western Slopes (1-30%).

IBRA Sub-Region: Darling Depression (1-30%); Lower Slopes (1-30%); Nymagee (30-70%).

Botanical Division: South Western Plains (SWP) (>70%); Central Western Slopes (CWS) (1-30%).

Local Govt. Areas: Bogan (1-30%); Cobar (1-30%); Lachlan (1-30%); Narronne (1-30%); Griffith (1-30%); Carrathool (1-30%).

CMAs: Central West (30-70%); Lachlan (30-70%); Western (1-30%); Murrumbidgee (1-30%).

MD Basin: Yes.

Substrate Mass: Alluvium.

Lithology: Alluvial loams and clays; Gravel.

Great Soil Group: Red earth; Red-brown earth.

Soil Texture: Clay loam; Loam; Sandy clay loam.

Landform Patterns: Penepale; Plain; Rises; Terrace (alluvial).

Landform Elements: Footslope; Hillslope; Plain; Terrace flat.

Land Use: Cropping and Horticulture; Grazing.

Impacts of European Settlement: Major alteration of species composition; Major reduction (>70%) in extent and/or range.

Friday, 27 January 2012
Protect from further clearing and over-grazing. Other mapping may assist. Protection of a selection of Western Lands Leases on the eastern edge of Western Division may be an option to protect 0.34% 348 ha ± 10%.

CD9910 PA 36 (E1); WE9902 PA 15 (E1).


**NSW Vegetation Classification - Vegetation ID**

**Vegetation Community ID 237**

**Common Name:** Riverine Western Grey Box grassy woodland of the semi-arid (warm) climate zone

**Scientific Name:** Eucalyptus microcarpa; Eucalyptus camaldulensis subsp. camaldulensis; Acacia acinacea; Maireana enchylaenoides; Paspalidium jubiflorum; Austrodanthonia caespitosa; Juncus flavidus; Atriplex semibaccata

**Veg. Comm. ID.:** 237  
**Original Entry:** John Benson 31/12/2005

**Photo 1:** ID237a_img021pc.jpg  Eucalyptus microcarpa woodland, Millewa State Forest, [AGD66 35°48'17.3"S 145°08'48.1"E], 10/4/02, Jaime Plaza.

**Photo 2:** ID237b_img022pc.jpg  Eucalyptus microcarpa woodland, Millewa State Forest, [AGD66 35°48'17.3"S 145°08'48.1"E], 10/4/02, Jaime Plaza.

**Photo 3:** ID237c_Img382ps.jpg  Western Grey Box (Eucalyptus microcarpa) open-forest in Ulupna Island Flora and Fauna Reserve (north of Strathmerton), Reserve Track, approx. 1.4 km from junction of Ulupna Creek and River Murray, Victoria; 14/11/1987, Peter Smith.

**Characteristic Vegetation:** (Combination of Quantitative Data and Qualitative Estimate)

- **Trees:** Eucalyptus microcarpa; Eucalyptus camaldulensis subsp. camaldulensis; Eucalyptus largiflorens;
River Red Gum (Eucalyptus camaldulensis subsp. camaldulensis) of Black Box (Eucalyptus largiflorens) and often grading into Yellow Acacia (Acacia acinacea); Acacia dealbata; Maireana enchylaenoides; Sclerolaena muricata var. muricata. Allocasuarina luehmannii.

Temperate: no dry season (hot summer); Semi-arid: warm (winter rain).

Conservation Reserves:

Current Extent Comments:

Pre-European Extent Comments:

Impacts of European Settlement:

Land Use:

Landform Patterns:

MD Basin:

Substrate Mass:

Lithology:

Great Soil Group:

Soil Texture:

Landform Patterns:

Landform Elements:

Land Use:

Impacts of European Settlement:

Pre-European Extent:

Pre-European Extent Comments:

Current Extent:

Current Extent Comments:

Conservation Reserves:

Reserves Total Area:

No. Representatives in Reserves:

Protected Area Explanation:

Vegetation Description:

Formal Group:

State Veg Map (Keith 2004):

State Landscape (Mitchell 2002):

NVIS Major Veg Sub-Groups:

Forest Type (RN 17):

Authority(s):

Interstate Equivalent(s):

Height Class (WH):

Species Richness:

Mean Species Richness:

Weediness:

Threatened Plants:

Threatened Fauna:

Conservation Area:

Protected Area Explanation:

Vegetation Description:

Flood plain.

Grey clay; Grey earth.

Clay loam; Heavy clay; Medium clay.

Flood plain.

Plain; Terrace plain.

Cropping and Horticulture; Grazing; Timber Production.

Major alteration of species composition; Medium reduction (30-70%) in extent and/or range.

Estimate only. Substantial areas probably occurred in areas now cleared.

(Estimated from mapped extent vegetation: part range). Margules & Partners (1990) maps approximately 6000 ha of Mixed Box Woodland along Murray River half of which may be this community and half ID74 Yellow Box woodland. Small areas occur along the Murrumbidgee River.

Yes.

Yes.

ICRA Bioregion (v6):

IBRA Sub-Region:

Botanical Division:

IBRA Bioregion (v6):

Local Govt. Areas:

CMAs:

MD Basin:

Substrate Mass:

Lithology:

Great Soil Group:

Soil Texture:

Landform Patterns:

Landform Elements:

Land Use:

Impacts of European Settlement:

Pre-European Extent:

Pre-European Extent Comments:

Current Extent:

Current Extent Comments:

Conservation Reserves:

Reserves Total Area:

No. Representatives in Reserves:

Protected Area Explanation:

Vegetation Description:

Formal Group:

State Veg Map (Keith 2004):

State Landscape (Mitchell 2002):

NVIS Major Veg Sub-Groups:

Forest Type (RN 17):

Authority(s):

Interstate Equivalent(s):

Height Class (WH):

Species Richness:

Mean Species Richness:

Weediness:

Threatened Plants:

Threatened Fauna:

Conservation Area:

Protected Area Explanation:

Vegetation Description:

Flood plain.

Grey clay; Grey earth.

Clay loam; Heavy clay; Medium clay.

Flood plain.

Plain; Terrace plain.

Cropping and Horticulture; Grazing; Timber Production.

Major alteration of species composition; Medium reduction (30-70%) in extent and/or range.

Estimate only. Substantial areas probably occurred in areas now cleared.

(Estimated from mapped extent vegetation: part range). Margules & Partners (1990) maps approximately 6000 ha of Mixed Box Woodland along Murray River half of which may be this community and half ID74 Yellow Box woodland. Small areas occur along the Murrumbidgee River.

Yes.

Yes.

ICRA Bioregion (v6):

IBRA Sub-Region:

Botanical Division:

IBRA Bioregion (v6):

Local Govt. Areas:

CMAs:

MD Basin:

Substrate Mass:

Lithology:

Great Soil Group:

Soil Texture:

Landform Patterns:

Landform Elements:

Land Use:

Impacts of European Settlement:

Pre-European Extent:

Pre-European Extent Comments:

Current Extent:

Current Extent Comments:

Conservation Reserves:

Reserves Total Area:

No. Representatives in Reserves:

Protected Area Explanation:

Vegetation Description:

Formal Group:

State Veg Map (Keith 2004):

State Landscape (Mitchell 2002):

NVIS Major Veg Sub-Groups:

Forest Type (RN 17):

Authority(s):

Interstate Equivalent(s):

Height Class (WH):

Species Richness:

Mean Species Richness:

Weediness:

Threatened Plants:

Threatened Fauna:

Conservation Area:

Protected Area Explanation:

Vegetation Description:

Flood plain.

Grey clay; Grey earth.

Clay loam; Heavy clay; Medium clay.

Flood plain.

Plain; Terrace plain.

Cropping and Horticulture; Grazing; Timber Production.

Major alteration of species composition; Medium reduction (30-70%) in extent and/or range.

Estimate only. Substantial areas probably occurred in areas now cleared.

(Estimated from mapped extent vegetation: part range). Margules & Partners (1990) maps approximately 6000 ha of Mixed Box Woodland along Murray River half of which may be this community and half ID74 Yellow Box woodland. Small areas occur along the Murrumbidgee River.

Yes.

Yes.

ICRA Bioregion (v6):

IBRA Sub-Region:

Botanical Division:

IBRA Bioregion (v6):

Local Govt. Areas:

CMAs:

MD Basin:

Substrate Mass:

Lithology:

Great Soil Group:

Soil Texture:

Landform Patterns:

Landform Elements:

Land Use:

Impacts of European Settlement:

Pre-European Extent:

Pre-European Extent Comments:

Current Extent:

Current Extent Comments:

Conservation Reserves:

Reserves Total Area:

No. Representatives in Reserves:

Protected Area Explanation:

Vegetation Description:

Formal Group:

State Veg Map (Keith 2004):

State Landscape (Mitchell 2002):

NVIS Major Veg Sub-Groups:

Forest Type (RN 17):

Authority(s):

Interstate Equivalent(s):

Height Class (WH):

Species Richness:

Mean Species Richness:

Weediness:

Threatened Plants:

Threatened Fauna:

Conservation Area:

Protected Area Explanation:

Vegetation Description:

Flood plain.

Grey clay; Grey earth.

Clay loam; Heavy clay; Medium clay.

Flood plain.

Plain; Terrace plain.

Cropping and Horticulture; Grazing; Timber Production.

Major alteration of species composition; Medium reduction (30-70%) in extent and/or range.

Estimate only. Substantial areas probably occurred in areas now cleared.

(Estimated from mapped extent vegetation: part range). Margules & Partners (1990) maps approximately 6000 ha of Mixed Box Woodland along Murray River half of which may be this community and half ID74 Yellow Box woodland. Small areas occur along the Murrumbidgee River.

Yes.

Yes.

ICRA Bioregion (v6):

IBRA Sub-Region:

Botanical Division:

IBRA Bioregion (v6):

Local Govt. Areas:

CMAs:

MD Basin:

Substrate Mass:

Lithology:

Great Soil Group:

Soil Texture:

Landform Patterns:

Landform Elements:

Land Use:

Impacts of European Settlement:

Pre-European Extent:

Pre-European Extent Comments:

Current Extent:

Current Extent Comments:

Conservation Reserves:

Reserves Total Area:

No. Representatives in Reserves:

Protected Area Explanation:

Vegetation Description:

Formal Group:

State Veg Map (Keith 2004):

State Landscape (Mitchell 2002):

NVIS Major Veg Sub-Groups:

Forest Type (RN 17):

Authority(s):

Interstate Equivalent(s):

Height Class (WH):

Species Richness:

Mean Species Richness:

Weediness:

Threatened Plants:

Threatened Fauna:

Conservation Area:

Protected Area Explanation:

Vegetation Description:

Flood plain.

Grey clay; Grey earth.

Clay loam; Heavy clay; Medium clay.

Flood plain.

Plain; Terrace plain.

Cropping and Horticulture; Grazing; Timber Production.

Major alteration of species composition; Medium reduction (30-70%) in extent and/or range.

Estimate only. Substantial areas probably occurred in areas now cleared.

(Estimated from mapped extent vegetation: part range). Margules & Partners (1990) maps approximately 6000 ha of Mixed Box Woodland along Murray River half of which may be this community and half ID74 Yellow Box woodland. Small areas occur along the Murrumbidgee River.
Naturally fragmented stands of variable patch sizes with <50% extent remaining.

Clearing for agriculture; Dryland cropping; Forestry activities including logging; Salinity; Soil erosion, water: sheet erosion; Unsustainable grazing and trampling by stock; Weed (exotic) invasion.

Large floods inundate this community but it is generally on higher ground than River Red Gum. Shrubs were probably more abundant prior to stock grazing.

Grades into various types of River Red Gum forest or woodland, or Black Box Woodland (ID13). Occurs in similar locations to ID74 (Riverine Yellow Box). Grades into the more widespread Western Grey Box communities ID76 and ID80 on alluvial plains distant from the rivers.

None.

Protect this community from clearing or intensive grazing in Murray and Murrumbidgee catchment management plans.

0 ha.

0.12% which is inadequately protected across distribution.

0.45% 18 ha ± 50%.

Areas on the Murray River floodplain including in a number of state forests such as Gulpi State Forest.

0

3

E/5a 1; 4.

Listed TSC Act, E: Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions (Part); Listed EPBC Act, E: Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia (Part).

Poor health as structure and/or composition significantly altered. But sufficient biota remain for natural regeneration if causal factors and their secondary impacts removed and dynamic processes reinstated.

Past clearing has been the main cause of decline, however grazing and weed invasion are ongoing impacts that affect most stands.

Clearing for agriculture; Dryland cropping; Forestry activities including logging; Salinity; Soil erosion, water: sheet erosion; Unsustainable grazing and trampling by stock; Weed (exotic) invasion.

Endangered.

E/5a

1; 4.

Protect this community from clearing or intensive grazing in Murray and Murrumbidgee catchment management plans.

Listed Under Legislation: Listed TSC Act, E: Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions (Part); Listed EPBC Act, E: Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia (Part).

Doesn't exist and not required.

**Vegetation Description:** Tall woodland averaging about 14 m high dominated by a number of box eucalypts including Western Grey Box (Eucalyptus microcarpa), Yellow Box (Eucalyptus melliodora) and Polar Box (Eucalyptus populnea subsp. bimbil) with Western Rosewood (Alectryon oleifolius subsp. canescens) as a small tree. Shrubs are very sparse or absent. They include Senna form taxon ‘zygophylla’, Hakea tephroserpema, Myoporum montanum; Acacia deanei subsp. deanei; Maireana microphylla; Sclerolaena muricata. The ground cover is usually mid-dense and is dominated by grasses such as Austrostipa scabra subsp. scabra, Enteropogon acicularis and Elymus scaber var. scaber along with forbs such as Calotis lappulacea, Sida corrugata, Vittadinia cuneata and Atriplex semibaccata. Low shrubs such as Maireana enchylaenoides and Sclerolaena diacantha may be present. Occurs on sandy loam soils on low rises on alluvial and stagnant alluvial plains in central NSW of the Lachlan River alluvial plain. Mainly in the north-western section of the NSW South Western Slopes and eastern section of the Cobar Peneplain Bioregions. Most of this community has been cleared for grazing or cropping and remnants have been heavily grazed.

**Characteristic Vegetation:**

- **Trees:** Eucalyptus microcarpa; Eucalyptus melliodora; Eucalyptus populnea subsp. bimbil; Alectryon oleifolius subsp. canescens.
- **Shrubs/Vines/Epiphytes:** Senna form taxon ‘zygophylla’; Hakea tephroserpema; Myoporum montanum; Acacia deanei subsp. deanei; Maireana microphylla; Sclerolaena muricata.
- **Ground Cover:** Austrostipa scabra subsp. scabra; Enteropogon acicularis; Calotis lappulacea; Maireana enchylaenoides; Einadia nutans subsp. nutans; Sida corrugata; Elymus scaber var. scaber; Atriplex semibaccata; Atriplex spinibractea; Sclerolaena diacantha; Salsola tragus subsp. tragus; Vittadinia cuneata; Calotis cuneifolia; Oxisalis perennans.
- **Weed Species:** Lycium ferocissimum; Lepidium africanum; Lolium rigidum; Marrubium vulgare; Medicago truncatula; Sonchus oleraceus; Trifolium arvense; Trifolium angustifolium; Echium plantagineum; Hordeum leporinum; Avena ludoviciana.

**Mean Species Richness:** 43±5 (floristic group 39 in Lewer et al. 2003 in 20x20 m plots).

**Threatened Fauna:** None recorded.

**Weediness:** High (15-30%) with 10-30% cover.

**Structure (WH):** Tall. Woodland.

**Height Class (WH):** Tall.
**Formation Group:** Eucalyptus (Mostly Grassy) Box Woodlands of the Inland Plains.

**State Veg Map (Keith 2004):** Floodplain Transition Woodlands.

**State Landscape (Mitchell 2002):** Not Assessed.

**NVIS Major Veg Sub-Groups:** Eucalyptus woodlands with a grassy understorey.

**Forest Type (RN 17):** 203 - Western Box (P).

**Authority(s):** (Quantitative Data). Equivalent to floristic group 39 being part of map unit ALP6 in Lewer et al. (2003). Similar in some respects to ID82 on the Cobar Peneplain but this community lacks Cypress Pine and contains an open understorey dominated by grasses. A mixed woodland community occurring on low rises on alluvial plains in central NSW.

**Interstate Equivalent(s):** Victoria: some similarity with EVC803: Plains Woodland.

**Mapped/Modellled:** Current extent and pre-European extent mapped or modelled as part of a broader *<strong>mapping</strong>*: Inadequate.

**Mapping Info:** Part of distribution mapped as part of ALP6 in Lewer et al. (2003). Not sampled or mapped over full range as of 2005.

**Climate Zone:** Temperate; no dry season (hot summer).

**IBRA Bioregion (v6):** Cobar Penepplain (30-70%); NSW South-western Slopes (30-70%).

**IBRA Sub-Region:** Lachlan Plains (30-70%); Lower Slopes (30-70%).

**Botanical Division:** Central Western Slopes (CWS) (30-70%); South Western Plains (SWP) (30-70%).

**Local Govt. Areas:** Bogan (1-30%); Carrathool (1-30%); Lachlan (1-30%); Narromine (1-30%).

**CMAs:** Central West (1-30%); Lachlan (30-70%).

**MD Basin:** Yes.

**Substrate Mass:** Alluvium.

**Lithology:** Alluvial loams and clays.

**Great Soil Group:** Alluvial soil; Brown earth.

**Soil Texture:** Sandy loam.

**Landform Patterns:** Alluvial plain; Rises; Stagnant alluvial plain.

**Landform Elements:** Plain.

**Land Use:** Cropping and Horticulture; Grazing.

**Impacts of European Settlement:** Major reduction (>70%) in extent and/or range.

**Pre-European Extent:** 50000 ha ±50%. Estimated from extant vegetation maps: part range.

**Pre-European Extent Comments:** Estimate only. Mostly cleared.

**Current Extent:** 10000 ha ±50% or 20% ± 80% of pre-European extent remaining.

**Current Extent Comments:** (Estimated from mapped extant vegetation: part range). Perhaps half of the 10600 ha mapped in map unit ALP6 in Lewer et al. (2003) and would extend beyond the boundaries of that mapping. Most of the original extent of this map unit has been cleared based on clearing patterns.

**Conservation Reserves:** None.

**Reserves Total Area:** 0 ha.  
No. Representatives in Reserves: 0

**Protected Area Explanation:** None.

**Secure Property Agreements:** None.

**Secure PAs Total Area:** 0 ha.  
No. Representatives in Secure Property Agreements: 0

**Protected Current Extent:** Not known to be protected.  
No. Representatives in Protected Areas: 0

**Protected Pre-European Extent:** 0% which is inadequately protected across distribution.

**Common in 1750:** Code 5a: <1% of pre-European extent in protected areas (>10,000 ha).

**Key Sites for Protection:** Areas south of the Lachlan River.

**Degree of Fragmentation:** Human induced highly fragmented small stands with <30% extent remaining and high edge to area ratio.

**Recoverability:** Poor health as structure and/or composition significantly altered. But sufficient biota remain for natural regeneration if causal factors and their secondary impacts removed and dynamic processes reinstated.

**Variation & Disturbance:** A mixed community that is pseudo-ecotonal between Western Grey Box on heavier soils and Poplar Box on loam soils. Occurs on slight rises on the alluvial plain.

**Fire Regime:** Fire is now largely absent due to fragmentation.

**Adjoining Communities:** Grades into Poplar Box (ID244), Western Grey Box (ID82, ID76) on different soils on the alluvial plains.

**Threatening Processes:** Mostly cleared and fragmented. Weeds dominate many sites. Oeorgrazing affects understorey condition.

**Threatening Process List:** Clearing for agriculture; Dryland cropping; Firewood collection; Soil erosion, water: sheet erosion; Unsustainable grazing and trampling by stock; Weed (exotic) invasion.

**Threat Category:** Endangered.  
Threat/Protected Area Code: E/5a  
Threat Criteria: 1; 4.

**Planning Controls:**

**Planning and Management:** Remnants require protection from clearing under Lachlan and cntral-West catchment plans. Some areas should be fenced off from continuous grazing. Samples should be protected in reserves or under property agreements.

**Listed Under Legislation:** None.

**Recovery Plan:** Doesn't exist, but required.

NSW Vegetation Classification - Vegetation ID

Vegetation Community ID 283

Common Name: Apple Box - Blakely’s Red Gum moist valley and footslopes grass-forb open forest of the NSW South-western Slopes Bioregions

Scientific Name: Eucalyptus bridgesiana - Eucalyptus blakelyi / Acacia dealbata / Microlaena stipoides var. stipoides - Gonocarpus tetragynus - Dichondra repens - Poa sieberiana


Photo 1: ID283a_PC208-3.jpg Eucalyptus bridgesiana - Acacia dealbata gully herbaceous woodland in Ellerslie Nature Reserve, [AGD66 35°14'33"S 147°51'30"E], 20/10/02, Jaime Plaza.

Photo 2: ID283b_PC188-10.jpg Eucalyptus albens - E.brigesiana - E.blakelyi herbaceous grassy gully woodland, Livingstone National Park, [AGD66 35°20'50"S 147°20'42"E], 15/10/02, Jaime Plaza.

Photo 3: ID283c_PC192-3.jpg Eucalyptus bridgesiana - E.melliodora valley woodland on the Little Billabong - Tumbarumba Road, [AGD66 35°33'20"S 147°37'02"E], 15/10/02, Jaime Plaza.
Characteristic Vegetation: (Combination of Quantitative Data and Qualitative Estimate)

Trees: Eucaalyptus bridgesiana; Eucaalyptus blakelyi; Eucaalyptus melliodora; Eucaalyptus macrophylla.

Shrubs/Vines/Epiphytes: Acacia dealbata; Acacia implexa; Acacia paradoxa; Cassinia aculeata; Leptospermum continentale; Callistemon sieberii; Pultenaea procumbens; Pultenaea subspicata.

Ground Cover: Microlaena stipoides var. stipoides; Dichondra repens; Gonocarpus tetragnus; Acaena ovina; Hydrocotyle laxiflora; Themeda australis; Elymus scaber var. scaber; Scleranthus pungens; Senecio hispidulus; Hypericum gramineum; Poa sieberiana; Drosera peltata; Pteridium esculentum; Chelionanthus australenii; Hypoxis hygrometrica var. hygrometrica; Drosera auriculata; Arthroplodium minus; Poranthera microphylla; Ranunculus inunatus; Senecio prenanthoides; Epilobium bilaneranum subsp. hydrophilum; Craspedia variabilis; Solenogyne dominii; Plantago hispida; Subtine bulbosa; Viola hederacea; Haloragis heterophylla; Cyperus lucidus; Luzula meridionalis; Carex appressa; Schoenus apogon; Luzula densiflora; Utica incisa; Rumex brownii; Drosera peltata; Cymbonotus lawsonianus; Bothriochloa macra Poa labillardieri var. labillardieri; Schoenus apogon; Juncus vaginatus; Juncus subsecundus; Lythrum hyssopifolia; Plantago lanceolata; Plantago varia; Themeda australis; Tricoryne elatior; Solenogyne dominii; Senecio quadridentatus; Senecio tenuiflorus; Viola betonicifolia; Wurmbea dioica subsp. dioica; Vittadinia cuneata; Wahlenbergia graciosil; Wahlenbergia stricta subsp. stricta; Microseris lanceolata; Panicum effusum; Hypericum gramineum; Glycine clandestina; Elymus scaber var. scaber; Eragrostis parviflora; Echinopogon ovatus.

Weed Species: Bromus hordeaceus; Rosa rubignosa; Rubus ulmifolius; Hypericum perforatum; Aira caryophyllaea; Hypochoeris radicata; Centaurea erythraea; Trifolium campestre; Trifolium dubium; Cirslum vulgar; Marrubium vulgar; Cerastium alamis arvensis; Trifolium repens; Holcus lanatus; Bromus molliformis; Bromus diandrus.

Weediness: Very high (>30%) with 10-30% cover.

Threatened Plants: Acacia phasmoides.

Threatened Fauna: Not assessed.

Mean Species Richness: 35 +/- 10 spp in 20 x 20 m plots (Gellie & Fanning 2004).

Rainforest Structure (Webb): Not applicable.

Structure (WH): Open Forest; Woodland.

Height Class (WH): Tall.

Vegetation Description: Tall open forest or woodland dominated by Apple Box (Eucalyptus bridgesiana) often with Blakely's Red Gum (Eucalyptus blakelyi) or Yellow Box (Eucalyptus melliodora). The shrub layer is very sparse or absent and often contains wattles such as Acacia dealbata at higher elevations or Acacia dealn and Acacia implexa in western locations along with Cassinia and Leptospermum. Tall grassland is mid-dense to dense and dominated by grass species such as Microlaena stipoides var. stipoides, Elymus scaber var. scaber and Themeda australis. Forb species include Dichondra repens, Acaena ovina, Hydrocotyle laxiflora, Epilobium bilaneranum subsp. hydrophilum, Craspedia variabilis and Solenogyne dominii. Sedges include such as Cyperus lucidus and Carex appressa and the rush Luzula meridionalis may be present. Occurs on clay loams or silty clay loam soils derived from colluvium or sedimentary, metamorphic, igneous or volcanic substrates on flats and gentle hillslopes in hill landscape patterns of the NSW South-western Slopes Bioregion. Grades into Blakely's Red Gum and Yellow Box dominated communities. Mostly cleared and often infested with weeds. An endangered community.

Level of Classification: Association.

Formation Group: Eucalyptus (Mostly Grassly) Box Woodlands of the Tablelands and Western Slopes.

State Veg Map (Keith 2004): Southern Tableland Grassy Woodlands; Western Slopes Grassy Woodlands.


NVIS Major Veg Sub-Groups: Eucalyptus woodlands with a grassy understorey.

Forest Type (RN 17): 103 - Apple Box (P).


Interstate Equivalent(s): Victoria: EVC 47 Valley Grassy Forest.

Mapped/Modelled: Current extent and pre-European extent not mapped or modelled.

Mapping Info: Not mapped over range and limited site sampling as of 2006. Difficult to map out from other box woodlands except for riparian zones.

Climate Zone: Temperate: no dry season (warm summer).

IBRA Bioregion (v6): NSW South-western Slopes (30-70%); South Eastern Highlands (1-30%).

IBRA Sub-Region: Bathurst (1-30%); Crockwell (1-30%); Monaro (1-30%); Murrumbateman (1-30%); Orange (1-30%); Upper Slopes (30-70%).

Botanical Division: South Western Slopes (SWS) (1-30%); Southern Tablelands (ST) (1-30%); Central Western Slopes (CWS) (1-30%)

Local Govt. Areas: Bathurst Regional (1-30%); Bland (1-30%); Blayney (1-30%); Cabonne (1-30%); Cootamundra (1-30%); Cowra (1-30%); Greater Hume (1-30%); Gundagai (1-30%); Harden (1-30%); Upper Lachlan (1-30%); Young (1-30%); Wellington (1-30%); Wagga Wagga (1-30%).

CMAs: Central West (1-30%); Lachlan (1-30%) Murray (1-30%); Murrumbidgee (1-30%).

MD Basin: Yes.

Substrate Mass: Colluvium; Plutonic rocks; Metamorphic rocks; Sedimentary rocks; Volcanic rocks.

Lithology: Basalt; Colluvial sediments; Conglomerate; Granite; Metamorphic rock (unidentified); Sandstone; Slate.

Great Soil Group: Brown earth; Brown podzolic soil.

Soil Texture: Clay loam; Silty clay loam.

Landform Patterns: Hills.

Landform Elements: Footslope; Hillslope; Valley flat.

Land Use: Cropping and Horticulture; Grazing.

Impacts of European Settlement: Dieback due to disease or senescence; Major alteration of species composition; Major reduction (>70%) in extent and/or range.

Pre-European Extent: 35000 ha ±50%. Estimated from extant vegetation maps: part range.

Pre-European Extent Comments: Gellie (2005) models about 18000 ha as Vegetation Group 159 for part of its range. 3084 ha predicted to have occurred in Boorowa Shire (2002a) of which nearly 78% has been cleared.
Current Extent: 3000 ha ±30% or 9% ± 60% of pre-European extent remaining.
Current Extent Comments: (Estimated from mapped extent vegetation: part range). Gellie (2005) estimates that 11% of this community remains (about 2000 ha) for the area he modelled which is less than one third of its range. Only 6% of this community remains in Little River Catchment. Only 671 ha remains in Boorowa Shire.
Conservation Reserves: Ellerslie NR 120 (E1); Woomargama NP 11 (E1); Bogandyera NR 10 (E4); Livingstone NP 10 (E3).
Reserves Total Area: 151 ha.
No. Representatives in Reserves: 4


Secure Property Agreements: None.
Secure PAs Total Area: 0 ha.
No. Representatives in Secure Property Agreements: 0

Protected Current Extent: 5.03% 151 ha ± 50%.
No. Representatives in Protected Areas: 4

Protected Pre-European Extent: 0.43% which is inadequately protected across distribution.

Common in 1750: Code 5a: <1% of pre-European extent in protected areas (>10,000 ha).

Key Sites for Protection: Requires investigation. Scattered across the NSW south-western slopes but it is difficult to find areas in good condition due to its location along river flats and low slopes which are highly cleared and disturbed

Degree of Fragmentation: Human induced highly fragmented small stands with <30% extent remaining and high edge to area ratio.

Recoverability: Very poor health as structure and/or composition severely altered. Insufficient biota remain for natural regeneration except some ruderal species.

Variation & Disturbance: Contains a similar understory to other grassy box woodlands in southern New South Wales. Understorey species range with altitude and substrate and with distance from creeklines. Sedges may dominate wet areas.

Fire Regime: Pre-European fire regime unknown but may have been pathily burnt by Aborigines. Fire is now relatively infrequent 10-30 years. Fire may be important as a means to reduce Nitrogen levels that favour the dominance of exotic annual species.

Adjoining Communities: Grades into ID278 Blakely's Red Gum riparian open forest and into ID277 Blakely's Red Gum - Yellow Box woodland on clay - loam soils on hills and slopes and into stringybark (Eucalyptus macrorryzach) woodland on poorer soils on higher slopes and ridges. Similar to ID275 White Box - Apple Box riparian woodland and ID298 Norton's Box - Apple Box open forest on the southern upper SW slopes.

Threatening Processes: Past clearing has resulted in a highly fragmented landscape. High nitrogen levels occur in most places due to high fertilizer use. This has coincided with the introduction of exotic pasture weeds in most remnants and a change from perennial native grasses and forbs to annual introduced species. Few remnants contain a natural shrub or ground cover plant species composition.

Threatening Process List: Acid soils due to fertilizer use; Age class of woody vegetation; Clearing for agriculture; Clearing on small lots (hobby farms); Disease and/or dieback (abnormal); Dryland cropping; Firewood collection; Chemical pollution (incl. herbicides, pesticides); Nutrient changes through fertilizers or runoff; Salinity; Soil erosion, water: gully, tunnel, landslips; Unsustainable grazing and trampling by stock; Weed (exotic) invasion.

Threat Category: Critically Endangered. Threat/Protected Area Code: CE/5a Threat Criteria: 4; 1.

Planning Controls: Planning and Management: Protect remnants in protected areas and under property plans. Regenerate some creeklines and flats. Weed programs are required in some areas.

Listed Under Legislation: None.

Recovery Plan: Doesn't exist, but required.

NSW Vegetation Classification - Vegetation ID

Vegetation Community ID 312

Common Name: Yellow Box grassy tall woodland on valley flats in the upper slopes of the South-western Slopes Bioregion and South Eastern Highlands Bioregion

Scientific Name: Eucalyptus melliodora / Acacia dealbata - Hibbertia obtusifolia / Austrodanthonia racemosa var. racemosa - Microlaena stipoides var. stipoides - Carex inversa - Senecio quadridentatus

Veg. Comm. ID.: 312

Original Entry: J.S. Benson 26/03/2007

Veg. Comm. ID.: 312

Photo 1: ID312a_DX28629.jpg Yellow Box (Eucalyptus melliodora) tall woodland with an altered grassy ground cover along the lower reaches of Tumbarumba Creek in the upper Murray River region, [AGD66 35°53.380'S 148°03.439'E], 5/5/2006, Jaime Plaza.

Characteristic Vegetation: (Quantitative Data)

Trees: Eucalyptus melliodora.

Shrubs/Vines/Epiphytes: Acacia dealbata; Hibbertia obtusifolia; Cassinia longifolia.

Ground Cover: Austrodanthonia racemosa var. racemosa; Microlaena stipoides var. stipoides; Carex inversa; Bulbine bulbosa; Senecio quadridentatus; Austrostipa scabra subsp. falcata; Themeda australis; Dichelachne micrantha; Poa sieberiana; Austrodanthonia penicillata; Austrodanthonia pilosa; Senecio bathurstianus; Desmodium brachypodum; Vittadinia cuneata var. cuneata f. cuneata; Wahlenbergia communis; Wahlenbergia gracilis; Wurmbea dioica subsp. dioica; Desmodium varians; Cheilanthes austrotenufolia; Gonocarpus tetragynus; Lomandra filiformis subsp. coracea; Oxalis perennans.

Weed Species: Rubus discolor; Hypericum perforatum; many species of exotic grasses.

Weediness: Very high (>30%) with 10-30% cover.

Threatened Plants: Not assessed.

Threatened Fauna: Not assessed.

Mean Species Richness: Not assessed.

Rainforest Structure (Webb): Not applicable.

Structure (WH): Woodland; Open Forest.

Height Class (WH): Tall.

Vegetation Description: Tall woodland or open forest dominated by Yellow Box (Eucalyptus melliodora) and generally lacking Blakey's Red Gum (Eucalyptus blakelyi). The shrub layer is very sparse or absent and if present may include Acacia dealbata or Hibbertia obtusifolia. The ground cover is mid-dense to dense and often dominated by grass species such as Austrodanthonia racemosa var. racemosa, Poa sieberiana, Microlaena stipoides, Themeda australis, Austrostipa scabra subsp. falcata and Dichelachne micrantha. Forbs include Bulbine bulbosa, Senecio quadridentatus, Senecio bathurstianus, Vittadinia cuneata var. cuneata, Wahlenbergia communis, Wahlenbergia gracilis and Wurmbea dioica subsp. dioica. The climbers Desmodium brachypodum and Desmodium varians may occur. Occurs on either orange-brown deep podzolic soils derived from granite or brown loam-clays derived from metasediments or sedimentary rocks in valley floors and on footslopes slopes in the upper slopes sub-region of the NSW South Wales South-western Slopes Bioregion. Grades into a western lower slopes similar community to the west (ID276). This community is mostly cleared and the ground cover is often dominated by exotic species. It is a critically endangered community.

Level of Classification: Association. Classification Confidence Level: Medium.
**Formation Group:** Eucalyptus (Mostly Grassy) Box Woodlands of the Tablelands and Western Slopes.

**State Veg Map (Keith 2004):** Southern Tableland Grassy Woodlands.

**State Landscape (Mitchell 2002):** Not Assessed.

**NVIS Major Veg Sub-Groups:** Eucalyptus forests with a grassy understorey.

**Forest Type (RN 17):** 171 - Yellow Box (P).


**Interstate Equivalent(s):** Victoria: probably part of EVC188 Plains Grassy Woodland / Valley Grassy Forest Complex.

**Mapped/Modelled:** Current extent partly mapped or modelled. **Plot Sampling:** Inadequate.

**Mapping Info:** Modelled as Vegetation Group 161 by Gellie (2005) for its central range. Mapped in reserves in the upper Murray region in EcoGIS (2005). Would require fine-scale mapping to map out this community from ID277 and other similar communities.

**Climate Zone:** Montane: no dry season (mild summer).

**IBRA Bioregion (v6):** NSW South-western Slopes (30-70%); South Eastern Highlands (30-70%).

**IBRA Sub-Region:** Upper Slopes (30-70%); Bondo (30-70%); Murrumbateman (1-30%).

**Botanical Division:** South Western Slopes (SWS) (30-70%); Southern Tablelands (ST) (30-70%).

**Local Govt. Areas:** Tumut (1-30%); Tumbarumba (30-70%); Yass Valley (1-30%).

**CMAs:** Murrumbidgee (30-70%); Murray (30-70%).

**MD Basin:** Yes.

**Substrate Mass:** Colluvium; Plutonic rocks; Metamorphic rocks.

**Lithology:** Colluvial sediments; Granite; Metamorphic rock (unidentified).

**Great Soil Group:** Brown podzolic soil; Red podzolic soil.

**Soil Texture:** Clay loam; Light clay; Medium clay.

**Landform Patterns:** Hills.

**Landform Elements:** Footslope; Valley flat.

**Land Use:** Grazing.

**Impacts of European Settlement:** Dieback due to disease or senescence; Major alteration of species composition; Major reduction (>70%) in extent and/or range.

**Pre-European Extent:** 40000 ha ±30%. Estimated from extant vegetation maps: part range.

**Pre-European Extent Comments:** Gellie (2005) (Vegetation Group 161) estimated 87,000 ha may have occurred but this is imprecise and may include the widely distributed ID277.

**Current Extent:** 3000 ha ±30% or 8% ± 50% of pre-European extent remaining.

**Current Extent Comments:** (Estimated from mapped extant vegetation: part range). Small patches with intact ground cover remain. Gellie maps 3800 ha remaining. Areas of isolated trees remain but the ground cover tends to be dominated by exotic pasture species.

**Conservation Reserves:** Bogandyera NR 97 (M); Woomargama NP 50 (E4).

**Reserves Total Area:** 147 ha. **No. Representatives in Reserves:** 2

**Protected Area Explanation:** Bogandyera NR from EcoGIS (2005) that also mentions with community is in Woomargama NP where an estimate is split off from the ID277 occurrence in that reserve. Occurrences in reserves in the SE Highlands Bioregion may increase proportion protected.

**Secure Property Agreements:** None.

**Secure PAs Total Area:** 0 ha. **No. Representatives in Secure Property Agreements:** 0

**Protected Current Extent:** 4.9% 147 ha ± 30%. **No. Representatives in Protected Areas:** 2

**Protected Pre-European Extent:** 0.36% which is inadequately protected across distribution.

**Common in 1750:** Code 5a: <1% of pre-European extent in protected areas (>10,000 ha).

**Key Sites for Protection:** In the north it occurs in valleys in the Yass region. It also occurs along Tumbarumba Creek and other tributaries of the upper Murray River.

**Degree of Fragmentation:** Human induced highly fragmented small stands with <30% extent remaining and high edge to area ratio.

**Recoverability:** Very poor health as structure and/or composition severely altered. Insufficient biota remain for natural regeneration except some ruderal species.

**Variation & Disturbance:** The understorey species would vary over range from north to south but the basic structure and canopy species are consistent.

**Fire Regime:** Unknown. May originally have been subject to regular patch burns by Aborigines but now highly fragmented and rarely burns. Some landholders may burn off the ground cover from time to time.

**Adjoining Communities:** Grades into the widespread Yellow Box - Blakely's Red Gum woodland (ID277) in valleys and slopes and into Norton's Box - Red Stringybark open forests upslope in the upper Murray region. Grades into a similar alluvial and parna Yellow Box woodland (ID276) on the lower slopes of the NSW South-western slopes Bioregion.

**Threatening Processes:** Mostly cleared and weed infested. Further clearing for agriculture or pine plantation may threaten some remaining stands. Over grazing is preventing regeneration of trees in most locations.

**Threatening Process List:** Acid soils due to fertilizer use; Age class of woody vegetation; Clearing for agriculture; Clearing for pine plantations; Nutrient changes through fertilizers or runoff; Soil erosion, water: sheet erosion; Unsustainable grazing and trampling by stock; Weed (exotic) invasion.

**Threat Category:** Critically Endangered. **Threat/Protected Area Code:** CE/5a **Threat Criteria:** 1; 4.

**Planning Controls:**

**Planning and Management:** Prevent further clearing of this community. Active management, including weeding, is required to allow regeneration of remnants on private land. Part of Grassy White Box - Yellow Box listed EEC.

**Listed Under Legislation:** Listed TSC Act, E: White Box Yellow Box Blakely's Red Gum Woodland (Part); Listed EPBC Act, CE: White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland (Part).
Recovery Plan: Doesn't exist, but required.

**NSW Vegetation Classification - Vegetation ID**

**Vegetation Community ID 266**

**Common Name:** White Box grassy woodland in the upper slopes sub-region of the NSW South-western Slopes Bioregion

**Scientific Name:** Eucalyptus albens / Acacia decora - Acacia implexa - Acacia deanei subsp. paucijuga / Themeda australis - Poa sieberiana - Wurmbea dioica - Cymbonotus lawsonianus

**Veg. Comm. ID.:** 266  
**Original Entry:** J. S. Benson 10/01/2006

**Characteristic Vegetation:** (Combination of Quantitative Data and Qualitative Estimate)

- **Trees:** Eucalyptus albens; Brachychiton populneus subsp. populneus; Eucalyptus blakelyi; Eucalyptus bridgesiana; Eucalyptus melliodora.

**Photo 1:** ID266a_PC178-22.jpg  
Eucalyptus albens grassy woodland, Quamby-Thuddungra, TSR south of Grenfell, [AGD66 34°09'28"S 148°08'39"E], 12/10/02, Jaime Plaza.

**Photo 2:** ID266b_PC172-12.jpg  
Eucalyptus albens - Themeda australis grassy woodland, Canowindra Cemetery, [AGD66 33°32'59"S 148°40'17"E], 10/10/02, Jaime Plaza.

**Photo 3:** ID266c_PC193-12.jpg  
Eucalyptus albens grassy woodland, Minjary National Park, [AGD66 35°13'18"S 148°07'20"E], 16/10/02, Jaime Plaza.
Shrubs/Vines/Epiphytes: Acacia decora; Acacia impexa; Acacia deanei subsp. pauci Jewel; Acacia genistifolia; Acacia penninervis var. penninervis var. penninervis; Acacia buxifolia subsp. buxifolia; Acacia paradoxa; Dodonaea viscosa subsp. cuneata; Bursaria spinosa subsp. spinosa; Cassinia aculeata; Hibbertia riparia.

Ground Cover: Themeda australis; Poa sieberiana; Wurmbea dioica; Cymbonotus lawsonianus; Aristida behriana; Panicum Cassinia aculeata; Hibbertia riparia.

Vegetation Description: Tall woodland with trees to 25 m high dominated by White Box (Eucalyptus albens) often as the only tree species. Kurrajong (Brachychiton populneus subsp. populneus) is often present, partly as subshrub on limestone or rocky ground. Euca

Weediness: Very high (>30%) with >30% cover.

Threatened Plants: Microseris lanceolata (depleted).

Threatened Fauna: Superb Parrot; Swift Parrot; Brown Treecreeper; Diamond Firetail; Pale-headed Snake; Striped Legless Lizard.

Mean Species Richness: In good sites over 40 spp. in 20 X 20 m plots but such sites are rare..

Rainforest Structure (Webb): Not applicable.

Structure (WH): woodland.

Height Class (WH): Tall.

Vegetation Description: Tall woodland with trees to 25 m high dominated by White Box (Eucalyptus albens) often as the only tree species. Kurrajong (Brachychiton populneus subsp. populneus) is often present, partly as subshrub on limestone or rocky ground. Euca

Weediness: Very high (>30%) with >30% cover.

Threatened Plants: Microseris lanceolata (depleted).

Threatened Fauna: Superb Parrot; Swift Parrot; Brown Treecreeper; Diamond Firetail; Pale-headed Snake; Striped Legless Lizard.

Mean Species Richness: In good sites over 40 spp. in 20 X 20 m plots but such sites are rare..

Rainforest Structure (Webb): Not applicable.

Structure (WH): woodland.

Height Class (WH): Tall.

Vegetation Description: Tall woodland with trees to 25 m high dominated by White Box (Eucalyptus albens) often as the only tree species. Kurrajong (Brachychiton populneus subsp. populneus) is often present, partly as subshrub on limestone or rocky ground. Euca

Weediness: Very high (>30%) with >30% cover.

Threatened Plants: Microseris lanceolata (depleted).

Threatened Fauna: Superb Parrot; Swift Parrot; Brown Treecreeper; Diamond Firetail; Pale-headed Snake; Striped Legless Lizard.

Mean Species Richness: In good sites over 40 spp. in 20 X 20 m plots but such sites are rare..

Rainforest Structure (Webb): Not applicable.

Structure (WH): woodland.

Height Class (WH): Tall.

Vegetation Description: Tall woodland with trees to 25 m high dominated by White Box (Eucalyptus albens) often as the only tree species. Kurrajong (Brachychiton populneus subsp. populneus) is often present, partly as subshrub on limestone or rocky ground. Euca

Weediness: Very high (>30%) with >30% cover.

Threatened Plants: Microseris lanceolata (depleted).

Threatened Fauna: Superb Parrot; Swift Parrot; Brown Treecreeper; Diamond Firetail; Pale-headed Snake; Striped Legless Lizard.

Mean Species Richness: In good sites over 40 spp. in 20 X 20 m plots but such sites are rare..

Rainforest Structure (Webb): Not applicable.

Structure (WH): woodland.

Height Class (WH): Tall.

Vegetation Description: Tall woodland with trees to 25 m high dominated by White Box (Eucalyptus albens) often as the only tree species. Kurrajong (Brachychiton populneus subsp. populneus) is often present, partly as subshrub on limestone or rocky ground. Euca

Weediness: Very high (>30%) with >30% cover.

Threatened Plants: Microseris lanceolata (depleted).

Threatened Fauna: Superb Parrot; Swift Parrot; Brown Treecreeper; Diamond Firetail; Pale-headed Snake; Striped Legless Lizard.

Mean Species Richness: In good sites over 40 spp. in 20 X 20 m plots but such sites are rare..

Rainforest Structure (Webb): Not applicable.

Structure (WH): woodland.

Height Class (WH): Tall.

Vegetation Description: Tall woodland with trees to 25 m high dominated by White Box (Eucalyptus albens) often as the only tree species. Kurrajong (Brachychiton populneus subsp. populneus) is often present, partly as subshrub on limestone or rocky ground. Euca

Weediness: Very high (>30%) with >30% cover.

Threatened Plants: Microseris lanceolata (depleted).

Threatened Fauna: Superb Parrot; Swift Parrot; Brown Treecreeper; Diamond Firetail; Pale-headed Snake; Striped Legless Lizard.

Mean Species Richness: In good sites over 40 spp. in 20 X 20 m plots but such sites are rare..

Rainforest Structure (Webb): Not applicable.

Structure (WH): woodland.

Height Class (WH): Tall.

Vegetation Description: Tall woodland with trees to 25 m high dominated by White Box (Eucalyptus albens) often as the only tree species. Kurrajong (Brachychiton populneus subsp. populneus) is often present, partly as subshrub on limestone or rocky ground. Euca

Weediness: Very high (>30%) with >30% cover.

Threatened Plants: Microseris lanceolata (depleted).

Threatened Fauna: Superb Parrot; Swift Parrot; Brown Treecreeper; Diamond Firetail; Pale-headed Snake; Striped Legless Lizard.

Mean Species Richness: In good sites over 40 spp. in 20 X 20 m plots but such sites are rare..

Rainforest Structure (Webb): Not applicable.

Structure (WH): woodland.

Height Class (WH): Tall.

Vegetation Description: Tall woodland with trees to 25 m high dominated by White Box (Eucalyptus albens) often as the only tree species. Kurrajong (Brachychiton populneus subsp. populneus) is often present, partly as subshrub on limestone or rocky ground. Euca

Weediness: Very high (>30%) with >30% cover.

Threatened Plants: Microseris lanceolata (depleted).

Threatened Fauna: Superb Parrot; Swift Parrot; Brown Treecreeper; Diamond Firetail; Pale-headed Snake; Striped Legless Lizard.

Mean Species Richness: In good sites over 40 spp. in 20 X 20 m plots but such sites are rare..

Rainforest Structure (Webb): Not applicable.
Substrate Mass: Volcanic rocks; Metamorphic rocks; Sedimentary rocks; Plutonic rocks.

Lithology: Basalt; Calcareous mudstone; Claystone; Granite; Hornfels; Jasper; Limestone; Mudstone; Phyllite; Schist; Shale; Slate.

Great Soil Group: Black earth; Chocolate soil; Red podzolic soil; Red-brown earth.

Soil Texture: Clay loam; Light clay; Light medium clay; Medium clay.

Landform Patterns: Hills; Low hills.

Landform Elements: Hillcrest; Hillslope; Valley flat.

Land Use: Cropping and Horticulture; Grazing.

Impacts of European Settlement: Major alteration of species composition; Major reduction (>70%) in extent and/or range.

Pre-European Extent: 800000 ha ±30%. Estimated from pre-European map: part range.

Pre-European Extent Comments: Moore (1953a) mapped 1.1 million ha of pre-European White Box woodland from Young to Albury on the NSW south western slopes but this broad map includes several types of White Box woodland. However, this did not cover the northern extent of this community.

Current Extent: 50000 ha ±30% or 6% ± 50% of pre-European extent remaining.

Current Extent Comments: (Estimated from mapped extent vegetation: part range). Miniscule White Box woodland remains with a native ground cover but White Box paddock trees are common mostly with a weedy ground cover. The current extent estimate depends on whether one is recording “intactness of ground cover” or tree patch cover. Prober & Thiele (1993) state that only 0.01% of White Box woodland south of Mologan remains relatively unmodified. NSWNPWS map 5584 of a predicted 30511 ha (18%) of White Box woodland in Boorowa Shire but this includes paddock patches. Seddon et al. (2002) estimate only 3% remains in the Little River Catchment.

Conservation Reserves: Flagstaff Memorial NR 6 (E2); Barton NR 6 (M); Minjary NP 30 (E3); Oak Creek NR 100 (E3); Tumblong SCA 18 (E1); Ellerslie NR 300 (E3).

Reserves Total Area: 460 ha. No. Representatives in Reserves: 6


Secure Property Agreements: VCA116 Marra Cemetry VCA 4 (M); VCA111 Waillendeen Cemetary VCA 3 (E1); HE9901 PA 6 (E2); WT9908 PA 64 (E2).

Secure PAs Total Area: 77 ha. No. Representatives in Secure Property Agreements: 4

Protected Current Extent: 1.07% 537 ha ± 30%. No. Representatives in Protected Areas: 10

Protected Pre-European Extent: 0.06% which is inadequately protected across distribution.

Common in 1750: Code 5a: <1% of pre-European extent in protected areas (>10,000 ha).

Key Sites for Protection: Some travelling stock routes, cemeteries and roadsides contain good condition grassy White Box woodland. These include Guise's Hill TSR and Mangoplah Landcare site in Wagga Shire (Friday 2004), Warraderry Range in the Lachlan Catchment, Howell's Creek and Bennet Springs TSRs in Boorowa Shire.

Degree of Fragmentation: Human induced highly fragmented small stands with <30% remaining and high edge to area ratio.

Recoverability: Very poor health as structure and/or composition severely altered. Insufficient biota remain for natural regeneration except some ruderal species.

Variation & Disturbance: Occurs over a large range on many lithologies and a number of soil types. Floristic composition varies but Prober (1996) describes consistency in ground cover species composition with a gradual latitudinal change from south to northern NSW.

Fire Regime: Aboriginal burning of grassy woodlands favoured grasses such as Themeda australis and native yam (Microseris lanceolata). An appropriate fire regime may be 3-15 years. Fire is rare due to fragmentation and lack of ground cover due to grazing. The prevalence of an exotic, annual ground flora has changed the fire regimes. Burning could decrease exotic annual species by flushing soil nitrogen.

Adjoining Communities: Grades into and shares many ground species with Blakely's Red Gum - Yellow Box woodland (ID277) on lower slopes and flats; into Fuzzy Box (Eucalyptus conica) woodland (ID201) on colluvial lower slopes and flats; to the west into Western Grey Box (Eucalyptus microcarpa) woodland (ID76 or ID80) on brown loams and clays and into shrubby White Box or Tumbledown Red Gum - Mugga Ironbark - Red Stringybark communities on steep hills.

Threatening Processes: Highly fragmented due to clearing. High nitrogen levels due to fertilizer use, coinciding with the introduction of exotic pasture weeds replacing perennial native grasses and forbs. Few remnants contain a natural shrub or ground cover plant species composition.

Threatening Process List: Age class of woody vegetation; Clearing for agriculture; Dryland cropping; Chemical pollution (incl. herbicides, pesticides); Nutrient changes through fertilizers or runoff; Salinity; Soil erosion, water: sheet erosion; Soil erosion, wind; Unsustainable grazing and trampling by stock; Weed (exotic) invasion.

Threat Category: Critically Endangered. Threat/Protected Area Code: CE/5a Threat Criteria: 1; 4.

Planning Controls:

Planning and Management: Management advice is provided in the Grassy White Box Woodlands Information Kit (Lambert & Elix 2002). Prevent travelling stock routes from being sold off or overgrazed. Protect key sites in public conservation reserves. Off-reserve measures such as the Grassy Woodlands Conservation Management Network can protect sites in good condition on private land. Management of remnants may require regular burning or mowing to remove nutrients and annual species and stimulate reproduction of native forbs and grasses.

Listed Under Legislation: Listed TSC Act, E: White Box Yellow Box Blakely's Red Gum Woodland (Part); Listed EPBC Act, CE: White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland (Part).

Recovery Plan: Doesn't exist, but required.


Friday, 27 January 2012
**NSW Vegetation Classification - Vegetation ID**

**Vegetation Community ID 267**

**Common Name:** White Box - White Cypress Pine - Western Grey Box shrub/grass/forb woodland in the NSW South-western Slopes Bioregion

**Scientific Name:**

*Eucalyptus albens - Eucalyptus microcarpa - Callitris glaucophylla - Acacia decora - Acacia hakeoides - Dodonaea viscosa subsp. cuneata - Maireana microphylla - Austrostipa densiflora - Austrodanthonia caespitosa - Chrysocephalum apiculatum - Lomandra filiformis subsp. coriacea*

**Veg. Comm. ID.:** 267  **Original Entry:** J. S. Benson 10/01/2006

**Photo 1:** ID267a_PC247-7.jpg Eucalyptus albens - Callitris glaucophylla open forest on a low hill on Backyamma Road, near Parkes, [AGD66 33°17'13.8"S 148°15'47.1"E], 03/05/2005, Jaime Plaza.

**Photo 2:** ID267b_benson.jpg Eucalyptus albens with Callitris glaucophylla on red panna soils, roadside south of Temora, lower slopes sub-region of NSW SWS Bioregion, February 2007, J.S. Benson.

**Photo 3:** ID267c_PC253-24.jpg Eucalyptus albens - Callitris glaucophylla woodland, Tanners Spring Road, [AGD66 32°33'50"S 148°21'55.9"E], 5/05/2005, Jaime Plaza.
**Characteristic Vegetation:** (Combination of Quantitative Data and Qualitative Estimate)

**Trees:** Eucalyptus albens; Callitris glauca/phylla; Eucalyptus microcarpa; Callitris endlicheri; Allocasuarina luehmannii; Eucalyptus melliodora.

**Shrubs/Vines/Epiphytes:** Acacia decora; Acacia hakeoides; Dodonaea viscosa subsp. cuneata; Maireana microphylla; Myoporum montanum; Pittosporum angustifolium; Senna artemisioides; Acacia pycnantha; Acacia dealbata subsp. paucijuga; Acacia impexa; Acacia paraax; Acacia verniciflua; Acacia aciculacea; Eremophila longifolia; Senna form taxon artemisioides; Indigofera australis; Cassinia aculeata; Grevillea floribunda; Geijera parviflora; Indigofera australis; Maireana enchylaenoides.

**Ground Cover:** Austrostipa densiflora; Austrodanthonia caespitosa; Chrysocolephalum apiculatum; Lomandra molliflora subsp. coriacea; Xerochrysum viscosum; Dianella revoluta; Sida corrigata; Lomandra multiflora; Dichopogon strictus; Hydrocotyle laxiflora; Chenopodium aculeatum; Gymnethus floribunda; Geijera parviflora; Indigofera australis; Maireana enchylaenoides.

**Weed Species:** Eucalyptus plantagineum; Vulpia bromoides; Vulpia muralis; Hypochaeris radicata; (and may others).

**Weediness:** High (15-30%) with 10-30% cover.

**Threatened Plants:** Not assessed.

**Threatened Fauna:** Swift Parrot; Grey-crowned Babbler.

**Major Veg Sub-Groups:** Not assessed.

**Vegetation Description:** Tall or mid-high woodland or open woodland with trees to about 15 m high dominated by White Box (Eucalyptus albens), White Cypress Pine (Callitris glauca/phylla) and often western Grey Box (Eucalyptus microcarpa) and rarely Black Cypress Pine (Callitris endlicheri). The shrub layer is sparse containing wattles such as Acacia decora, Acacia hakeoides, Acacia dealbata subsp. paucijuga, Acacia impexa and in the south Acacia paraax. Other shrubs include Dodonaea viscosa subsp. cuneata, Myoporum montanum, Pittosporum angustifolium, Senna artemisioides, Maireana enchylaenoides and Maireana microphylla. The ground cover is mid-dense to very sparse depending on rainfall. It may contain the decumbent shrubs Eremophila debilis. Grass species include Austrostipa densiflora, Austrostipa biculiculata, Austrostipa verticillata, Austrodanthonia caespitosa, Themeda australis, Enteropogon acicularis and Bothriochloa macra. Forb species include Xerochrysum viscosum, Dianella revoluta, Dichopogon strictus, Chrysocolephalum apiculatum, Gymnethus laxiflora, Podolepis jaceoides, Vittadinia cuneata var. cuneata f. cuneata; Einadia hastata; Wahlenbergia communis; Wahlenbergia luteola; Atriplex semibaccata; Glycine tabacina; Glycine chlamydes; Goodenia pinnatifida; Asperula conferta; Eremophila delibis; Bothriochloa macra; Austrostipa verticillata; Austrostipa biculiculata; Cymbopogon reuctans; Chloris truncata; Austrostipa scabra subsp. scabra; Enteropogon acicularis.

**Height Class (WH):** Mid-High; Tall.

**Structure (WH):** Tall or mid-high woodland or open woodland with trees to about 15 m high dominated by White Box (Eucalyptus albens), White Cypress Pine (Callitris glauca/phylla) and often Western Grey Box (Eucalyptus microcarpa) and rarely Black Cypress Pine (Callitris endlicheri). The shrub layer is sparse containing wattles such as Acacia decora, Acacia hakeoides, Acacia dealbata subsp. paucijuga, Acacia impexa and in the south Acacia paraax. Other shrubs include Dodonaea viscosa subsp. cuneata, Myoporum montanum, Pittosporum angustifolium, Senna artemisioides, Maireana enchylaenoides and Maireana microphylla. The ground cover is mid-dense to very sparse depending on rainfall. It may contain the decumbent shrubs Eremophila debilis. Grass species include Austrostipa densiflora, Austrostipa biculiculata, Austrostipa verticillata, Austrodanthonia caespitosa, Themeda australis, Enteropogon acicularis and Bothriochloa macra. Forb species include Xerochrysum viscosum, Dianella revoluta, Dichopogon strictus, Chrysocolephalum apiculatum, Gymnethus laxiflora, Podolepis jaceoides, Vittadinia cuneata var. cuneata f. cuneata; Einadia hastata; Wahlenbergia communis; Wahlenbergia luteola; Atriplex semibaccata; Glycine tabacina; Glycine chlamydes; Goodenia pinnatifida; Asperula conferta; Eremophila delibis; Bothriochloa macra; Austrostipa verticillata; Austrostipa biculiculata; Cymbopogon reuctans; Chloris truncata; Austrostipa scabra subsp. scabra; Enteropogon acicularis.

**Authority(s):** (Combination of Expert Opinion and Quantitative Data). Probably includes the White Box - White Cypress Pine association in Moore (1953a). Includes the White Box - White Cypress Pine - Grey Box woodland and part of the Wagga Wagga Open Forest map units in Friday (2004) for Wagga Wagga Shire. Probably includes biolandsape Eas25c, EasR53a, BuSil3b and Ufla25b in Priday (2006). Probably includes community 75 (Eucalyptus albens - E. microcarpa) in Austin et al. for Lachlan River catchment. Probably the White Cypress Pine - White Box unit in MLVMP (1999). Grey Box - White Box unit in under Saltville (1998). Part of BVTs 19 or 77 in DEC (2006, 2006a). Listed as a species of concern in the NSW South-western Slopes Bioregion. Contains elements of White Box woodland on the slopes (e.g. ID266), White Cypress Pine woodland (ID70) and Western Grey Box woodlands on the plains (ID76 and ID80). Mostly cleared with remnant stands affected by heavy grazing and weed invasion.

**Environment:**

**Climate Zone:** Temperate: dry season (hot summer).

**IBRA Bioregion (v6):** NSW South-western Slopes (>70%).

**IBRA Sub-Region:** Lower Slopes (30-70%); Upper Slopes (1-30%).

**Botanical Division:** Central Western Slopes (CWS) (30-70%); South Western Slopes (SWS) (1-30%).

**Local Govt. Areas:** Bland (1-30%); Cabonne (1-30%); Coolamon (1-30%); Dubbo (1-30%); Forbes (1-30%); Junee (1-30%); Lockhart (1-30%); Parkes (1-30%); Temora (1-30%); Wagga Wagga (1-30%); Weddn (1-30%); Wellington (1-30%).

**CMAs:** Central West (1-30%); Lachlan (1-30%); Murray (1-30%); Murrumbidgee (1-30%).

**MD Basin:** Yes.

**Substrate Mass:** Colluvium: Metamorphic rocks; Parna: Sedimentary rocks.

**Lithology:** Colluvial sediments; Conglomerate: Metamorphic rock (unidentified); Mudstone: Shale.

**Great Soil Group:** Brown earth; Red clay; Red earth.

**Soil Texture:** Clay loam; Clay loam, sandy; Light clay.

**Landform Patterns:** Low hills; Rises.

**Landform Elements:** Footslope; Hillslope.

**Land Use:** Cropping and Horticulture; Grazing.

**Impacts of European Settlement:** Major alteration of species composition; Major reduction (>70%) in extent and/or range.
Past clearing has resulted in a highly fragmented landscape. A key threat is the introduction of exotic pasture species. Very poor health as structure and/or composition severely altered. Insufficient biota remain for natural regeneration except weeds in most remnants and a change from perennial native grasses and forbs to annual introduced species. Few remnants contain a natural shrub or ground cover native plant species composition. Frequency and extent of which is debatable. An appropriate fire regime may have been 3-10 years but patchy with the occasional wildfire. Prior to European settlement, there may have been regular patch burning of grassy woodlands by Aborigines - the intensity of fire compared to pre-European times.

Degree of Fragmentation: Human induced highly fragmented small stands with <30% extent remaining and high edge to area ratio. Recoverability: Very poor health as structure and/or composition severely altered. Insufficient biota remain for natural regeneration except some ruderal species.

Fire Regime: Prior to European settlement, there may have been regular patch burning of grassy woodlands by Aborigines - the frequency and extent of which is debatable. An appropriate fire regime may have been 3-10 years but patchy with the occasional wildfire. Fire is now limited by fragmentation due to clearing and lack of ground cover due to grazing. The prevalence of an annual ground flora in many locations may also have changed the intensity of fire compare to pre-European times.

Adjoining Communities: Situated between ID266 White Box grassy woodland on red and yellow podzolic soils in hilly country to the east and ID76s and 80 (Western Grey Box woodlands) to the west. Grades into Blakey's Red Gum - River Red Gum communities on alluvium along watercourses. A similar community occurs in the BBS Bioregion to the north (ID435).

Threatening Processes: Past clearing has resulted in a highly fragmented landscape. A key threat is the introduction of exotic pasture weeds in most remnants and a change from perennial native grasses and forbs to annual introduced species. Few remnants contain a natural shrub or ground cover native plant species composition.

Threatening Process List: Acid soils due to fertilizer use; Age class of woody vegetation; Clearing for agriculture; Dryland cropping; Chemical pollution (incl. herbicides, pesticides); Nutrient changes through fertilizers or runoff; Salinity; Soil erosion, water: sheet erosion; Unsustainable grazing and trampling by stock; Weed (exotic) invasion.

Threat Category: Endangered. Threat/Protected Area Code: E/5a Threat Criteria: 1; 4.

Planning Controls:
Planning and Management: Protect all TSRs and roadsides containing this community. Protect remnants on private land under secure property agreements. Management advice is provided in the Grassy White Box Woodlands Information Kit (Lambert & Elix 2002).

Listed Under Legislation: Listed TSC Act, E: White Box Yellow Box Blakely's Red Gum Woodland (Part); Listed EPBC Act, CE: White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland (Part).

Recovery Plan: Doesn't exist, but required.

NSW Vegetation Classification - Vegetation ID
Vegetation Community ID 268

**Common Name:** White Box - Blakely's Red Gum - Long-leaved Box - Norton's Box - Red Stringybark
grass-shrub woodland on shallow soils on hills in the New South Wales South-western Slopes Bioregion

**Scientific Name:**
- Eucalyptus albens - Eucalyptus blakelyi - Eucalyptus goniocalyx - Eucalyptus macrocarpa / Acacia genistifolia - Lissanthe strigosa subsp. strigosa - Dillwynia sericea - Acacia implexa / Dianella revoluta var. revoluta - Lomandra filiformis subsp. coriacea - Austrodanthonia eriantha - Microlena stipoides var. stipoides

**Veg. Comm. ID.:** 268 **Original Entry:** J. S. Benson 31/12/2005

**Photo 1:** ID268a_PC207-2.jpg  Eucalyptus albens - E.blakelyi - E.macrorhyncha shrubby hillslope woodland in Ellerslie Nature Reserve, [AGD66 35°13'34"S 147°52'13"E], 20/10/02, Jaime Plaza.

**Photo 2:** ID268b_SWS0507002.jpg  White Box (Eucalyptus albens) open forest with Red Stringybark (Eucalyptus macrocarpa), Blakely's Red Gum (Eucalyptus blakelyi) and the shrub Acacia genistifolia in Wyangala State Recreation Area, [AGD66 33°54.149'S 149°00.117'E], 1/6/2007, Jaime Plaza.
Characteristic Vegetation:

Trees: Eucalyptus albens; Eucalyptus polyanthemos; Eucalyptus blakelyi; Eucalyptus macrorhyncha; Eucalyptus sideroxylon; Eucalyptus goniocalyx; Eucalyptus nortonii.

Shrubs/Vines/Epiphytes: Acacia impexa; Acacia genistifolia; Dillwynia sericea; Lissianthe strigosa subsp. strigosa; Acacia decora; Bursaria spinosa subsp. spinosa; Daviesia latifolia; Melichrus urceolatus; Acacia paradoxa; Hibbertia obtusifolia; Hibbertia riparia; Persoonia rigid; Putenaea lapidosa; Leucopogon virgatus; Xanthorrhoea glauca.

Ground Cover: Dianella revoluta var. revoluta; Lamondra filiformis subsp. coriaceae; Austrotrichachium eriantha; Microlaena stipoides var. stipoides; Hydrocotyle laevigata; Solenogyne domini; Acena ovina; Themeda australis, Joycea pallida; Poa sieberiana; Elymus scaber var. scaber; Aristida ramosa; Schoenus apogon; Carex brevicaulis; Carex inversa; Luzula densiflora; Gonocarpus tetragynus; Geranium solanderi var. solanderi; Cheilanthes sieberi subsp. sieberi; Ammobium craspedioides; Bulbine bulbosa; Lamondra multiforma; Juncus filiculaulis; Carex inversa; Austrostipa densiflora; Austrotrichachium caespitosum; Echinopogon ovatus; Acena nova-zelandiae; Rumex brownii; Senecio prenanthoides; Veronica plebeia; Galium propinquum; Stellaria pungens; Echinopogon ovatus; Xerochrysum viscosum; Xerochrysum bracteatum; Euchiton gymnocephalus; Senecio quadri dentatus; Pratia purpurascens; Dichondra repens; Hypericum gramineum; Juncus subsecundus; Opuncaria varia; Oxalis perennans; Ajuga australis; Mentha diemenica; Wahlenbergia stricta subsp. stricta; Dichopogon strictus; Asperula conifera; Glycine clandestina; Panorhaphis microphylla; Arthropodium minus; Cheiranthera cyanea var. cyanea.

Weed Species: Hypericum perforatum; Anagallis arvensis; Vulpia bromoides; Vulpia muralis; Hyperaerae glabra; Hypochoeris radicata; Rubus ulmifolius; Centaurea erythraea; Trifolium campestre; Bromus hordeaceus; Cirsiun vulgare; Coryza bonariensis.

Weediness: High (15-30%) with 10-30% cover.

Threatened Plants: Not assessed.

Threatened Fauna: Barking Owl; Swift Parrot; Black-chinned honeyeater.

Mean Species Richness: 40 +/- 10 (Gellie & Fanning 2004 in 20 x 20 m plots).

Rainforest Structure (Webb): Not applicable.

Structure (WH): woodland; open forest.

Height Class (WH): Tall; Mid-High.

Vegetation Description: Tall to mid-high woodland or open forest dominated by White Box (Eucalyptus albens), Blakely's Red Gum (Eucalyptus blakelyi), Long-leafed Box (Eucalyptus goniocalyx) and Red Stringybark (Eucalyptus macrorhyncha) and often with Red Box (Eucalyptus polyanthemos). Some areas may contain occasional Mugga Ironbark (Eucalyptus sideroxylon). Shrubs are sparse and include Acacia paradoxa, Dillwynia sericea, Acacia impexa, Acacia genistifolia, Lissianthe strigosa subsp. strigosa, Bursaria spinosa subsp. spinosa, Daviesia latifolia, Hibbertia obtusifolia and Melichrus urceolatus. The ground cover is generally mid-dense. Grass species include Microlaena stipoides var. stipoides, Poa sieberiana, Themeda australis, Austrotrichachium eriantha, Austrotrichachium densiflora and Elymus scaber var. scaber. Forb species include Dianella revoluta var. revoluta, Hydrocotyle laevigata, Solenogyne domini, Acena spp., Gonocarpus tetragynus, Geranium solanderi var. solanderi, Xerochrysum spp. and Arthropodium minus. The rush Luzula densiflora and sedges Schoenus apogon, Carex brevicaulis and Carex inversa may occur. The mat-rush Lamondra filiformis is ususally common. Occurs on shallow clay or loamy clay soils derived from fine grained sedimentary, metamorphic or igneous substrates on hillcrests. This woodland provides habitat for a number of threatened woodland bird species and its restoration would assist with landscape function for some key species of fauna.

Level of Classification: Alliance / Sub-formation. Classification Confidence Level: Medium.

Formation Group: Eucalyptus (Mostly Grassy) Box Woodlands of the Tablelands and Western Slopes.

State Veg Map (Keith 2004): Western Slopes Grassy Woodlands.


NVIS Major Veg Sub-Groups: Eucalyptus woodlands with a grassy understorey.

Forest Type (RN 17): 175- White Box (P); 99 - Red Box (P).

occur in many locations. Few remnants contain a healthy shrub or ground cover plant species composition. Fire is now limited by fragmentation due to clearing and lack of ground cover due to grazing. The prevalence of an annual causal factors and their secondary impacts removed and dynamic processes reinstated. Current extent and pre-European extent not mapped or modelled. Doesn't exist and not required. 80000 ha ±30%. Estimated from extant vegetation maps: part range. Vulnerable. Arkose; Colluvial sediments; Granite; Shale; Sandstone. Lower Slopes (1-30%); Upper Slopes (>70%). Black earth; Brown clay. Temperate: no dry season (hot summer); Temperate: no dry season (warm summer). DTCCW South ADS-40 mapping 2010. Small areas mapped in some reserves and local government areas but not mapped over full range as of 2007. V/4a 5; 4; 1. Inadequate. MD Basin: Yes. Substrate Mass: Colluvium; Igneous rocks; Plutonic rocks; Metamorphic rocks; Sedimentary rocks. Great Soil Group: Black earth; Brown clay. Landform Patterns: Hills; Low hills. Landform Elements: Footslope; Gully; Hillslope. Land Use: Grazing. Impacts of European Settlement: Major alteration of species composition; Major reduction (>70%) in extent and/or range. Pre-European Extent: 80000 ha ±30%. Estimated from extant vegetation maps: part range. Pre-European Extent Comments: Estimate based on landscape position. Current Extent: 30000 ha ±30% or 38% ± 50% of pre-European extent remaining. Current Extent Comments: (Estimated from mapped extant vegetation: part range). Mostly cleared. Some areas are recorded in reserves but these represent a minor part of the original extent. Conservation Reserves: Benambra NP 1029 (M); Livingstone NP 230 (E1); Livingstone SCA 28 (M); Nest Hill NR 60 (M); Tabletop NR 7 (M); Woomargama NP 30 (E3); Elterslie NR 300 (E3); Tumbleong SCA 280 (E1). Reserves Total Area: 1944 ha. No. Representatives in Reserves: 8. Protected Area Explanation: Benambra NP, Livingstone NP, Livingstone SCA, Nest Hill BR and Tabletop NR areas from vegetation group 27 in Gellie & Fanning (2004). Tarcutta Hills BHR from ABH (2001) including 30 ha of regenerating woodland. Woomargama NP area from estimate in Benson (1999-2009) retyping an area of veg group 22 in Gellie & Fanning (2004) on South Creek Trail on the edge of the park. Tarcutta Hills ABH reserve area from ABH (2001) including 50 ha of regenerating woodland. Ellerslie NR and Tumbleong SCA from DECCW South ADS-40 mapping 2010. Secure Property Agreements: Tarcutta Hills BHR 80 (E2). Secure PAs Total Area: 80 ha. No. Representatives in Secure Property Agreements: 1. Protected Current Extent: 6.74% 2024 ha ± 30%. No. Representatives in Protected Areas: 9. Protected Pre-European Extent: 2.53% which is inadequately protected across distribution. Common in 1750: Code 4a: 1-5% of pre-European extent in protected areas (>10,000 ha). Key Sites for Protection: Few sites remain in good condition other than those in reserves. Surveys are required to document sites for conservation action. Wyangala State Recreation Area contains good examples of this community. Hills north of Albury contain some areas worthy of restoration. Degree of Fragmentation: Human induced highly fragmented small stands with <30% extent remaining and high edge to area ratio. Recoverability: Poor health as structure and/or composition significantly altered. But sufficient biota remain for natural regeneration if causal factors and their secondary impacts removed and dynamic processes reinstated. Varies due to grazing history and grazing intensity. High levels of grazing reduces shrub cover and shrub diversity and favours the development of a grassy ground cover. Areas in non-grazing reserves tend to have adenser shrub cover and large variety of species. Fire Regime: Prior to European settlement there was probably Aboriginal burning of grassy woodlands - the frequency of which is debatable. Fire is now limited by fragmentation due to clearing and lack of ground cover due to grazing. The prevalence of an annual ground flora in many locations may also have changed the intensity of fire compare to pre-European times. Adjoining Communities: Grades into Red Stringybark (e.g. ID348), Mugga Ironbark (e.g. ID342) or inland Scribbly Gum communities upslope on shallower soils and into grassy White Box woodland (ID266) on clay soils on undulating hills. Grades into ID268 (Swampy Red Box Woodland) in depressions and along creeks in the south. Similar to the restricted community (ID269) that occurs on the hills around Albury but ID268 lacks some of the shrub species that are in ID269. Threatening Processes: A vulnerable community due to past clearing resulting in a highly fragmented landscape. Exotic pasture weeds occur in many locations. Few remnants contain a healthy shrub or ground cover plant species composition. Threatening Process List: Clearing for agriculture; Soil erosion, water; sheet erosion; Unsustainable grazing and trampling by stock; Weed (exotic) invasion. Threat Category: Vulnerable. Threat/Protected Area Code: V/4a Threat Criteria: 5; 4; 1. Planning Controls: Planning and Management: Protect more stands under property agreements or in reserves. Limit grazing to allow for regeneration of the community where this is possible. Listed Under Legislation: None. Recovery Plan: Doesn't exist and not required. Reference List: (308; 340; 344; 316; 353). Benson, J.S. (1999-2009) Unpublished field note books recording species at various locations in western NSW. (Royal Botanic Gardens and Domain Trust: Sydney); Gellie, N. & Fanning, M. (2004) Final report of vegetation ecosystems in new and existing conservation reserves, south west slopes region 2002-2004, version 3. Report to NSW Department of Environment and Conservation: Queanbeyan; Australian Bush Heritage Fund (2001) Tarcutta Hills Reserve Management Plan (Australian Bush Heritage Fund: Melbourne); Friday, S. (2004) The native vegetation and threatened species of the City of Wagga Wagga. Unpublished report. (NSW National Parks and Wildlife Service, Southern Region: Queanbeyan); Gellie, N.J.H. (2005) Native vegetation of the Southern Forests: South-east Highlands, Australian Alps, South-west Slopes and SE Corner bioregions, Cunninghamia 9(2): 219-254. Friday, 27 January 2012 Page 3 of 3
NSW Vegetation Classification - Vegetation ID

Vegetation Community ID 276

Common Name: Yellow Box grassy tall woodland on alluvium or parna loams and clays on flats in NSW South-western Slopes Bioregion

Scientific Name: Eucalyptus melliodora / Acacia decora - Maireana microphylla / Bothriochloa macra - Austrostipa bigeniculata - Austrodanthonia setacea - Vittadinia cuneata


Photo 1: ID276a_benson.jpg Yellow Box woodland on red loam and alluvium north of Junee, 14/03/2007, J.S. Benson.

Photo 2: ID276b_DX27763.jpg Yellow Box woodland on alluvial flats south of Jugiong grading into Eucalyptus blakelyi (ID277) on hills in the background, [AGD66 34° 54.298'S 148° 19.100'E], 29/04/2006, Jaime Plaza.

Photo 3: ID276c_PC261-21.jpg Eucalyptus melliodora woodland on flats near Nubingerie, West of Wellington, [AGD66 32° 31’22.7”S 148°40’15.8”E], 08/05/2005, Jaime Plaza.
**Characteristic Vegetation:** (Combination of Quantitative Data and Qualitative Estimate)

- **Trees:** Eucalyptus melliodora; Eucalyptus blakelyi; Eucalyptus bridgesiana.
- **Shrubs/Vines/Epiphytes:** Acacia decora; Maireana microphylla; Acacia deanei subsp. deanei; Acacia impexa; Acacia montana; Acacia pygcantha; Acacia paradoxa.
- **Ground Cover:** Bothriochloa macra; Austrostipa bigeniculata; Vittadinia cuneata; Elymus scaber var. scaber; Chloris truncata; Convulvulus graminetinus; Sida corrugata; Goodenia pinnatifida; Austrodanthonia auriculata; Austrodanthonia setacea; Austrostipa scabra subsp. falcata; Calotis cuneata var. cuneata; Carex inversa; Oxalis exilis; Rumex brownii.
- **Weed Species:** Avena barbata; Paspalum dilatatum; Lollum perenne; Lollum rigidum; Hordeum leporinum; Verbena bonariensis; Marrubium vulgare; Holcus lanatus; Echium plantagineum; Sonchus oleraceus; Bromus hordeaceus.

**Soil Complex:**

- **Soil Type:** Alluvial plain; Low hills.
- **Soil Texture:** Alluvial loams and clays; Eolian sand or loam.
- **Soil Lithology:** Alluvial soil; Brown clay; Brown earth; Calcareous red earth.
- **Substrate Mass:** Alluvial; Eolian sediment; Parna.
- **Soil Lithology:** Alluvial loams and clays; Eolian sand or loam.
- **Substrate Mass:** Alluvial soil; Brown clay; Brown earth; Calcareous red earth.
- **Soil Texture:** Clay loam; Light clay; Silty clay loam; Silty loam.
- **Landform Patterns:** Alluvial plain; Low hills.
- **Landform Elements:** Backplain; Plain; Terrace plain; Valley flat.
- **Land Use:** Grazing; Cropping and Horticulture; Grazing.
- **Impacts of European Settlement:** Major alteration of species composition; Major reduction (>70%) in extent and/or range; Older age class over most of distribution.
- **Pre-European Extent:** 40000 ha ±50%. Expert estimate not based on any mapped vegetation.
- **Pre-European Extent Comments:** Estimate based on landscape position and distribution in relation to clearing patterns. Yellow Box woodland on flats would have been more restricted than similar box woodlands on slopes.
- **Current Extent:** 4000 ha ±50% or 10% ± 70% of pre-European extent remaining.
- **Current Extent Comments:** (Expert estimate). Estimate. Very little remains in good condition. These rich soil flats have been nearly totally cleared.
Human induced highly fragmented small stands with <30% extent remaining and high edge to area ratio. Acid soils due to fertilizer use; Age class of woody vegetation; Clearing for agriculture; Firewood collection; Irrigated cropping (incl. horticulture); Nutrient changes through fertilizers or runoff; Salinity; Soil erosion, water: gully, tunnel, landslips; Soil erosion, water: sheet erosion; Unsustainable grazing and trampling by stock; Weed (exotic) invasion.

Floristic composition varies over range from north to south. Shrub density probably depends on long term grazing pressure.

Grades into the more widespread Yellow Box - Blakely's Red Gum (ID277) and various White Box woodlands on adjoining slopes. Grades into the riparian Yellow Box - River Red Gum community (ID74) on the lower slopes and plains to the west. Similar tree composition and structure to ID312 that occurs on the very upper slopes and tablelands. Similar to ID437 in the BBS Bioregion north of Wellington.

None.

0 ha.

73 ha.

1.82% 73 ha ± 30%.

0.18% which is inadequately protected across distribution.

Common in 1750: Code 5a: <1% of pre-European extent in protected areas (>10,000 ha).

Key Sites for Protection: Requires survey of remnants on alluvial and valley flats. Examples include Kyeamba Creek alluvial floodplain east of Wagga and on alluvium to red loamy parma soils north of Wagga, also occurs near Junee.

Degree of Fragmentation: Human induced highly fragmented small stands with <30% extent remaining and high edge to area ratio.

Recoverability: Very poor health as structure and/or composition severely altered. Insufficient biota remain for natural regeneration except some ruderal species.

Variation & Disturbance: Floristic composition varies over range from north to south. Shrub density probably depends on long term grazing pressure.

Fire Regime: Rarely burns due to fragmentation and grazing. May have been patch burnt by Aborigines before European settlement. Fire may be important as a means to reduce Nitrogen levels that favour the dominance of exotic annual species.

Adjoining Communities: Grades into the more widespread Yellow Box - Blakely's Red Gum (ID277) and various White Box woodlands on adjoining slopes. Grades into the riparian Yellow Box - River Red Gum community (ID74) on the lower slopes and plains to the west. Similar tree composition and structure to ID312 that occurs on the very upper slopes and tablelands. Similar to ID437 in the BBS Bioregion north of Wellington.

Threatening Processes: Past clearing has resulted in a highly fragmented landscape. High nitrogen levels occur in most places due to high fertilizer use. This has coincided with the introduction of exotic pasture weeds in most remnants and a change from perennial native grasses and forbs to annual introduced species. Few remnants contain a natural shrub or ground cover plant species composition.

Threatening Process List: Acid soils due to fertilizer use; Age class of woody vegetation; Clearing for agriculture; Firewood collection; Irrigated cropping (incl. horticulture); Nutrient changes through fertilizers or runoff; Salinity; Soil erosion, water: gully, tunnel, landslips; Soil erosion, water: sheet erosion; Unsustainable grazing and trampling by stock; Weed (exotic) invasion.

Threat Category: Critically Endangered. Threat/Protected Area Code: CE/5a Threat Criteria: .

Planning Controls:

Planning and Management: Protect remnants from further clearing and fence off some to allow regeneration due to the senescence of old trees. Management advice is provided in the Grassy White Box Woodlands Information Kit (Lambert & Elix 2002).

Listed Under Legislation: Listed TSC Act, E: White Box Yellow Box Blakely's Red Gum Woodland (Part); Listed EPBC Act, CE: White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland (Part).

Recovery Plan: Doesn't exist, but required.

Common Name: Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South-western Slopes Bioregion

Scientific Name: Eucalyptus blakelyi - Eucalyptus melliodora - Eucalyptus bridgesiana / Acacia dealbata / Themeda australis - Poa sieberiana - Bothriochloa macra - Aristida ramosa


Photo 1: ID277a_PC171-11.jpg Blakely’s Red Gum (Eucalyptus melliodora) - Blakely’s Red Gum (E.blakelyi) tall woodland, on flats near Forbes [AGD66 33°24'37"S 148°11'23"E], 10/10/02, Jaime Plaza.

Photo 2: ID277b_SWS0507093.jpg Blakely’s Red Gum (Eucalyptus blakelyi) - Yellow Box (Eucalyptus melliodora) woodland on light brown soils along High Rock Road east of Rye Park, [AGD66 34°32.025'S 148°55.483'E], 29/5/2007, Jaime Plaza.

Photo 3: ID277c_PC262-6.jpg Eucalyptus melliodora - E. blakelyi grassy woodland on the Yeoval-Cumnock Road, [AGD66 32°53'26.6"S 148°44'12.1"E], 8/05/2005, Jaime Plaza.
Characteristic Vegetation: (Combination of Quantitative Data and Qualitative Estimate)

**Trees:**
Eucalyptus blakelyi; Eucalyptus melliodora; Eucalyptus bridgesiana; Eucalyptus albans; Eucalyptus microcarpa; Eucalyptus conica; Callitris glaucophylla; Eucalyptus goniocalyx; Eucalyptus polyanthemos subsp. polyanthemos.

**Shrubs/Vines/Epiphytes:**
Acacia dealbata; Hibernia obtusifolia.

**Ground Cover:**
Thymea australis; Poa sieberiana; Bothriochloa macra; Aristida ramosa; Panicum effusum; Austrostipa verticillata; Austrostipa scabra subsp. scabra; Austrostipa bigeniculata; Austrodanthonia auriculata; Austrodanthonia setacea; Cymbopogon refractus; Elymus scaber var. scaber; Juncus usitatus; Lomandra filiformis subsp. coriacea; Alternanthera nana; Geranium solanderi var. solanderi; Chrysophalum apiculatum; Sida corrugata; Carex inversa; Wahlenbergia lutelola; Chlions trunctata; Chelianthanthus sieberi subsp. sieberi; Villadinia cuneata; Lomandra filiformis subsp. coriacea; Enteropogon acicularis; Convolvulus graminitinus; Bulbine bulbosa; Dianella revoluta var. revoluta; Calotis scabiosifolia var. scabiosifolia.

**Weed Species:**
Marrubium vulgare; Plantago lanceolata; Paspalum dilatatum; Bromus hordeaceus; Echium plantagineum; Anagallis arvensis.

**Weediness:**
Very high (>30%) with 10-30% cover.

**Threatened Plants:**
Ammobium craspedioide.

**Threatened Fauna:**
Borwn Treecreeper, Supherb Parrot, Swift Parrot, Grey-crowned Babbler, Bush Thicknee; Squirrel Glider.

**Mean Species Richness:**
Not assessed.

**Rainforest Structure (Webb):**
Not applicable.

**Structure (WH):**
Woodland.

**Height Class (WH):**
Tall.

**Vegetation Description:**
Tall woodland to about 20 m high dominated by Blakely's Red Gum (Eucalyptus blakelyi) and Yellow Box (Eucalyptus melliodora). Blakely's Red Gum or Yellow Box vary in their dominance and either can be absent in some places grading into areas with more Apple Box (Eucalyptus bridgesiana), Long-leaved Box (Eucalyptus goniocalyx) and rarely Eucalyptus microcarpa or Eucalyptus polyanthemos. Shrubs are sparse or absent and may include Acacia dealbata. The ground cover may be dense to sparse depending on rainfall and is dominated by grass species including Poa sieberiana, Bothriochloa macra, Aristida ramosa, Themeda australis, Austrodanthonia spp and Austrostipa spp. Forbs include Villadinia cuneata, Chrysophalum apiculatum and Sida corrugata. A very widespread community on fertile deep, loam or clay soils derived from a range of substrates including fine-grained sedimentary and metamorphic rocks but also volcanics and fine-grained granite. Occurs on flats, footslopes and hillslopes mainly in the upper slopes sub-region of the NSW South-western Slopes Bioregion mainly east of Wagga Wagga. Grades into White Box (Eucalyptus albans) grassy woodland (ID266) on hillslopes and into either ID76 (Western Grey Box woodland) or ID276 (Yellow Box woodland) on panna or alluvial flats. Mainly cleared and subjected to nutrification from fertilizers and associated weed invasion.

**Level of Classification:**
Classification Confidence Level: High.

**Formation Group:**
Eucalyptus (Mostly Grass) Box Woodlands of the Tablelands and Western Slopes.

**State Veg Map (Keith 2004):**
Western Slopes Grassly Woodlands.

**State Landscape (Mitchell 2002):**
Not Assessed.

**NVIS Major Veg Sub-Groups:**
Eucalyptus woodlands with a grassy understorey.

**Forest Type (RN 17):**
172 - Yellow Box-Blakely's Red Gum (P).

**Authority(s):**

**Interstate Equivalent(s):**
Victoria: part of eVC 175 Grassly Woodland or EVC 47 Valley Grassly Forest.

**Mapped/Modelled:**
Current extent partly mapped or modelled.

**Plot Sampling:**
Inadequate.

**Mapping Info:**
Mapped in some local government areas and reserves and in some regional assessments (for example vegetation group 160 in Gellie 2005). Areas mapped in ADS-40 mapping on SW slopes by DECCW (eg DECCW 2010b).

**Climate Zone:**
Temperate: no dry season (warm summer).

**IBRA Bioregion (v6):**
NSW South-western Slopes (>70%).

**IBRA Sub-Region:**
Upper Slopes (>70%); Bondo (1-30%); Murrumbateman (1-30%).

**Botanical Division:**
South Western Slopes (SWS) (30-70%); Central Western Slopes (CWS) (30-70%).

**Local Govt. Areas:**
Albury (1-30%); Boorowa (1-30%); Cabonne (1-30%); Coolamon (1-30%); Cootamundra (1-30%); Cowra (1-30%); Greater Hume (1-30%); Gundagai (1-30%); Harden (1-30%); Junee (1-30%); Mid-Western Regional (1-30%); Parkes (1-30%); Tambarumba (1-30%); Turnut (1-30%); Upper Lachlan (1-30%); Wagga Wagga (1-30%); Weddin (1-30%); Wellington (1-30%); Young (1-30%); Yass Valley (1-30%).

**CMAs:**
Central West (1-30%); Lachlan (1-30%); Murray (1-30%); Murrumbidgee (1-30%).

**MD Basin:**
Yes.

**Substrate Mass:**
Igneous rocks; Plutonic rocks; Metamorphic rocks; Sedimentary rocks.

**Lithology:**
Colluvial sediments; Granite; Limestone; Microgranite; Mudstone; Phyllite; Slate; Limestone.

**Great Soil Group:**
Brown clay; Brown earth; Grey-brown podzolic soil; Solodized solonetz.

**Soil Texture:**
Clay loam; Light clay.

**Landform Patterns:**
Hills.

**Landform Elements:**
Footslope; Hillslope; Plain; Valley flat.

**Land Use:**
Cropping and Horticulture; Grazing.

**Impacts of European Settlement:**
Dieback due to disease or senescence; Major alteration of species composition; Major reduction (>70%) in extent and/or range.

**Pre-European Extent:**
500000 ha ±30%. Estimated from extant vegetation maps: part range.

**Pre-European Extent Comments:**
Estimate based on landscape position and distribution in relation to clearing patterns. This community would have been one of the most widespread communities on the upper south western slopes and adjacent tablelands. Gellie (2005) modelled about 250000 has over part of its range as his Vegetation Group 160.
Current Extent: 30000 ha ±30% or 6% ± 50% of pre-European extent remaining.

Current Extent Comments: (Expert estimate). Most mapping and surveys point to most of this community having been extensively cleared, particularly the ground cover which is now dominated by exotic species. Gellie (2005) estimates only 3% remains intact. Large areas of isolated paddock trees remain with exotic ground pasture cover but these areas are considered as cleared in this estimate. Modeling of this community in Yass Shire (NECS 1999) estimates that only 7% remains there. modelled mapping of Vegetation Group 160 in Gellie (2005) suggests that only 3% remains intact overall.

Conservation Reserves: Boginderra Hills NR 10 (M); Ullandra NR 758 (E1); Woomargama NP 220 (E1); Jingellic NR 24 (M); Conimbila NP 90 (E4); Jindalee NP 10 (E1).

Reserves Total Area: 1112 ha. No. Representatives in Reserves: 6


Secure Property Agreements: WW9901 PA 17 (E2); WW9902 PA 313 (E2).

Secure PAs Total Area: 330 ha. No. Representatives in Secure Property Agreements: 2

Protected Pre-European Extent: 0.28% which is inadequately protected across distribution.

Common in 1750: Code 5a: <1% of pre-European extent in protected areas (>10,000 ha).

Key Sites for Protection: The best remnants occur along roadsides, in cemeteries and in Travelling Stock Reserves with examples such as Godfrey's Creek, Breakfast Creek and Doonside TSRs in the Boorowa Shire. Quamby - Thuddungra TSR near Forbes and other areas.

Degree of Fragmentation: Human induced highly fragmented small stands with <30% extent remaining and high edge to area ratio.

Recoverability: Very poor health as structure and/or composition severely altered. Insufficient biota remain for natural regeneration except some ruderal species.

Variation & Disturbance: Ground cover alters composition across its wide distribution with altitude and latitude, but there are many species that are common to most sites across its range.

Fire Regime: Fire may be important as a means to reduce Nitrogen levels that favour the dominance of exotic annual species.

Adjoining Communities: Grades into ID341 on hilly landscapes where Red Box co-occurs with Blakely's Red Gum. Grades into Yellow Box (Eucalyptus melliodora) grassy woodland (ID276) on river flats and they share many species. Grades into White Box woodland (ID266) on better drained duplex soils upslope and into various Red Box, Long-leaved Box or Red Stringybark communities on steeper slopes.

Threatening Processes: Past clearing has resulted in a highly fragmented landscape. High nitrogen levels occur in most places due to high fertilizer use. This has coincided with the introduction of exotic pasture weeds in most remnants and a change from perennial native grasses and forbs to annual introduced species. Echium (Patersons Curse) is amajer weed species. Few remnants contain a natural shrub or ground cover plant species composition.

Threatening Process List: Acid soils due to fertilizer use; Age class of woody vegetation; Clearing for agriculture; Clearing for pine plantations; Disease and/or dieback (abnormal); Dryland cropping; Firewood collection; Nutrient changes through fertilizers or runoff; Salinity; Soil erosion, water; gully, tunnel, landslips; Soil erosion, water; sheet erosion; Unsustainable grazing and trampling by stock; Weed (exotic) invasion.

Threat Category: Critically Endangered.

Planning Controls: Management advice is provided in the Grassy White Box Woodlands Information Kit (Lambert & Elix 2002). Need to encourage nature ground cover by eliminating fertilizer use and fencing off remnants to allow trees to regrow. Weeding programs are required for some areas.

Listed Under Legislation: Listed TSC Act, E: White Box Yellow Box Blakely's Red Gum Woodland (Part); Listed EPBC Act, CE: White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland (Part).

Recovery Plan: Doesn't exist, but required.

Common Name: Riparian Blakely's Red Gum - box - shrub - sedge - grass tall open forest of the central NSW South-western Slopes Bioregion

Scientific Name: *Eucalyptus blakelyi* - *Eucalyptus bridgesiana* / *Acacia dealbata* - *Acacia deanei subsp. paucijuga* - *Styphelia triflora* / *Carex appressa* - *Hydrocotyle laxiflora* - *Rumex brownii* - *Poa labillardierei var. labillardierei*

Vegetation Community ID: 278

Original Entry: J.S. Benson 20/01/2006

**Photo 1:** ID278a_PC248-16.jpg  Eucalyptus blakelyi valley sedge-grass woodland with Acacia paradoxa shrubs in Goobang NP, Spring Creek Trail, [AGD66 32° 57'23"S 148° 25'16.9"E], 04/05/2005, Jaime Plaza.

**Photo 2:** ID278b_PC174-16.jpg  Eucalyptus blakelyi - *E.goniocalyx* riparian woodland with *Gahnia aspera* ground cover, Conimbla National Park, [AGD66 33° 48'40"S 148° 26'50"E], 11/10/02, Jaime Plaza.

Characteristics:

- **Trees:** *Eucalyptus blakelyi*; *Eucalyptus melliodora*; *Eucalyptus bridgesiana*; *Eucalyptus goniocalyx*; *Eucalyptus microcarpa*.
- **Shrubs/Vines/Epiphytes:** *Acacia dealbata*; *Acacia paradoxa*; *Acacia deanei subsp. paucijuga*; *Styphelia triflora*; *Acrotriche rigida*; *Acacia acinacea*; *Dodonaea viscosa subsp. Cuneata*.
- **Ground Cover:** *Carex appressa*; *Hydrocotyle laxiflora*; *Rumex brownii*; *Juncus flavidus*; *Poa labillardierei var. labillardierei*; *Microlaena stipoides var. stipoides*; *Carex inversa*; *Carex incomitata*; *Juncus subglaucus*; *Poranthera microphylla*; *Centipeda cunninghamii*; *Echinopogon ovatus*; *Cynoglossum australis*; *Scutellaria humilis*; *Dichondra repens*; *Dianella revoluta var. revoluta*; *Geranium retrorsum*; *Acaena ovina*; *Persicaria lapathifolia*; *Ranunculus sessiliflorus var. sessiliflorus*; *Ranunculus pumilio var. pumilio*; *Oxalis perennans*; *Xerophyllum vicosum*; *Gahnia aspera*.
- **Weed Species:** *Centaurium erythraea*; *Hypocharis glabra*; *Hypocharis radicata*; *Rubus discolor*; *Phalaris aquatica*; *Trifolium repens*; *Trifolium campestre*; *Vulpia bromoides*; *Anagallis arvensis*; *Cirsium vulgare*; *Briza minor*.

- **Weediness:** Medium (5-15%) with 10-30% cover.

- **Threatened Plants:** *Pomaderris castalina* (restricted near Parkes).

- **Threatened Fauna:** Not assessed.

- **Mean Species Richness:** 45 +/- 10 (community 6 in Porteners 1997a in 20 x 20 m plots).

- **Rainforest Structure (Webb):** Not applicable.

- **Structure (WH):** Open Forest; Woodland.

- **Height Class (WH):** Tall.
Vegetation Description: Tall open forest or woodland dominated by Blakely's Red Gum (Eucalyptus blakelyi) often with Yellow Box (Eucalyptus melliodora), Apple Box (Eucalyptus bridgesiana) or Long-leaved Box (Eucalyptus goniocalyx). Shrubs are sparse and usually contain a number of wattles (Acacia spp) with tea tree (Leptospermum spp) or hoph bush (Dodonaea viscosa var. cuneata). The ground cover is often dense containing sedges such as Carex appressa and other Carex species. Rushes Juncus spp.) may be common in wet sites. Grasses include Poa labillardieri var. labillardieri and Microlaena stipoides var. stipoides. Forbs include Rumex brownii, Ranunculus spp., Hydrocotyle laxiflora, Dichondra repens, Dianella revoluta var. revoluta, Geranium retroversum, Acaena ovina, Persicaria lapathifolia and Ranunculus sessiliflorus var. sessiliflorus. Occurs on deep alluvial silty clay-loam soils in gullies and on creek flats in hill landscapes or along creeks mainly in the Upper Slopes sub-region of the NSW South-western Slopes Bioregion. Mostly cleared with some areas remaining along creeks in forested hills. Grades into the widespread ID277 Blakely's Red Gum - Yellow Box woodland on hillslopes with deep soil.

Level of Classification: Association. Classification Confidence Level: Low.

Formation Group: Eucalyptus (Mostly Grassy) Box Woodlands of the Tablelands and Western Slopes.

State Veg Map (Keith 2004): Western Slopes Grassy Woodlands.


NVIS Major Veg Sub-Groups: Eucalyptus forests with a grassy understorey.

Forest Type (RN 17): 178 - Western Slopes Red Gums (P).


Intermediate Equivalents:

Mapped/Modelled: Current extent partly mapped or modelled.

Plot Sampling: Inadequate.

Mapping Info: Mapped in some reserves but not over whole range. Distributed over a large area but with limited remaining areas.

Climate Zone: Temperate: no dry season (warm summer).

IBRA Bioregion (v6): NSW South-western Slopes (30-70%); South Eastern Highlands (30-70%).

IBRA Sub-Region: Crookwell (1-30%); Hill End (1-30%); Murrumbateman (1-30%); Orange (1-30%); Oberon (1-30%); Upper Slopes (30-70%).

Botanical Division: South Western Slopes (SWS) (1-30%); Central Western Slopes (CWS) (30-70%); Central Tablelands (CT) (1-30%).

Local Govt. Areas: Bathurst Regional (1-30%); Blayney (1-30%); Boorowa (1-30%); Cootamundra (1-30%); Cowra (1-30%); Forbes (1-30%); Harden (1-30%); Orange (1-30%); Parkes (1-30%); Weddin (1-30%).

CMAs: Central West (1-30%); Lachlan (1-30%); Murrumbidgee (1-30%).

MD Basin: Yes.

Substrate Mass: Alluvium; Colluvium.

Lithology: Alluvial loams and clays; Colluvial sediments.

Great Soil Group: Grey earth; Grey-brown podzolic soil.

Soil Texture: Clay loam; Silty clay loam.

Landform Patterns: Hills; Plateau; Terrace (alluvial).

Landform Elements: Bank (streambank); Gully; Valley flat.

Land Use: Grazing.

Impacts of European Settlement: Major reduction (>70%) in extent and/or range.

Pre-European Extent: 30000 ha ±50%. Expert estimate not based on any mapped vegetation.

Pre-European Extent Comments: Estimate based on landscape position and distribution in relation to clearing patterns over NSW SW Slopes Bioregion.

Current Extent: 6000 ha ±50% or 20% ± 70% of pre-European extent remaining.

Current Extent Comments: (Expert estimate). Model of Vegetation Group 162 (Gellie (2005) 78% had been cleared for one region.

Conservation Reserves: Conimbla NP 353 (M); Goobang NP 3000 (E1).

Reserves Total Area: 3353 ha.

No. Representatives in Reserves: 2


Secure Property Agreements: VCA081 VCA 21 (E3).

Secure PAS Total Area: 21 ha.

No. Representatives in Secure Property Agreements: 1

Protected Current Extent: 56.23% 3374 ha ± 50%.

No. Representatives in Protected Areas: 3

Protected Pre-European Extent: 11.24% which is inadequately protected across distribution.

Common in 1780: Code 3a: 5-15% of pre-European extent in protected areas (>10,000 ha).

Key Sites for Protection: Requires specific survey. Few sites in good condition remain as most areas are cleared or invaded with weeds.

Degree of Fragmentation: Human induced highly fragmented small stands with <30% extent remaining and high edge to area ratio.

Recoverability: Poor health as structure and/or composition significantly altered. But sufficient biota remain for natural regeneration if causal factors and their secondary impacts removed and dynamic processes reinstated.

Variation & Disturbance: There is large variation in species composition over the range of this community with consistently recurring species in all layers.

Fire Regime: Some valleys may have been patch burnt by Aboriginal people. Current fire regimes vary across its range - some areas are burnt regularly (less than 10 years) others infrequently.

Adjoining Communities: Grades into the more widespread grassy Blakely's Red Gum - Yellow Box woodland (ID277) on hills and plateaux. Grades into ID797 where River Red Gum in larger streams or western areas. Grades into a vareity of forests on adjoining slopes in hilly country being dominated by box or stringybark trees. Some similarities with ID298 in the southern part of the NSW South-western Slopes and ID283 where Apple Box dominates. Grades upslope into ironbark woodlands in northern range.

Threatening Processes: Few areas remain in good condition due to its position in valleys. Past clearing has resulted in highly fragmented remnants. High nitrogen levels occur in most places due to high fertilizer use. This has coincided with the introdution of exotic pasture weeds in most remants and a change from perennial native grasses and forbs to annual introduced species. Few remants contain a
natural shrub or ground cover plant species composition.

**Threatening Process List:** Acid soils due to fertilizer use; Clearing for agriculture; Clearing for pine plantations; Disease and/or dieback (abnormal); Nutrient changes through fertilizers or runoff; Unsustainable grazing and trampling by stock; Weed (exotic) invasion.

**Threat Category:** Endangered.  
**Threat/Protected Area Code:** E/3a  
**Threat Criteria:** 1; 4.

**Planning Controls:**

**Planning and Management:** Management advice is provided in the Grassy White Box Woodlands Information Kit (Lambert & Elix 2002).

**Listed Under Legislation:** Listed TSC Act, E: White Box Yellow Box Blakely's Red Gum Woodland (Part); Listed EPBC Act, CE: White Box-Yellow Box-Blakely's Red Gum Woodland (Part).

**Reference List:**

**NSW Vegetation Classification - Vegetation ID**

**Vegetation Community ID 280**

**Common Name:** Red Stringybark - Blakely's Red Gum -+ Long-leaved Box shrub/grass hill woodland of the NSW South-western Slopes Bioregion

**Scientific Name:** *Eucalyptus macrorhyncha - Eucalyptus blakelyi - Eucalyptus goniocalyx / Lissanthe strigosa subsp. strigosa - Cassinia aculeata - Bursaria spinosa - Acacia baileyana / Austrodanthonia setacea - Austrostipa densiflora - Themeda australis - Chrysocephalum semipapposum*

**Veg. Comm. ID.:** 280  **Original Entry:** J.S. Benson 23/01/2006

**Photo 1:** ID280a_PC184-19.jpg  Eucalyptus goniocalyx - E. blakelyi shrub - grass woodland on hills on the Temora - Cootamundra Road, [AGD66 34°33'32"S 147°58'11"E], 14/10/02, Jaime Plaza.

**Photo 2:** ID280b_PC184-14.jpg  The tall shrub *Acacia baileyana* in *Eucalyptus goniocalyx* - E. blakelyi woodland on the Stockinbingal - Cootamundra Road, [AGD66 34°33'32"S 147°58'11"E], 14/10/02, Jaime Plaza.

**Photo 3:** ID280c_DX27774.jpg  *Eucalyptus goniocalyx - E. blakelyi - E. melliodora - E. macrorhyncha* open forest on a ridge on Adjunbilly Road south of Jugiong, SW Slopes, [AGD66 35°03.746'S 148°20.115'E], 29/4/2006, Jaime Plaza.

**Common Name:** Red Stringybark - Blakely's Red Gum -+ Long-leaved Box shrub/grass hill woodland of the NSW South-western Slopes Bioregion

**Scientific Name:** *Eucalyptus macrorhyncha - Eucalyptus blakelyi - Eucalyptus goniocalyx / Lissanthe strigosa subsp. strigosa - Cassinia aculeata - Bursaria spinosa - Acacia baileyana / Austrodanthonia setacea - Austrostipa densiflora - Themeda australis - Chrysocephalum semipapposum*
Characteristic Vegetation: (Combination of Quantitative Data and Qualitative Estimate)

**Trees:** Eucalyptus macrorhyncha; Eucalyptus blakelyi; Eucalyptus goniocalyx; Eucalyptus melliodora; Eucalyptus polyanthemos subsp. polyanthemos; Eucalyptus dealbata; Callitris endlicheri; Brachychiton populneus subsp. populneus.

**Shrubs/Vines/Epiphytes:** Lissianthe strigosa subsp. strigosa; Bursaria spinosa; Acacia buxifolia subsp. buxifolia; Pultenaea foliolosa; Acacia baileyana; Acacia verniciflua; Cassinia aculeata; Hibbertia obtusiflora; Dodonaea viscosa subsp. spatulata; Leptospermum brevipes.

**Ground Cover:** Austrodanthonia setacea; Austrostipa densiflora; Themeda australis; Chrysocephalum semipapposum; Xerochrysum viscosum; Dianella revoluta var. revoluta; Hydrocotyle laxiflora; Stackhousia monogyna; Aristida ramosa; Gonocarpus tetragynus; Elymus scaber var. scaber; Hardenbergia violacea; Crassula sieberiana subsp. sieberiana; Triplodon discus pygmaeus; Stuartia muelleri; Cheilanthes sieberi subsp. sieberi; Lomandra bracteata; Styphandra glauca.

**Weed Species:** Poa leporinum. Hypochaeris radicata; Trifolium arvense; Lollum perenne; Arctotheca calendula; Briza minor; Hordeum leporinum.

**Weediness:** Medium (5-15%) with 10-30% cover.

**Threatened Plants:** Acacia baileyana occurs naturally in this community in its original range, although it is a weed elsewhere in Australia.

**Threatened Fauna:** Not assessed.

**Mean Species Richness:** 20 +/- 1 (Bos & Lockwood 1996).

**Rainforest Structure (Webb):** Not applicable.

**Structure (WH):** Woodland.

**Height Class (WH):** Mid-High.

**Vegetation Description:** Mid-high woodland dominated by Red Stringybark (Eucalyptus macrorhyncha) and Blakely's Red Gum (Eucalyptus blakelyi) sometimes with Long-leaved Box (Eucalyptus goniocalyx) or Yellow Box (Eucalyptus melliodora). The shrub layer is sparse to mid-dense and includes Bursaria spinosa, Acacia buxifolia, Lissianthe strigosa, Hibbertia obtusiflora and Cassinia spp. Cootamundra Wattle (Acacia baileyana) may be a dominant shrub in the Cootamundra region. The ground cover is mid-dense and is dominated by grasses such as Themeda australis, Austrodanthonia setacea and Austrostipa densiflora and forbs such as Chrysocephalum semipapposum, Xerochrysum viscosum, Dianella revoluta var. revoluta, Hydrocotyle laxiflora and Stackhousia monogyna. Occurs on red-brown loamy clay soils derived from granite, granodiorite, sedimentary or metamorphic rocks on steep hillslopes and hillcrests in hilly country from Cootamundra and eastwards in the NSW South-western Slopes Bioregion. Mainly cleared with limited representation in protected areas. A threatened community.

**Level of Classification:** Association. **Classification Confidence Level:** Medium.

**Formation Group:** Eucalyptus (Mostly Grassy) Box Woodlands of the Tablelands and Western Slopes.

**State Veg Map (Keith 2004):** Western Slopes Grassy Woodlands.

**State Landscape (Mitchell 2002):** Not Assessed.

**NVIS Major Veg Sub-Groups:** Eucalyptus woodlands with a shrubby understorey.

**Forest Type (RN 17):** 177 - Red Gum-Stringybark (P).


**Intermediate Equivalent(s):** Possibly similar to Victoria's EVC 175_63: Shrubby Granitic Outwash Grassy Woodland.

**Mapped/Modelled:** Current extent and pre-European extent not mapped or modelled. **Plot Sampling:** Inadequate.

**Mapping Info:** Limited mapping for some reserves. Not mapped over range as of 2007. Bos & Lockwood (1996) sampled some areas.

**Climate Zone:** Temperate: no dry season (warm summer).

**IBRA Bioregion (v6):** NSW South-western Slopes (>70%).

**IBRA Sub-Region:** Upper Slopes (>70%).

**Botanical Division:** South Western Slopes (SWS) (>70%).

**Local Govt. Areas:** Cootamundra (30-70%); Junee (1-30%); Gundagai (1-30%); Tumbarumba (1-30%); Boorowa (1-30%); Harden (1-30%).

**CMAs:** Lachlan (30-70%); Murrumbidgee (30-70%); Central West (1-30%).

**MD Basin:** Yes.

**Substrate Mass:** Igneous rocks; Metamorphic rocks; Plutonic rocks; Volcanic rocks.

**Lithology:** Andesite; Granite; Granodiorite; Metamorphic rock (unidentified); Rhyolite.

**Great Soil Group:** Brown clay; Grey-brown podzolic soil.

**Soil Texture:** Light clay; Light medium clay.

**Landform Patterns:** Hills.

**Landform Elements:** Hillcrest; Hillslope.

**Land Use:** Grazing.

**Impacts of European Settlement:** Major reduction (>70%) in extent and/or range.

**Pre-European Extent:** 60000 ha ±50%. Expert estimate not based on any mapped vegetation.

**Pre-European Extent Comments:** Estimate based on landscape position and distribution in relation to clearing patterns.

**Current Extent:** 12000 ha ±50% or 20% ± 70% of pre-European extent remaining.

**Current Extent Comments:** (Expert estimate). Mostly cleared. 91% of a modelled 5761 ha in the Boorowa Shire has been cleared (Priday 2004).

**Conservation Reserves:** Ulandra NR 900 (E3).

**Reserves Total Area:** 900 ha. **No. Representatives in Reserves:** 1

**Protected Area Explanation:** Bos & Lockwood (1996) record this community in Ulandra NR and it appears to coincide with community 2 in the vegetation map of the reserve by Black (1992).
Human induced highly fragmented small stands with <30% extent remaining and high edge to area ratio. Acid soils due to fertilizer use; Clearing for agriculture; Clearing for pine plantations; Nutrient changes through fertilizers or runoff; Soil erosion, water: sheet erosion; Unsustainable grazing and trampling by stock; Weed (exotic) invasion.

The shrub understorey varies with aspect, and land use history and across its range. Heavily grazed areas tend to lack shrubs including legumes. More analysis may produce several communities perhaps linked to different substrates from granite in the upper Murray river to metamorphics near Cootamundra. Red Stringybark and Yellow Box dominate on ridges and steeper upper slopes and these areas could be split to form a new community.

Grades into White Box on mid slopes, into Blakely's Red Gum-Yellow Box or Red Box woodland on lower slopes and flats and into Red Stringybark - Black Cypress Pine communities on silicious ridges.

Protect from further clearing. Revegetation programs required on private land. Protect roadside remnants.

None.

Common in 1750: None.

Key Sites for Protection: Few large patches remain. Areas may occur in Jindalee State Forest.

Degree of Fragmentation: Human induced highly fragmented small stands with <30% extent remaining and high edge to area ratio.

Recoverability: Poor health as structure and/or composition significantly altered. But sufficient biota remain for natural regeneration if causal factors and their secondary impacts removed and dynamic processes reinstated.

Variation & Disturbance: The shrub understorey varies with aspect, and land use history and across its range. Heavily grazed areas tend to lack shrubs including legumes. More analysis may produce several communities perhaps linked to different substrates from granite in the upper Murray river to metamorphics near Cootamundra. Red Stringybark and Yellow Box dominate on ridges and steeper upper slopes and these areas could be split to form a new community.

Fire Regime: Rarely burns due to fragmented and small remnants. Fire may be important as a means to reduce Nitrogen levels that favour the dominace of exotic annual species.

Adjoining Communities: Grades into White Box on mid slopes, into Blakely's Red Gum-Yellow Box or Red Box woodland on lower slopes and flats and into Red Stringybark - Black Cypress Pine communities on silicious ridges.

Threatening Processes: Past clearing has resulted in a highly fragmented landscape. High nitrogen levels occur in most places due to high fertilizer use. This has coincided with the introduction of exotic pasture weeds in most remnants and a change from perennial native grasses and forbs to annual introduced species. Few remnants contain a natural shrub or ground cover plant species composition.

Threatening Process List: Acid soils due to fertilizer use; Clearing for agriculture; Clearing for pine plantations; Nutrient changes through fertilizers or runoff; Soil erosion, water: sheet erosion; Unsustainable grazing and trampling by stock; Weed (exotic) invasion.

Threat Category: Endangered. Threat/Protected Area Code: E/4a Threat Criteria: 1; 4.

Planning Controls:

Planning and Management: Protect from further clearing. Revegetation programs required on private land. Protect roadside remnants. May be included in EEC listings but this needs assessment.

Listed Under Legislation: None.

Recovery Plan: Doesn't exist, but required.

**NSW Vegetation Classification - Vegetation ID**

**Vegetation Community ID 282**

**Common Name:** Blakely's Red Gum - White Box - Yellow Box - Black Cypress Pine box grass/shrub woodland on clay loam soils on undulating hills of central NSW South-western Slopes Bioregion

**Scientific Name:**

- Eucalyptus blakelyi
- Eucalyptus albens
- Eucalyptus melliodora
- Callitris endlicheri / Lissanthe strigosa subsp. strigosa
- Acacia implexa - Acacia decora / Themeda australis - Aristida ramosa - Austrodanthonia racemosa - Chrysocephalum apiculatum

**Veg. Comm. ID.:** 282  
**Original Entry:** J.S. Benson 24/01/2006  
**Last Modified:** J.S. Benson 3/04/2007

**Photo 1:** ID282a_PC187-16.jpg  
Eucalyptus blakelyi grassy hill woodland, south of Wagga Wagga, [AGD66 35°14'22"S 147°19'55"E], 15/10/02, Jaime Plaza.

**Photo 2:** ID282b_benson.jpg  
Eucalyptus blakelyi regrowth with Lissanthe strigosa and Aristida ramosa on rolling hills in Dananbilla Nature Reserve near Young, [AGD66 34°10.179'S 148°33.714'E], 13/23/2007, J.S. Benson.

**Photo 3:** ID282c_PC179-16.jpg  
Eucalyptus blakelyi - E. melliodora - Callitris endlicheri woodland, Koorawatha Cemetery [AGD66 34°03'08"S 148°33'10"E], 12/10/02, Jaime Plaza.
Characteristic Vegetation: (Qualitative Estimate)

Trees: Eucalyptus blakelyi; Eucalyptus albens; Eucalyptus melliodora; Callitris endlicheri; Eucalyptus bridgesiana; Eucalyptus macrotricha.

Shrubs/Vines/Epiphytes: Lissantha strigosa subsp. strigosa; Acacia impexa; Acacia dealbata; Acacia paradoxa; Dodonaea viscosa subsp. angustifolia; Exocarpos cupressiformis.

Ground Cover: Themeda australis; Aristida ramosa; Poa sieberiana; Arthropodium minus; Bulbine bulbosa; Dichopogon limbiatus; Wurmbea dioica subsp. dioica; Chrysopogon plumosus; Asparagus conferta; Microlena stipoides var. stipoides; Elymus scaber var. scaber; Erigeron retrosum; Geranium solandri var. solandri; Plantago varia; Sorghum leiocladum; Wahlenbergia luteola; Wahlenbergia stricta subsp. stricta; Juncus remotiflorus; Carex appressa; Rhexum brownii; Dinitis punctata var. punctata; Acaena agripla; Chloris truncata; Austrodonanthia racemosa var. racemosa; Austrodonanthia caespitosa; Austrodonanthia auriculata; Austrostipa scabra subsp. falcata; Aristida behriana; Bothriochloa macra; Carex inversa; Hydrocotyle laxiflora; Dianella revoluta var. revoluta; Chelitanthes sieberi subsp. sieberi; Glycine tabacina; Glycine clandestina.

Weed Species: Aria elegantissima; Anagallis arvensis; Arctotheca calendula; Briza minor; Briza maxima; Hypochaeris glabra; Hypochaeris radicata; Petrothamnus nanteuillii; Trifolium arvense; Trifolium campestre; Trifolium glomeratum; Vulpia bromoides.

Weediness: High (15-30%) with 10-30% cover.

Threatened Plants: Ammobium craspedioides.

Threatened Fauna: Barking Owl.

Mean Species Richness: 40 +/- 10 spp. in good sites in 20 x 20 m plots but less in disturbed sites (J. Benson pers. obs).

Rainforest Structure (Web): Not applicable.

Structure (WH): Woodland.

Height Class (WH): Tall.

Vegetation Description: Tall grassy woodland co-dominated by Blakely's Red Gum (Eucalyptus blakelyi) and White Box (Eucalyptus albens) often with either Yellow Box (Eucalyptus melliodora) or Apple Box (Eucalyptus bridgesiana). Stands of Black Cypress Pine (Callitris endlicheri) may be present. The shrub layer is absent or sparse and may include wattles such as Acacia decora, Acacia dealbata or Acacia impexa. The heath Lissanthe strigosa mat be common. The ground cover is mid-dense to dense dominated by grasses and forbs or weeds in disturbed sites. The ground cover in remnants of good condition include grasses such as Themeda australis, Aristida ramosa, Austrodonanthia racemosa var. racemosa, Austrodonanthia caespitosa, Poa sieberiana, Chloris truncata, Aristida behriana, Bothriochloa macra and Elymus scaber. Allubs species include Arthropodium minus, Acaena ovina, Bulbine bulbosa, Dichopogon limbiatus, Asparagus conferta, Chrysopogon plumosus, Hypericum graminum, Microseris lancelota, Solenogyne dominii, Stockhousia monogyna and Wurmbea dioica. In low lying areas the rush Juncus remotiflorus and the sedge Carex appressa are often present. Weeds are abundant in most remnants due to ground disturbance, application of fertilizer and sowing of exotic pastures. Occurs on shallow clay loam soils, derived from igneous, volcanic (e.g. rhyolite) or fine grained sedimentary lithologies on hillslopes, hillcrests or footslopes on undulating hills in the NSW South-western Slopes Bioregion including in the Gundagai - Cootamundra - Cowra - Young - Boorowa region. Grades into Grassy White Box woodland (ID266) on better soils and Blakely's Red Gum - Yellow Box woodland (ID277) of Yellow Box woodland (ID276) on flats and lower hills. Mostly cleared and weed infested. A threatened community.

Level of Classification: Association. Classification Confidence Level: Low.

Formation Group: Eucalyptus (Mostly Grass) Box Woodlands of the Tablelands and Western Slopes.

State Veg Map (Keith 2004): Western Slopes Grassy Woodlands.


NVIS Major Veg Sub-Groups: Eucalyptus woodlands with a grassy understorey.

Forest Type (RN 17): 173 - Yellow Box-White Box (P).


Intermediate Equivalent(s): Possibly Victoria: EVC175. 62 Rainshadow Grassy Woodland or EVC 47 Valley Grassy Forest.

Mapped/Modelled: Current extent partly mapped or modelled. Plot Sampling: Inadequate.

Mapping Info: Various mapping over range and for some reserves but not mapped overall. Would be difficult to distinguish from other grassy box woodlands using API.

Climate Zone: Temperate: no dry season (warm summer).

IBRA Bioregion (v6): NSW South-western Slopes (30-70%); South Eastern Highlands (1-30%).

IBRA Sub-Region: Upper Slopes (30-70%); Bondo (1-30%); Murrumbateman (1-30%); Crookwell (1-30%); Orange (1-30%).

Botanical Division: Central Western Slopes (CWS) (30-70%); South Western Slopes (SWS) (30-70%).

Local Govt. Areas: Bathurst Regional (1-30%); Blayney (1-30%); Boorowa (1-30%); Cabonne (1-30%); Coolamon (1-30%); Cootamundra (1-30%); Forbes (1-30%); Gunnedah (1-30%); Junee (1-30%); Mid-Western Regional (1-30%); Orange (1-30%); Upper Lachlan (1-30%); Weddin (1-30%); Tumut (1-30%).

CMAs: Central West (1-30%); Lachlan (1-30%); Murray (1-30%); Murrumbidgee (1-30%).

MD Basin: Yes.

Substrate Mass: Igneous rocks; Metamorphic rocks; Sedimentary rocks; Plutonic rocks; Volcanic rocks.

Lithology: Granite; Granodiorite; Rhyolite; Sedimentary rock (unidentified); Metamorphic rock (unidentified); Tuff.

Great Soil Group: Brown podzolic soil; Yellow podzolic soil.

Soil Texture: Clay loam; Light clay.

Landform Patterns: Peaks; Low hills.

Landform Elements: Footslope; Hillcrest; Hillslope.

Land Use: Cropping and Horticulture; Grazing.

Impacts of European Settlement: Major alteration of species composition; Major reduction (>70%) in extent and/or range.

Pre-European Extent: 70000 ha ±50%. Expert estimate not based on any mapped vegetation.

Pre-European Extent Comments: Estimate due to lack of mapping - once widespread in the central and south portions of the NSW SWS.
Reference List:
**NSW Vegetation Classification - Vegetation ID**

**Vegetation Community ID 284**

**Common Name:** Red Stringybark - Blakely's Red Gum - tea tree herbaceous swampy valley open forest of the southern NSW South-western Slopes Bioregion

**Scientific Name:**
- Eucalyptus macrorhyncha
- Eucalyptus blakelyi
- Leptospermum continentale
- Acacia dealbata
- Microlaena stipoides var. stipoides
- Hydrocotyle laxiflora
- Acaena novae-zelandiae
- Juncus remotiflorus

**Veg. Comm. ID.:** 284  **Original Entry:** J.S. Benson 6/02/2006

**Photo 1:** ID284a_PC197-19.jpg Eucalyptus blakelyi herbaceous - tea tree valley flat swampy woodland in Murragulrie Flora Reserve, [AGD66 35°29'44"S 147°37'54"E], 17/10/02, Jaime Plaza.

**Photo 2:** ID284b_PC197-20.jpg Eucalyptus blakelyi - Leptospermum continentale valley flat swampy woodland in Murragulrie Flora Reserve, [AGD66 35°29'44"S 147°37'54"E], 17/10/02, Jaime Plaza.

**Vegetation Description:**

**Height Class (WH):** Tall

**Vegetation Description:** Tall woodland dominated by Red Stringybark (Eucalyptus macrorhyncha) and Blakely's Red Gum (Eucalyptus blakelyi) occasionally with Long-leaved Box (Eucalyptus goniocalyx) with a herbaceous ground cover. Shrubs are sparse with some dense patches and include Acacia dealbata and Leptospermum continentale. The ground cover is dense and includes the grass Microlaena stipoides var. stipoides, forbs such as Acaena novae-zelandiae, Hydrocotyle laxiflora, Dichopogon strictus, Hypericum gramineum, Ranunculus lappaceus, Senecio lautus subsp. dissectifolius and Viola betonicifolia and sedges such as Carex appressa along with the

**Shrubs/Vines/Epiphytes:**
- Leptospermum continentale
- Acacia dealbata
- Hibbertia vestita
- Acrotiriche serrulata

**Ground Cover:**
- Microlaena stipoides var. stipoides
- Acaena novae-zelandiae
- Hydrocotyle laxiflora
- Juncus remotiflorus
- Cheilanthes austrotoenuifolia

**Trees:** Eucalyptus macrorhyncha; Eucalyptus blakelyi; Eucalyptus goniocalyx.

**Weed Species:**
- Anagallis arvensis
- Hypochaeris radicata
- Rubus ulmifolius
- Hypericum perforatum

**Weediness:** Medium (5-15%) with 10-30% cover.

**Mean Species Richness:** Not assessed.

**Threatened Plants:** Not assessed.

**Threatened Fauna:** Not assessed.

**Structure (WH):** Woodland.

**Rainforest Structure (Webb):** Not applicable.

**Characteristic Vegetation:** (Combination of Quantitative Data and Qualitative Estimate)

- **Trees:** Eucalyptus macrorhyncha; Eucalyptus blakelyi; Eucalyptus goniocalyx.
- **Shrubs/Vines/Epiphytes:** Leptospermum continentale; Acacia dealbata; Hibbertia vestita; Acrotiriche serrulata.
- **Ground Cover:** Microlaena stipoides var. stipoides; Acaena novae-zelandiae; Hydrocotyle laxiflora; Juncus remotiflorus; Cheilanthes austrotoenuifolia; Dichopogon strictus; Hypericum gramineum; Ranunculus lappaceus; Senecio quadridentatus; Geranium solandri var. solandri; Dichondra repens; Senecio lautus subsp. dissectifolius; Senecio prenanthoides; Ajuga australis; Drosera peltata; Viola betonicifolia; Craspedia variabilis; Caladenia carneav var. carneav; Carex appressa; Hypoxis exilis; Cymbonotus lawsonianus.
- **Weed Species:** Anagallis arvensis; Hypochaeris radicata; Rubus ulmifolius; Hypericum perforatum.
rush Juncus remotiflorus. Occurs on yellow to brown podzolic moist soils derived from adamellite lithology in broad, gently sloping drainage lines in the Murraguldrie region in the southern part of the NSW South-western Slopes Bioregion. Restricted in extent. Sampled in one flora reserve as of 2007.

**Level of Classification:** Sub-association.  
**Classification Confidence Level:** Low.

**Formation Group:** Eucalyptus (Mostly Grassy) Box Woodlands of the Tablelands and Western Slopes.

**State Veg Map (Keith 2004):** Western Slopes Grassy Woodlands.

**State Landscape (Mitchell 2002):** Not Assessed.

**NVIS Major Veg Sub-Groups:** Eucalyptus woodlands with a grassy understorey.

**Forest Type (RN 17):** .

**Author(s):** (Combination of Expert Opinion and Quantitative Data).  Red Stringybark - Long-leaved Box community for Wagga Wagga Shire in (Priday 2004). Vegetation group 13 in (Gellie & Fanning 2004). Species list noted in Benson (1999-2009). May be part of Vegetation Group 116 in (Gellie 2005). Possibly similar to community 30 in Austin et al.(2000) in the Lachlan catchment.

** Interstate Equivalent(s):** Victoria: possibly similar to EVC 80 Spring Soak Woodland.

**Protected Area Explanation:** Murraguldrie FR 120 (E1).

**Pre-European Extent Comments:** Estimated from mapped extant vegetation: part range. Priday (2004) considers a "moderate" proportion of its original extent has been cleared and converted to pines.

**Pre-European Extent:** 3000 ha ±30%.  Estimated from extant vegetation maps: part range.

**Current Extent:** 1000 ha ±30% or 33% ± 50% of pre-European extent remaining.

**Current Extent Comments:** (Estimated from mapped extant vegetation: part range).  Priday (2004) considers a "moderate" proportion of its original extent has been cleared and converted to pines.

**Conservation Reserves:** Murraguldrie FR 120 (E1).

**Reserves Total Area:** 120 ha.

**Restricted in 1750:** Does't exist and not required.

**Restricted in 1850:** Rarely burnt now due to surrounding pine plantations and fragmentation.

**Adjoining Communities:** Grades upslope into Red Box (Eucalyptus polyanthomes) and Long-leaved Box (Eucalyptus goniocalyx) communities. May grade into small patches of Broad-leaved Sally woodland in poorly drained areas (ID285).

**Threatening Processes:** Clearing for pine plantations and weed infestation are the main threats. Although restricted in area much of it is on public land.

**Threatening Process List:** Clearing for agriculture; Clearing for pine plantations; Weed (exotic) invasion.

**Threat/Protected Area Code:** V/5b 1; 4.

**Threat Criteria:** 1; 4.

**Planning Controls:** Due to its restricted extent limit further areas being cleared for pine plantations.

**Planning and Management:** None.

**Listed Under Legislation:** None.

**Recovery Plan:** Doesn't exist and not required.

**Inadequate.**

**NSW Vegetation Classification - Vegetation ID**

**Vegetation Community ID 301**

**Common Name:** Drooping Sheoke - Ricinocarpos bowmannii - grasstree tall open shrubland of the Coolac - Tumut Serpentinite Belt

**Scientific Name:** Eucalyptus nortonii - Eucalyptus albens - Brachychiton populneus subsp. populneus / Allocasuarina verticillata - Ricinocarpos bowmannii - Xanthorrhoea glauca subsp. angustifolia - Acacia implexa / Themeda australis - Austrodanthonia laevis - Aristida ramosa var. ramosa - Clematis microphylla var. leptophylla

**Veg. Comm. ID.:** 301  **Original Entry:** J. S. Benson 6/07/2006

**Photo 1:** ID301a_DX28770.jpg Allocasuarina verticillata, Eucalyptus nortonii, Xanthorrhoea glauca subsp. angustifolia, Ricinocarpos bowmannii tall shrubland on Coolac serpentinite near Brungle, [AGD66 35°07.734'S 148°17.996'E], 7/5/2006, Jaime Plaza.

**Photo 2:** ID301b_DX28732.jpg Drooping Sheoak (Allocasuarina verticillata) shrubland on Coolac serpentinite showing boundary with non-serpentinite substrate at the base of the hill, Honeysuckle Range near Brungle [AGD66 35°07.998'S 148°17.91'E], 7/5/2006, Jaime Plaza.

Characteristic Vegetation: (Combination of Quantitative Data and Qualitative Estimate)

Trees: Eucalyptus nortonii; Eucalyptus albens; Brachychiton populneus subsp. populneus.
Shrubs/Vines/Epiphytes: Allocasuarina verticillata; Ricinocarpus bowmannii; Xanthorrhoea glauca subsp. angustifolia; Acacia implexa; Acacia decora; Exocarpus cupressiformis; Acacia penniservis var. penniservis; Spyradium parvifolium.

Ground Cover: Themeda australis; Aristida ramosa var. ramosa; Austrodenania laevis; Clematis microphylla var. leptophylla; Hypericum gramineum; Euchiton gymnocephalus; Acacia nova-zelandiae; Geranium solanderi var. solanderi; Bothriochloa macra; Poa sieberiana var. sieberiana; Panicum effusum; Austrostipa scabra subsp. falcata; Viola betonicaefolia; Dianella revoluta var. revoluta; Stellararia pungens; Lomandra filiformis subsp. coriacea; Wahlenbergia communis; Oxalis exilis; Cheilanthes sieberi subsp. sieberi; Austrodenania racemosa var. racemosa; Austrodenania caespitosa; Austrodenania pilosa; Panicum effusum; Senecio quadridentatus; Pilulotus spathulatus f. spathulatus.

Weed Species: Carthamus lanatus; Hypericum perforatum; Avena barbata; Petrohragia nanteuilii; Briza maxima; Hypochaeris radicata; Rubus discolor.

Weediness: Medium (5-15%) with <10% cover.

Threatened Plants: Possibly contains Grevillea wilkinsonii (Makinson 1993) near Gundagai and this species may have been widespread but has been grazed out. Ricinocarpus bowmannii and Spyradium parvifolium are relatively restricted.

Threatened Fauna: Not assessed.

Mean Species Richness: 20 +/- 5 (J.S. Benson (1999-2009) in 20 X 20 m plot).

Rainforest Structure (Webb): Not applicable.

Structure (WH): Open Heath.

Height Class (WH): Tall.

Vegetation Description: A floristically and structurally distinct tall open heath or low sparse woodland dominated by the tall shrub/small tree Drooping Sheoke (Allocasuarina verticillata), the shrub Ricinocarpus bowmannii, the grasstree Xanthorrhoea glauca subsp. angustifolia and wattle shrubs such as Hickory (Acacia implexa), Western Golden Wattle (Acacia decora), Acacia penniservis var. penniservis, Native Cherry (Exocarpus cupressiformis) and the relatively rare Spyradium parvifolium. Taller trees are scattered and include Victoria's Box (Eucalyptus nortonii), White Box (Eucalyptus albens) with occasional Kurrajong (Brachychiton populneus subsp. populneus). Rocks cover about 50% of the ground. The plant species ground cover is sparse on exposed slopes and dense in creeklines. Ground cover species includes grasses such as Themeda australis, Aristida ramosa var. ramosa, Austrodenania laevis, Bothriochloa macra, Poa sieberiana var. sieberiana, Panicum effusum and Austrostipa scabra subsp. falcata; the climber Clematis microphylla var. leptophylla is very common; forbs include Stellaria pungens, Hypericum gramineum, Euchiton gymnocephalus, Acaea nova-zelandiae, Geranium solanderi var. solanderi, Oxalis exilis, Senecio quadridentatus and an eastern occurrence of the semi-and forlft Pilulotus spathulatus; the rock fern Cheilanthes sieberi subsp. sieberi is common. Weeds may be common in heavily grazed locations. They include Saffron Thistle (Carthamus lanatus), St John's Wort (Hypericum perforatum), wild oat (Avena barbata), Petrohragia nanteuilii, Briza maxima, Hypochaeris radicata and, in gullies, Blackberry (Rubus discolor). The endangered shrub Grevillea wilkinsonii may have been widespread in this community but has been grazed out. Occurs on shallow dark brown clays being euchrozem or red podzolic soils derived from in a 50 kilometre narrow band of serpentinite and associated substrates between Cooleac - Gundagai and Tumut in the NSW South-western Slopes Bioregion. A small area may also occur near Talbingo in the South Easter Highlands Bioregion. The vegetation is structurally and floristically distinct from the surrounding Eucalyptus-dominated grassy box woodlands that occur on non-serpentinite substrates. Restricted in area and mostly cleared, with most areas grazed by sheep. As of 2007, this community was not sampled in any protected area.


Formation Group: Heaths and Shrublands on the Tablelands and Western Slopes of South-eastern Australia.

State Veg Map (Keith 2004): Western Slopes Grassy Woodlands.

State Landscape (Mitchell 2002): Cootamundra - Tumut Serpentinite and Ultramafics;.

NVIS Major Veg Sub-Groups: Casuarina and Allocasuarina forests and woodlands.

Forest Type (RN 17): 224 - Scrub (P); 227 - Grass Tree (P); 174 - White Box-Western boxes (P).


Interstate Equivalent(s): None..

Mapped/Modelled: Current extent partly mapped or modelled. Plot Sampling: Inadequate.

Mapping Info: Four sample plots sample this vegetation as of 2006. Some extent mapping in Friday (2006). The serpentine substrate on which this community occurs is mapped by Ashley et al.(1971) and is shown on geological maps published by the NSW Department Mineral Resources.

Climate Zone: Temperate: no dry season (warm summer).

IBRA Bioregion (v6): NSW South-western Slopes (>70%); South Eastern Highlands (1-30%).
IBRA Sub-Region: Upper Slopes (>70%); Bondo (1-30%).
Botanical Division: South Western Slopes (SWS) (>70%).

Local Govt. Areas: Gundagai (30-70%); Tumut (30-70%).

CMAs: Murrumbidgee (>70%).

MD Basin: Yes.

Substrate Mass: Metamorphic rocks.

Lithology: Amphibolite; Serpentinite.

Great Soil Group: Euchrozem; Red podzolic soil.

Soil Texture: Clay loam.

Landform Patterns: Hills.

Landform Elements: Gully; Hillcrest; Hillslope.

Land Use: Grazing.

Impacts of European Settlement: Major reduction (>70%) in extent and/or range.
Weeds have invaded disturbed sites along gullies in particular. Localised mining and pine plantations on ridgelines have destroyed some areas. Further clearing or overgrazing of the hills may threaten the survival of many species in this restricted community.

Conservation Reserves: None.

Protected Area Explanation: Not known from any protected area as of 2006, however a small area of serpentine occurs above Talbingo Dam in Bago State Forest near to the boundary of Kosciuszko National Park. At least one PVP incentive payment is known to have been made as of 2007 to limit grazing on the Mooney Range north Coolac near the Hume Highway.

Secure Property Agreements: None.

Adjoining Communities: Most of the community grades into White Box (Eucalyptus albens) (ID266) or Yellow Box (Eucalyptus melliodora) (ID277) grassy woodland on soils derived from fine-grained metamorphics adjacent to the serpentine.

Threatening Processes: Further clearing or overgrazing of the hills may threaten the survival of many species in this restricted community. Weeds have invaded disturbed sites along gullies in particular. Localised mining and pine plantations on ridgelines have destroyed some areas. Pines do not grow well on serpentinite, yet have been planted in the past. Some root fungi are known to kill grass trees.

Threatening Process List: Age class of woody vegetation; Clearing for agriculture; Clearing for pine plantations; Disease and/or dieback (abnormal); Mining or quarrying; Overharvesting or collecting of key species; Phytophthora dieback; Sedimentation; Soil erosion, water: sheet erosion; Unsustainable grazing and trampling by stock; Unsustainable grazing by introduced animals.

Threat Category: Endangered.

Planning Controls: Protect remnants on Coolac serpentinite in reserves and/or under secure property agreements. Protect stands from stock grazing, too frequent fire and further pine plantings. Targeted weeding of some locations may be required. This community should be considered as a threatened community given its rarity and remaining extent.

Protected Pre-European Extent: 0% which is inadequately protected across distribution.

Restricted in 1750: Code 5b: <5% of pre-European extent in protected areas (1,000<area<10,000 ha).

Key Sites for Protection: Coolac - Tumut Serpentinite belt including the roadside and adjacent hill at Brungle Creek crossing on the Wee Jasper - Tumut Road and remnants along the Honeysuckle Range to the west near Brungle and northeast of Tumut. Small outliers may also occur near Gundagai.

Degree of Fragmentation: Human induced highly fragmented small stands with <30% extent remaining and high edge to area ratio.

Recoverability: Poor health as structure and/or composition significantly altered. But sufficient biota remain for natural regeneration if causal factors and their secondary impacts removed and dynamic processes reinstated.

Variation & Disturbance: There are marked changes in the species composition from hillside vegetation to gullies or along creeks where sedgelands and Leptospermum may occur and grass trees are less abundant. Allocasuarina verticillata tends to be present throughout its range. Eucalyptus species vary from place to place.

Fire Regime: Unknown, but is now rare due to the rocky terrain, lack of ground cover due to sheep grazing and the open nature of the shrubland. However, occasional fire (30-100 years) may be important for the germination and establishment of Allocasuarina and Acacia as long as the grazing intensity is low enough to allow seedlings to survive.

Secure PAs Total Area: 0 ha.

No. Representatives in Secure Property Agreements: 0

No. Representatives in Secure Property Agreements: 0

Pre-European Extent: 8500 ha ±30%. Expert estimate not based on any mapped vegetation.

Pre-European Extent Comments: The Coolac to Tumut serpentinite belt is about 55 km long and ranges from 3.5 km to 300 m wide but there are several small outlying areas. Mulvaney et al (2005) map a pre-European extent of 7636 ha in Gundagai Shire with smaller areas in Tumut Shire.

Current Extent: 2400 ha ±30% or 28 ± 50% of pre-European extent remaining.

Current Extent Comments: (Expert estimate). Mulvaney et al. (2005) map 2013 ha in Gundagai Shire which implies 26% is remaining compared to its pre-European extent. Smaller areas remain in Tumut Shire. Field observations suggest that most of the hills along the serpentinite belt have been cleared for grazing and some recent pine plantations.

Reserves Total Area: 0 ha.

No. Representatives in Reserves: 0

Tens of kilometers of road cuttings and other human induced highly fragmented small stands with <30% extent remaining and high edge to area ratio.

Reference List:

**NSW Vegetation Classification - Vegetation ID**

**Vegetation Community ID 316**

**Common Name:** Norton's Box - Red Box - Red Stringybark +/- Nodding Flax Lily forb-grass open forest mainly on the Tumut region

**Scientific Name:**
Eucalyptus nortonii - E. polyanthemos subsp. vestita - Eucalyptus macrorhyncha / Acacia buxifolia subsp. buxifolia - Brachyloma daphnoides subsp. daphnoides - Acacia verniciflua / Stypandra glauca - Poa sieberiana - Austrodanthonia racemosa var. racemosa - Cheilanthes austrotenuifolia

**Veg. Comm. ID.:** 316  
**Original Entry:** J.S. Benson 13/10/2006

**Photo 1:** ID316a_PC194-20.jpg Eucalyptus nortonii - E. macrorhyncha - E. polyanthemos - Stypandra glauca woodland on hillcrests in Minjary National Park, [AGD66 35°14'31"S 148°07'34"E], 16/10/02, Jaime Plaza.

**Photo 2:** ID316b_PC194-18.jpg Eucalyptus nortonii - Eucalyptus polyanthemos grass - forb woodland in Minjary National Park, [AGD66 35°13'39"S 148°07'33"E], 16/10/02, Jaime Plaza.

**Photo 3:** ID316c_DX28720.jpg Heavily grazed Norton's Box (Eucalyptus nortonii) - Red Box (Eucalyptus polyanthemos) open forest with a rich forb-grass ground cover on Crown Land on Yarch Road Darlow Creek near Adelong, [AGD66 35°20.488'S 147°57.540'E], 6/5/2006, Jaime Plaza.
Characteristic Vegetation: (Quantitative Data)

**Trees:** Eucalyptus nortonii; Eucalyptus polyanthemos; Eucalyptus macrorhyncha; Callitris endlicheri; Eucalyptus blakelyi; Brachychiton populneus subsp. populneus; Eucalyptus melliodora.

**Shrubs/Vines/Epiphytes:** Acacia buxifolia subsp. buxifolia; Brachyloma daphnoides subsp. daphnoides; Acacia verniciflua; Acacia implexa; Heteraglyne obtusifolia; Acacia gunnii; Dodonaea viscosa subsp. cuneata; Dillwynia sericea.

**Ground Cover:** Stypandra glauca; Poa sieberiana; Austrodanthonia racemosa var. racemosa; Cheilanthes austrotenusifolia; Dichelachne sieberiana; Elymus scaber var. scaber; Bothriochloa macra; Poranthera microphylla; Bulbine bulbosa; Euciptus gymnocephalus; Daucus gliechidiatus; Cynoglossum australis; Carex breviculmis; Wahlenbergia multicaulis; Lamandra filiformis subsp. filiformis; Lamandra filiformis subsp. coriacea; Oxalis perennans; Hydrocotyle laxiflora; Glycine clandestina; Dictandra repens; Microtis unifolia; Stelaria pungens; Hypericum gramineum; Geranium returosus; Cymbonotus preissianus; Luzula densiflora; Wahlenbergia stricta subsp. stricta; Microseris lanceolata; Acaena echinata; Scutellaria humillla; Dianella revoluta var. revoluta; Senecio quadridentatus; Senecio hapsipulius var. hapsipulius.

**Weed Species:** Trifolium striatum; Bromus diandrus; Cirsium vulgare; Anagallis arvensis; Centaurium erythraea; Hypericum perforatum; Trifolium campestre; Trifolium arvense; Trifolium angustifolium; Petrorhagia nanteuilii; Vulpia bromoides; Briza maxima; Anthoxanthum odoratum; Hypochaeris glabra; Hypochaeris radicata; Aira elegansissima.

**Weediness:** High (15-30%) with 10-30% cover.

**Threatened Plants:** Not assessed.

**Threatened Fauna:** Not assessed.

**Mean Species Richness:** 35 spp. +/- 10 20 X 20 m plot (Gellie & Fanning 2004). Rich forb component.

**Rainforest Structure (Webb):** Not applicable.

**Structure (WH):** Open Forest; Woodland.

**Height Class (WH):** Mid-High.

**Vegetation Description:** Mid-high open forest to woodland dominated by Norton's Box (Eucalyptus nortonii), Red Box (Eucalyptus polyanthemos subsp. polyanthemos) and Red Stringybark (Eucalyptus macrorhyncha) with patches of Callitris endlicheri or more exposed sites. Scattered Kurrajong (Brachychiton populneus subsp. populneus) may be present. The shrub layer is very sparse and includes Acacia buxifolia subsp. buxifolia, Brachyloma daphnoides subsp. daphnoides, Acacia verniciflua, Acacia implexa, Acacia gunnii, Heteraglyne obtusifolia and Dodonaea viscosa subsp. cuneata. The ground cover is dense contain a rich composition of forbs and grasses although it may be weedy in places. Grasses include Poa sieberiana, Austrodanthonia racemosa var. racemosa, Dichelachne sieberiana and Elymus scaber var. scaber. Forbs include Noddling Flax Lily (Stypandra glauca) which is very common along with Poranthera microphylla. Bulbine bulbosa, Euciptus gymnocephalus, Daucus gliechidiatus, Cynoglossum australis, Wahlenbergia spp., Oxalis perennans, Hydrocotyle laxiflora, Glycine clandestina, Dicandra repens, Microtis unifolia, Stelaria pungens, Hypericum gramineum, Geranium returosus, Conocarpus tetragynus, Cymbonotus preissianus and Senecio spp. The rock fern Cheilanthes austrotenuifolia is common. The sedge Carex breviculmis and rush Luzula densiflora are often present along with mat-rushes Lamandra filiformis subsp. filiformis and Lamandra filiformis subsp. coriacea occur. The climber Glycine clandestina is common. Occurs on shallow sandy loam soils derived from granite on steep hilltops and hillcrests in hill landform patterns on the Minjary Range and surrounding region north of Tumut in the upper slope sub-region of the NSW South-western Slopes Bioregion. Cleared over much of its distribution but sampled in Minjary National Park.

**Level of Classification:** Association.
**Classification Confidence Level:** Medium.

**Formation Group:** Eucalyptus (Mostly Grassy) Box Woodlands of the Tablelands and Western Slopes.

**State Veg Map (Keith 2004):** Western Slopes Grassy Woodlands.

**State Landscape (Mitchell 2002):** Not Assessed.

**NVIS Major Veg Sub-Groups:** Eucalyptus forests with a grassy understorey.

**Forest Type (RN 17):** 99 - Red Box (P).


**Interstate Equivalent(s):** Victoria: possible part of the broadly classified EVC 22: Grassy Dry Forest.

**Mapped/Modelled:** Current extent partly mapped or modelled.
**Plot Sampling:** Adequate.

**Mapping Info:** Mapped and sampled in Minjary National Park by Gellie & Fanning but not mapped over full range as of 2007.

**Climate Zone:** Temperate: no dry season (warm summer).

**IBRA Bioregion (v6):** NSW South-western Slopes (>70%).

**IBRA Sub-Region:** Upper Slopes (>70%).

**Botanical Division:** South Western Slopes (SWS) (>70%).

**Local Govt. Areas:** Gundagai (30-70%); Tumut (30-70%).

**CMAs:** Murrumbidgee (>70%).

**MD Basin:** Yes.

**Substrate Mass:** Plutonic rocks.

**Lithology:** Granite.

**Great Soil Group:** Lithosol.

**Soil Texture:** Sandy clay loam; Sandy loam.

**Landform Patterns:** Hills.

**Landform Elements:** Hillcrest; Hillslope.

**Land Use:** Grazing; Nature Conservation.

**Impacts of European Settlement:** Medium reduction (30-70%) in extent and/or range.
Pre-European Extent: 8000 ha ±30%. Estimated from extant vegetation maps: part range.
Pre-European Extent Comments: Would have been mainly restricted to region between Gundagai and Tumut.
Current Extent: 3000 ha ±30% or 38% ± 50% of pre-European extent remaining.
Current Extent Comments: (Estimated from pre-European map: part range). Most hills in the region have been cleared.
Conservation Reserves: Minjary NP 750 (E2).

Reserves Total Area: 750 ha. No. Representatives in Reserves: 1
Protected Area Explanation: Minjary NP estimate from veg. groups 35 and 36 in Gellie & Fanning (2004).
Protected Current Extent: 25% 750 ha ± 30%. No. Representatives in Protected Areas: 1
Secure Property Agreements: None.
Secure PAs Total Area: 0 ha. No. Representatives in Secure Property Agreements: 0

Restricted in 1750: Code 4b: 5-15% of pre-European extent in protected areas (1,000<area<10,000 ha).

Key Sites for Protection: An excellent stand occurs on a small patch of Crown land on the Darlows Creek - Yarch Road north west of Tumut, This should be protected.

Degree of Fragmentation: Human induced fragmented stands with <60% >30% extent remaining and moderate edge to area ratio.
Recoverability: Moderate health as structure and/or composition altered. Likely to recover considerably if causal factors and secondary impacts removed.

Variation & Disturbance: Restricted in extent and therefore limited variation but fire regimes would alter composition of shrubs and ground flora. Some sites have more shrubs but this may depend on grazing regimes.

Fire Regime: Unknown but some landholders may burn regularly.
Adjoining Communities: A shrubby community with similar tree composition (ID306) occurs to the south-east in Wereboldera SCA near Tumut. Grades into White Box grassy woodland (ID266) on deeper soils.

Threatening Processes: overclearing in the past has fragmented links between hills where this community occurs. Some areas on private land are susceptible to overgrazing and sheet soil erosion during drought. Localised weed invasion.

Threatening Process List: Clearing for agriculture; Inappropriate fire regimes; Nutrient changes through fertilizers or runoff; Soil erosion, water: sheet erosion; Unsustainable grazing and trampling by stock; Weed (exotic) invasion.

Threat Category: Vulnerable. Threat/Protected Area Code: V/4b Threat Criteria: 1; 2.
Planning Controls: Prevent further clearing or over-grazing of hills with this community. Avoid burning too often although occasional fire may be appropriate management.

Planned and Management: None.

Recovery Plan: Doesn't exist and not required.

Planning Under Legislation: None.

 Listed Under Legislation: None.

**NSW Vegetation Classification - Vegetation ID**

**Vegetation Community ID 347**

**Common Name:** White Box - Blakely's Red Gum shrub/grass woodland on metamorphic hillslopes in the mid-southern part of the upper slopes sub-region of the NSW South-western Slopes Bioregion

**Scientific Name:** Eucalyptus albens - Eucalyptus blakelyi - Eucalyptus macrorhyncha / Brachyloma daphnoides subsp. daphnoides - Acacia paradoxa - Dillwynia sericea - Xanthorrhoea glauca subsp. angustifolia / Austrodamithia eriantha - Poa sieberiana var. sieberiana - Stypandra glauca - Cheilanthes austroenuloria

**Veg. Comm. ID:** 347  
**Original Entry:** J.S. Benson 30/04/2007  
**No Photo Available**

**Characteristic Vegetation:** (Combination of Quantitative Data and Qualitative Estimate)

**Trees:** Eucalyptus albens; Eucalyptus blakelyi; Eucalyptus macrohyncha; Eucalyptus sideroxylon.

**Shrubs/Vines/Epiphytes:** Brachyloma daphnoides subsp. daphnoides; Acacia paradoxa; Dillwynia sericea; Xanthorrhoea glauca subsp. angustifolia; Hibernia obtusifolia; Cassinia aculeata; Daviesia leptophylla; Acrotriche serrulata; Hibernia riparia; Platylabium formosus subsp. formosum; Pultenaea foliolosa; Melichrus urceolatus; Acacia buxifolia subsp. buxifolia; Acacia dealbata; Acacia gunnii; Acacia implexa.

**Ground Cover:** Austrodamithia eriantha; Austrodamithia racemosa var. racemosa - Poa sieberiana var. sieberiana; Stypandra glauca; Lomandra filiformis subsp. filiformis; Cheilanthes austroenuloria; Hydrocotyle laxiflora; Xerophyllum viscosum; Senecio quadridentatus; Hypericum gramineum; Goodenia hederacea subsp. hederacea; Gonocarpus tetragnus; Haloragis heterophylla; Cheiranthion cyaene var. cyaene; Opercularia aspera; Dianella revoluta var. revoluta; Lamandra multiflora subsp. multiflora; Cheilanthes sieberiana var. sieberiana; Austrostipa densiflora; Austrodamithia racemosa var. racemosa; Austrodamithia setacea; Aristida ramosa var. ramosa; Austrostipa scabra subsp. falcata; Triplodiscus pygmaeus; Dichophogon strictus; Burchardia umbellata; Microseris lanceolata; Glycine clandestina; Wahlenbergia stricta subsp. stricta; Oxalis perennans; Lepidosperma laterale; Wurmbea dioica subsp. dioica; Senecio prenanthoides; Senecio bathurstianus; Senecio burrhastianus; Hardenbergia violacea.

**Weed Species:** Hypochaeris radicata; Petrorhagia nanteuilii; Carduus pycnocephalus subsp. stricta; Oxalis perennans; Lepidosperma laterale; Wurmbea dioica subsp. dioica - Senecio prenanthoides; Senecio bathurstianus; Senecio burrahastianus; Hardenbergia violacea.

**Weediness:** Medium (5-15%) with 10-30% cover.

**Threatened Plants:** Not assessed.

**Threatened Fauna:** Not assessed.

**Mean Richness:** Not assessed.

**Rainforest Structure (Webb):** Not applicable.

**Structure (WH):** Woodland.

**Height Class (WH):** Mid-high to tall woodland or open forest dominated White Box (Eucalyptus albens), Blakely's Red Gum (Eucalyptus blakelyi) with Red Stringybark (Eucalyptus macrohyncha) and occasionally Mugga Ironbark (Eucalyptus sideroxylon). The shrub layer may be sparse to mid-dense in less grazed sites but absent or very sparse in heavily grazed areas. It includes Cassinia aculeata, Hibbertia obtusifolia, Hibernia riparia, Dillwynia sericea, Daviesia leptophylla, Acrotriche serrulata, Brachyloma daphnoides subsp. daphnoides, Platylabium formosum subsp. formosum, Pultenaea foliolosa, Melichrus urceolatus, Acacia buxifolia subsp. buxifolia, Acacia dealbata, Acacia gunnii, Acacia implexa and Acacia paradoxa. The ground cover is usually sparse and includes the grasses Austrodamithia eriantha, Austrodamithia racemosa var. racemosa, Poa sieberiana var. sieberiana and Austrostipa densiflora.along with the mat-rushes Lamandra filiformis subsp. filiformis and Lamandra multiflora subsp. multiflora. Forb species include Hydrocotyle laxiflora, Xerophyllum viscosum, Senecio quadridentatus, Hypericum gramineum, Goodenia hederacea subsp. hederacea, Gonocarpus tetragnus, Cheiranthion cyaene var. cyaene, Opercularia aspera, Dianella revoluta var. revoluta and Stypandra glauca. The rock fern Cheilanthes sieberi subsp. sieberi may be present. Occurs on shallow, often stony clay loam soils mainly derived from fine-grained metamorphic rocks on hillslopes and gullies in hill landscape patterns in the central part of the upper slopes sub-region of the NSW South-western Slopes Bioregion, generally north of the Murray CMA area. Mostly cleared and therefore a threatened community.

**Level of Classification:** Association.  
**Classification Confidence Level:** Low.

**Formation Group:** Eucalyptus (Mostly Grass) Box Woodlands of the Tablelands and Western Slopes.

**State Veg Map (Keith 2004):** Western Slopes Grass Woodlands.

**State Landscape (Mitchell 2002):** Not Assessed.

**NVIS Major Veg Sub-Groups:** Eucalyptus woodlands with a shrubby understorey.

**Forest Type (RN 17):**  
176 - White Box-Stringybark (P).

**Authority:** (Combination of Expert Opinion and Quantitative Data). Includes Vegetation Group 29 in Gellie & Fanning (2004) including sites SWSEl02 and SWSEl06. Species listed for Tarcutta Bush Heritage Reserve in ABHF (2001).

**Internate Equivalent(s):** None.

**Mapped/Modelled:** Current extent and pre-European extent not mapped or modelled.

**Mapping Info:** ADS-40 mapping of some areas around Wagga Wagga as of 2010 except but needs more plot sampling.

**Climate Zone:** Temperate: no dry season (warm summer).

**IBRA Bioregion (v6):** NSW South-western Slopes (>70%).

**IBRA Sub-Region:** Upper Slopes (>70%).

**Botanical Division:** Central Western Slopes (CWS) (1-30%); South Western Slopes (SWS) (30-70%).
Grades into grassy White Box woodland (ID266) on deeper loam soils in broad gully heads or on lower slopes.

Grades into Mugga Ironbark - Inland Scribbly gum open forest (ID289) on ridges. Some similarities with the shrubby White Box - White Cypress Pine - Blakely's Red Gum woodland to the east around Wagga Wagga (ID346) and the shrubby White Box community to the south of Tarcutta to Albury (ID269).

Prevent further clearing and allow regeneration in remnants.

Unknown but probably now rare due to fragmentation.

Hills in the Tarcutta and Gundagai regions.

Human induced highly fragmented small stands with <30% extent remaining and high edge to area ratio.

Poor health as structure and/or composition significantly altered. But sufficient biota remain for natural regeneration if causal factors and their secondary impacts removed and dynamic processes reinstated.

Shrub layer density and composition varies with grazing history and location on hillslopes versus gullies.

Grazing.

impacts of European Settlement: Medium reduction (30-70%) in extent and/or range.

Pre-European Extent: 12000 ha ±50%. Expert estimate not based on any mapped vegetation.

Pre-European Extent Comments: Estimate only

Current Extent: 4500 ha ±50% or 38% ± 80% of pre-European extent remaining.

Current Extent Comments: (Expert estimate).

Conservation Reserves: Ellerslie NR 200 (E3).

Reserves Total Area: 200 ha.

No. Representatives in Reserves: 1

Protected Area Explanation: Ellerslie NR from ADS-40 mapping 2010 but estimate only.

Secure Property Agreements: Tarcutta Hills BHR 130 (E2).

Secure PAs Total Area: 130 ha.

No. Representatives in Secure Property Agreements: 1

Protected Current Extent: 7.33% 330 ha ± 30%.

No. Representatives in Protected Areas: 2

Protected Pre-European Extent: 2.75% which is inadequately protected across distribution.

Common in 1750: Code 4a: 1-5% of pre-European extent in protected areas (>10,000 ha).

Key Sites for Protection: Hills in the Tarcutta and Gundagai regions.

Degree of Fragmentation: Human induced highly fragmented small stands with <30% extent remaining and high edge to area ratio.

Recoverability: Poor health as structure and/or composition significantly altered. But sufficient biota remain for natural regeneration if causal factors and their secondary impacts removed and dynamic processes reinstated.

Variation & Disturbance: Shrub layer density and composition varies with grazing history and location on hillslopes versus gullies.

Fire Regime: Unknown but probably now rare due to fragmentation.

Adjoining Communities: Grades into grassy White Box woodland (ID266) on deeper loam soils in broad gully heads or on lower slopes. Grades into Mugga Ironbark - Inland Scribbly gum open forest (ID289) on ridges. Some similarities with the shrubby White Box - White Cypress Pine - Blakely's Red Gum woodland to the east around Wagga Wagga (ID346) and the shrubby White Box community to the south of Tarcutta to Albury (ID269).

Threatening Processes: Highly fragmented due to past extensive clearing. Remnants are heavily grazed. Annual exotic weeds have invaded some remnants but less so than the more grassy White Box woodland (ID266).

Threatening Process List: Age class of woody vegetation; Clearing for agriculture; Disease and/or dieback (abnormal); Soil erosion, water: sheet erosion; Unsustainable grazing and trampling by stock; Weed (exotic) invasion.

Threat Category: Vulnerable.

Threat/Protected Area Code: V/4a Threat Criteria: 1; 4.

Planning Controls: Prevent further clearing and allow regeneration in remnants.

Planning and Management: Prevent further clearing and allow regeneration in remnants.

Listed Under Legislation: Listed TSC Act, E: White Box Yellow Box Blakely’s Red Gum Woodland (Part); Listed EPBC Act, CE: White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland (Part).

Recovery Plan: Doesn't exist, but required.

NSW Vegetation Classification - Vegetation ID
Vegetation Community ID 426

Common Name: Red Box - White Box +/- Red Stringybark hill woodland in the NSW South-western Slopes Bioregion

Scientific Name: Eucalyptus polyanthemos subsp. polyanthemos - Eucalyptus albens - Brachychiton populneus subsp. populneus - Eucalyptus macrorhyncha / Acacia implexa - Lissanthus strigosa subsp. strigosa - Hibbertia obtusifolia - Amyema miquelli / Austrodanthonia racemosa var. racemosa - Austrostipa densiflora - Chellanthes sieberi subsp. sieberi - Austrostipa scabra subsp. falcata


Photo 1: ID426a_benson DSCN0011.jpg Red Box (Eucalyptus polyanthemos) - White Box (Eucalyptus albens) woodland on a roadside north of Cootamundra in the south western slopes, [AGD66 34° 56'24.7"S 148° 03'11.1"E], 22/5/2009, J.S. Benson.

Photo 2: ID426b_benson DSCN0016.jpg Isolated Red Box (Eucalyptus polyanthemos) tree in a cleared paddock north of Cootamundra in the south western slopes, [AGD66 34° 57'25.3"S 148° 03'13.5"E], 22/5/2009, J.S. Benson.

Photo 3: ID426c_BBSMAY09_1610.jpg Red Box (Eucalyptus polyanthemos) - White Box (Eucalyptus albens) low woodland on steep hill composed of phyllite on Mount View property south of Spicers Creek near Gulgong SWS Bioregion [AGD66 32°24'56.9"S, 149°31.9"E], 12/5/09, Jaime Plaza.
**Characteristic Vegetation:** (Combination of Quantitative Data and Qualitative Estimate)

**Trees:** Eucalyptus polyanthemos subsp. polyanthemos; Eucalyptus albens; Brachychiton populneus subsp. populneus; Eucalyptus macrophylla; Eucalyptus sideroxylon.

**Shrubs/Vines/Epiphytes:** Acacia implexa; Lissanthe strigosa subsp. strigosa; Hibbertia obtusifolia; Dillwynia sericea; Amyema miqueli.

**Ground Cover:** Austrostipa scabra subsp. falcata; Lomandra filiformis subsp. coriacea; Aristida personata; Austrostipa densiflora; Austrodanthonia racemosa var. racemosa; Thymela australis; Daucus chilidiatius; Microlaena stipoides var. stipoides; Carex inversa; Austrodanthonia pilosa; Goodenia heteracaea subsp. heteracaea; Juncus subsecundus; Juncus homalocalus; Cheilanthes sieberi subsp. sieberi; Einadia polygonoides; Cheilanthes distans; Eucthonia sphaericus; Lageneria stipitata; Oxalis radicosa; Rumex brownii; Veronica plebeia; Eragrostis parviflora; Elymus scaber subsp. scaber; Panicum effusum.

**Weed Species:** Trifolium glomeratum; Trifolium arvense.

**Weediness:** Medium (5-15%) with 10-30% cover.

**Threatened Plants:** Not assessed.

**Threatened Fauna:** Not assessed.

**Mean Species Richness:** 19 +/- 5 in 20 x 20 m plots in FG 20 in Ismay et al. (2004).

**Rainforest Structure (Webb):** Not applicable.

**Structure (WH):** Woodland.

**Height Class (WH):** Tall; Mid-High.

**Vegetation Description:** Tall to mid-high woodland dominated by Red Box (Eucalyptus polyanthemos subsp. polyanthemos) often with White Box (Eucalyptus albens), Kurrajong (Brachychiton populneus subsp. populneus) or Red Stringybark (Eucalyptus macrophylla). Mugga Ironbark may be present. The mistletoe Amyema miqueli is often abundant. The shrub layer is sparse to very sparse and includes species such as Acacia implexa, Lissanthe strigosa subsp. strigosa, Hibbertia obtusifolia or Dillwynia sericea. The ground is often bare or mostly covered with litter. Grass species include Austrostipa scabra subsp. falcata, Aristida personata, Austrostipa densiflora, Austrodanthonia racemosa var. racemosa, Thymela australis and Microlaena stipoides var. stipoides. The sedge Carex inversa may be present along with species of Juncus. Forb species include Daucus chilidiatius, Goodenia heteracaea subsp. heteracaea, Einadia polygonoides, Eucthonia sphaericus, Lageneria stipitata, Oxalis radicosa, Rumex brownii and Veronica plebeia. Occurs on shallow loam to clay soils often derived from shale or phyllite substrates on hills from north of Wellington in the north to around Cootamundra in the south in the NSW South-western Slopes Bioregion. Most of the original extent has been cleared, remnants are mostly in poor condition and subject to heavy stock grazing. Overall, this community is critically endangered with few if any examples in protected areas as of 2009.

**Level of Classification:** Association. **Classification Confidence Level:** Medium.

**Formation Group:** Eucalyptus (Mostly Grassly) Box Woodlands of the Tablelands and Western Slopes.

**State Veg Map (Keith 2004):** Western Slopes Grassly Woodlands.

**State Landscape (Mitchell 2002):** Not Assessed.

**NVIS Major Veg Sub-Groups:** Eucalyptus woodlands with a grassy understorey.

**Forest Type (RN 17):** 99 - Red Box (P).

**Authority(s):** (Combination of Expert Opinion and Quantitative Data). Map unit LOW8 being floristic group 20 in Ismay et al. (2004) at northern limit north of Wellington. Some similarity but differs to the White Box - Red Box woodland on sandstone in the western Blue Mountains MUR8 in Somerville (2009). Remnants field checked in Cootamundra region by J.S. Benson and DECC southern mapping team (May 2009).

**Intermediate Equivalent(s):** None (may be similar to and EVC in Victoria).

**Mapped/Modelled:** Current extent partly mapped or modelled. **Plot Sampling:** Inadequate.

**Mapping Info:** Not mapped over range as of 2009. Requires more sampling over range. Small area mapped near Gulgong in Ismay et al. (2004). Cootamundra remnants are being mapped using AS40 imagery during 2009.

**Climate Zone:** Temperate: no dry season (warm summer).

**IBRA Bioregion (v6):** NSW South-western Slopes (>70%).

**IBRA Sub-Region:** Upper Slopes (>70%).

**Botanical Division:** Central Western Slopes (CWS) (30-70%).

**Local Govt. Areas:** Bathurst Regional (1-30%); Cootamundra (1-30%); Cowra (1-30%); Gundagai (1-30%); Harden (1-30%); Junee (1-30%); Mid-Western Regional (1-30%); Young (1-30%); Cabonne (1-30%).

**CMAs:** Central West (1-30%); Murrumbidgee (1-30%); Lachlan (1-30%).

**MD Basin:** Yes.

**Substrate Mass:** Metamorphic rocks; Sedimentary rocks.

**Lithology:** Chert; Metamorphic rock (unidentified); Mudstone; Phyllite; Schist; Shale.

**Great Soil Group:** Brown clay; Brown earth; Brown podzolic soil.

**Soil Texture:** Clay loam; Clay loam, sandy.

**Landform Patterns:** Hills; Low hills.

**Landform Elements:** Hillslope.

**Land Use:** Cropping and Horticulture; Grazing.

**Impacts of European Settlement:** Major alteration of species composition; Major reduction (>70%) in extent and/or range.

**Pre-European Extent:** 30000 ha ±50%. Estimated from extant vegetation maps: part range.

**Pre-European Extent Comments:** Confined to patches on steep hills from in the upper slopes sub-region of the NSW South western Slopes Bioregion. Mostly cleared.

**Current Extent:** 3000 ha ±50% or 10% ± 80% of pre-European extent remaining.

**Current Extent Comments:** (Estimated from mapped extant vegetation: part range). Small patches (e.g.137 ha on Cobbora 1:100,000 map sheet) remain. Some areas remain near Cootamundra.
Human induced highly fragmented small stands with <30% extent remaining and high edge to area ratio.

Reasonably consistent floristic composition and landscape position over range.

Grades into grassy White Box woodland (ID266) on better soils throughout range, into Blakely's Red Gum - Red Stringybark woodland (ID280) around Cootamundra and into Tumbledown Red Gum (Eucalyptus dealbata) woodlands on some poorer soils on acid volcanics.

Mostly cleared in the past with remnants over-grazed and affected by fertiliser use with some weed invasion. Many trees are dying back due to the impacts of the 2004-9 drought.

References:

- Code 5a: <1% of pre-European extent in protected areas (>10,000 ha).