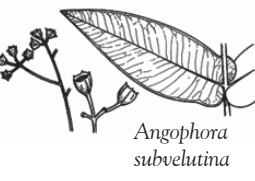
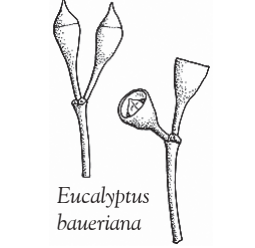


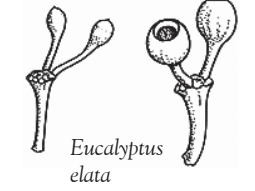
Angophora floribunda



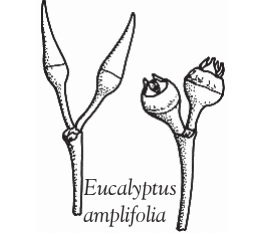
Angophora subvelutina



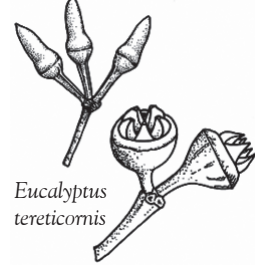
Eucalyptus baueriana



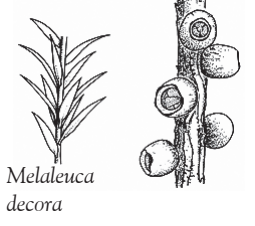
Eucalyptus elata



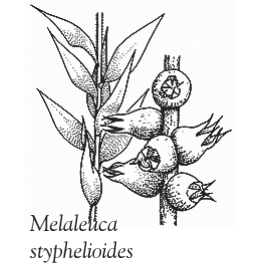
Eucalyptus amplifolia



Eucalyptus tereticornis



Melaleuca decora



Melaleuca styphelioides

EECs that may adjoin or intergrade with River-flat Eucalypt Forest

This community occurs with, would have previously occurred with, or closely resembles other Coastal Floodplain vegetation types which are also listed as EECs. Collectively, these EECs cover all remaining native vegetation on the coastal floodplains of NSW. These EECs are:

1. *Sub-tropical Coastal Floodplain Forest* north of Port Stephens. They may be distinguished by the presence of Brush Box (*Lophostemon suaveolens*) and Pink Bloodwood (*Corymbia intermedia*);
2. *Swamp Oak Floodplain Forest* where there is increasing estuarine influence;
3. *Swamp Sclerophyll Forest on Coastal Floodplains* where soils become more waterlogged;
4. *Freshwater Wetlands on Coastal Floodplains* where they adjoin more permanent standing water; and
5. *Lowland Rainforest on Floodplain* on more basaltic type soils in the NSW North Coast bioregion.

Determining the conservation value of remnants

The degree of disturbance (i.e. the site condition) of any remnant of River-flat Eucalypt Forest may vary depending on past land use, management practices and/or natural disturbance and this should be considered at the time of assessment. Whilst not exhaustive, the following are a number of variations of River-flat Eucalypt Forest you may encounter:

1. Tree canopy present with limited native vegetation in the understorey, due to under-scrubbing, stock grazing pressure, too-frequent fire or invasion by weeds;
2. Tree canopy generally absent due to prior clearing or fire, with occurrence of regrowth of native trees and shrubs and possibly weeds;
3. Some characteristic tree canopy species absent due to past selective clearing;
4. As a fragmented remnant of Eucalypts, due to clearing of adjoining vegetation; or
5. As a remnant that no longer floods due flood mitigation or drainage works.

Even where a remnant is considered to be heavily degraded and in poor condition, it may

Disclaimer: The Department of Environment and Climate Change has prepared this document as a guide only. The information provided is not intended to be exhaustive. It does not constitute legal advice. Users of this guide should do so at their own risk and should seek their own legal and other expert advice in identifying endangered ecological communities. The Department of Environment and Climate Change accepts no responsibility for errors or omissions in this guide or for any loss or damage arising from its use.

still meet the criteria of being an EEC and have conservation value for a number of reasons including:

1. Being part of a wildlife corridor that has connective importance at local and/or regional scales;
2. Providing important winter feed trees for arboreal mammals and birds;
3. Providing a 'stepping stone' for fauna in an otherwise cleared landscape;
4. Providing significant habitat components such as hollow bearing trees important to the life cycle of migratory, non-migratory and/or nomadic species;
5. Containing threatened flora; and/or
6. Maintaining a healthy native seed bank, which is very important in a highly cleared landscape.

It is important to take these factors into account when determining the conservation significance of remnants.

For further assistance

This and other EEC guidelines are available on DECC Threatened Species website threatenedspecies.environment.nsw.gov.au/
The references listed below also provide further information to aid in identifying EECs.

- Botanic Gardens Trust plant identification assistance: rbgsyd.nsw.gov.au/information/about_plants/botanical_info/plant_identification
- Botanic Gardens Trust PlantNET: plantnet.rbgsyd.nsw.gov.au/search/simple.htm
- Brooker, M. and Kleinig, D. (1990) *Field Guide to Eucalypts of South-eastern Australia*, Vol 2. Inkata, Melbourne.
- Harden, G. (ed) *Flora of NSW Vols 1 – 4* (1990-2002). NSW University Press.
- Harden, G., McDonald, W. and Williams, J. (2006) *Rainforest Trees and Shrubs – A Field Guide to their identification*. Gwen Harden Publishing, Nambucca Heads.
- NSW Scientific Committee Determinations: nationalparks.nsw.gov.au/npws.nsf/Content/Final+determinations
- Thackway, R. and Cresswell, I. (1995) (eds) *'An interim biogeographic regionalisation of Australia: a framework for establishing the national system of reserves.'* (Australian Nature Conservation Agency: Canberra).

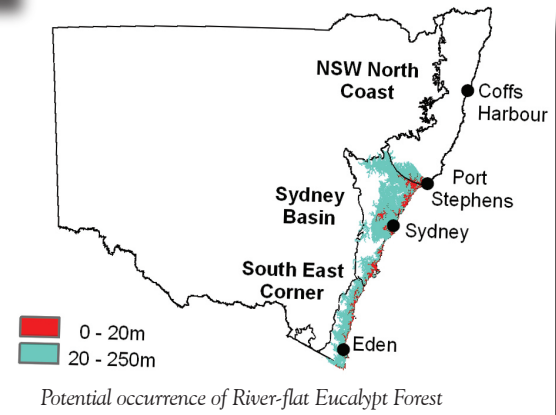
River-flat Eucalypt Forest on Coastal Floodplain



River-flat Eucalypt forest with an open understorey and few shrubs

Where is River-flat Eucalypt Forest found?

River-flat Eucalypt Forest occurs on the flats, drainage lines and river terraces of coastal floodplains where flooding is periodic and where soils are generally rich in silt, lack deep humic layers and have little or no saline (salt) influence. It occurs south from Port Stephens in the NSW North Coast, Sydney Basin and South East Corner bioregions as mapped below.



Potential occurrence of River-flat Eucalypt Forest

Introduction

These guidelines provide background information to assist landholders and approval authorities to identify remnants of River-flat Eucalypt Forest on Coastal Floodplains (hereafter referred to as River-flat Eucalypt Forest), an Endangered Ecological Community (EEC). For more detailed information, refer to the River-flat Eucalypt Forest profile and the NSW Scientific Committee Final Determination at: threatenedspecies.environment.nsw.gov.au

What is an Endangered Ecological Community?

An ecological community is an assemblage of species which can include flora, fauna and other living organisms that occur together in a particular area. They are generally recognised by the trees, shrubs and groundcover plants that live there. An Endangered Ecological Community is an ecological community listed as facing a very high risk of extinction in NSW under the *Threatened Species Conservation Act 1995*.

What is River-flat Eucalypt Forest?

River-flat Eucalypt Forest is a tall mixed open forest to woodland occurring on river flats and terraces in the central to upper parts of coastal floodplains. It is distinguished from other floodplain EECs by its dominance of either a mixed or single species eucalypt tree layer (including *Angophoras*), with few She-oak (*Casuarina*) or Swamp Mahogany (*Eucalyptus robusta*) trees, and a prominent groundcover of soft leaved herbs and grasses. On river-flats adjacent to tidal areas, where occasional flooding with brackish water may occur, the understorey may be replaced by salt-tolerant rushes and herbs.

What is the Coastal Floodplain?

Floodplains are level landform patterns on which there may be active erosion and deposition of sediment by flooding where the average interval is 100 years or less.

Coastal floodplains include coastal river valleys, alluvial flats and drainage lines below the escarpment of the Great Dividing Range. While most floodplains are below 20m in elevation, some may occur on localised river flats up to 250m elevation. Compared with the surrounding landscape, floodplains are generally quite flat. However, there may be local variation associated with river channels, local depressions, natural levees and river terraces. The latter are areas that rarely flood anymore due to deepening or widening of streams.

Description of the community

Characteristic species

A list of trees, shrubs and ground cover species that characterise River-flat Eucalypt Forest have been identified by the NSW Scientific Committee (see table).



L. McKinnon



River-flat Eucalypt Forest high in the Hunter catchment area

The tree layer

The tree layer of River-Flat Eucalypt Forest varies considerably across its range, but the most widespread and dominant trees include Forest Red Gum (*Eucalyptus tereticornis*), Cabbage Gum (*E. amplifolia*), Rough-barked Apple (*Angophora floribunda*) and Broad-leaved Apple (*A. subvelutina*). Common species south of Sydney are Blue Box (*E. baueriana*), Bangalay (*E. botryoides*) and River Peppermint (*E. elata*). Swamp Gum (*E. ovata*) occurs on the far south coast while Sydney Blue Gum (*E. saligna*) and Flooded Gum (*E. grandis*) may occur north of Sydney.

On the Hawkesbury Nepean floodplain, the threatened species Camden White Gum (*E. benthamii*) may occur as part of the community.

The shrub layer

Small trees that may occur include, the Paperbark (*Melaleuca decora*), Prickly-leaved Tea tree (*M. stypheloides*), Grey Myrtle (*Backhousia myrtifolia*) and White Cedar (*Melia azedarach*). Shrubs that may occur include Sweet Bursaria (*Bursaria spinosa*), White Sally Wattle (*Acacia floribunda*), Coffee Bush (*Breynia oblongifolia*) and Ball Everlasting (*Ozothamnus diosmifolius*).

The ground layer

Groundcover plants include the herbs Forest Nightshade (*Solanum prinophyllum*), Kidney Weed (*Dichondra repens*), Wood Sorrel (*Oxalis perennans*), Berry Saltbush (*Einadia hastata*) and Whiteroot (*Pratia purpurascens*), scramblers such as Slender Trefoil (*Desmodium varians*), Twining Glycine (*Glycine clandestina*) and Trailing Speedwell (*Veronica plebeia*), and Grasses such as Weeping Grass (*Microlaena stipoides*), Hedgehog Grasses (*Echinopogon* spp.), Bordered Panic (*Entolasia marginata*) and Basket Grass (*Oplismenus aemulus*).

The composition and structure of the groundlayer is influenced by past management practices such as grazing, fire, drainage, soil salinity and other disturbances. As a result it may have a substantial component of weed species.

What does this mean for my property?

As a listed Endangered Ecological Community under the *Threatened Species Conservation Act 1995*, River-flat Eucalypt Forest has significant conservation value and some activities may require a license, consent or approval. Please contact the Department of Environment and Climate Change for further information.

How can I identify an area of River-flat Eucalypt Forest?

The following are 'Key Indicators' to aid in identifying River-flat Eucalypt Forest:

- Is the site south of Port Stephens in the NSW North Coast, Sydney Basin or South East Corner bioregions (refer to map)?
- Is the site on the coastal floodplain (see "What is the Coastal Floodplain")?
- Is the site on silty, clay or sandy loam soil with a lack of deep humic layers and has little or no saline (salt) influence?
- Is the site located on a river flat or terrace in an upper part of the Coastal Floodplain (check for active or dormant drainage lines in the area)?
- Does the site consist of an open forest or woodland with a mixture of Eucalypt or Angophora trees, particularly Forest Red Gum, Cabbage Gum or Broad-leaved Apple (see table)?
- Are there any characteristic shrub and/or groundlayer species present (see table)?
- Are there relatively low numbers of She-oaks, Paperbarks or Swamp Mahogany trees?

If you answered yes to the above questions your site is likely to be River-flat Eucalypt Forest.

Photos courtesy of northsydney.nsw.gov.au

Characteristic Species List

River-flat Eucalypt Forest is characterised by the species listed below. The species present at any site will be influenced by the size of the site, recent rainfall or drought conditions and by its disturbance (including fire and logging) history. Note that NOT ALL the species listed below need to be present at any one site for it to constitute River-flat Eucalypt Forest.

Scientific Name	Common Name (Range)
Tree Canopy Species (>6m)	
<i>Angophora floribunda</i>	Rough-barked Apple
<i>Angophora subvelutina</i>	Broad-leaved Apple + (N-Sho)
<i>Casuarina cunninghamiana</i> subsp. <i>cunninghamiana</i>	River Oak
<i>Casuarina glauca</i>	Swamp Oak
<i>Eucalyptus amplifolia</i>	Cabbage Gum +
<i>Eucalyptus baueriana</i>	Blue Box (S-Haw)
<i>Eucalyptus benthamii</i>	Camden White Gum (R)
<i>Eucalyptus botryoides</i>	Bangalay (S-Hun)
<i>Eucalyptus elata</i>	River Peppermint (S-Haw)
<i>Eucalyptus grandis</i>	Flooded Gum (N-Hun)
<i>Eucalyptus longifolia</i>	Woollybutt (S-Hun)
<i>Eucalyptus moluccana</i>	Grey Box (N-Sho)
<i>Eucalyptus ovata</i>	Swamp Gum (S-Syd)
<i>Eucalyptus saligna</i>	Sydney Blue Gum (N-Syd)
<i>Eucalyptus tereticornis</i>	Forest Red Gum +
<i>Eucalyptus viminalis</i>	Ribbon Gum (S-Syd)
<i>Livistona australis</i>	Cabbage Tree Palms
<i>Melia azedarach</i>	White Cedar (N-Ulla)
Small Trees & Shrubs (~1.5-6m)	
<i>Acacia parramattensis</i>	Parramatta Wattle
<i>Acmena smithii</i>	Lily Pilly
<i>Acacia floribunda</i>	White Sally Wattle
<i>Backhousia myrtifolia</i>	Grey Myrtle
<i>Bursaria spinosa</i>	Sweet Bursaria / Boxthorn +
<i>Cayratia clematidea</i>	Native Grape (N-Sho)
<i>Melaleuca decora</i>	(N-Sho) A Paperbark
<i>Melicytus dentatus</i> (formerly <i>Hymenanthera dentata</i>)	Tree Violet
<i>Melaleuca linariifolia</i>	Flax-leaved Paperbark (N-Ulla)
<i>Melaleuca stypheloides</i>	Prickly-leaved Tea Tree (N-Sho)
<i>Ozothamnus diosmifolius</i> (formerly <i>Helichrysum diosmifolius</i>)	Ball Everlasting
<i>Tristaniopsis laurina</i>	Water Gum
<i>Phyllanthus gunnii</i>	Scrubby Spurge
<i>Plectranthus parviflorus</i>	Cockspur Flower
<i>Trema aspera</i>	Native Peach
Groundcover (~0-1.5m), Vines & Scramblers	
Herbs / Ferns	
<i>Adiantum aethiopicum</i>	Maiden Hair Fern
<i>Centella asiatica</i>	Indian Pennywort (N-Illa)
<i>Cheilanthes sieberi</i> subsp. <i>sieberi</i>	Mulga Fern
<i>Commelina cyanea</i>	Commelina (N-Nar)
<i>Desmodium gunnii</i>	Slender Trefoil +
<i>Dichondra repens</i>	Kidney Weed +
<i>Doodia aspera</i>	Prickly Rasp Fern
<i>Einadia hastata</i>	Berry Saltbush +
<i>Einadia trigonos</i>	Fishweed +

Scientific Name	Common Name (Range)
Groundcover (~0-1.5m), Vines & Scramblers	
Herbs / Ferns	
<i>Euchiton sphaericus</i>	Cudweed
<i>Eustrephus latifolius</i>	Wombat Berry
<i>Galium propinquum</i>	Maori Bedstraw +
<i>Geranium solanderi</i>	Native Geranium
<i>Hydrocotyle peduncularis</i>	Native Pennywort
<i>Hypolepis muelleri</i>	Harsh Ground Fern
<i>Opecularia diphylla</i>	Stinkweed
<i>Oxalis perannans</i>	Native Sorrel +
<i>Persicaria decipiens</i>	Slender Knotweed
<i>Poranthera microphylla</i>	Small Poranthera
<i>Pratia purpurascens</i>	Whiteroot +
<i>Pteridium esculentum</i>	Bracken
<i>Sigesbeckia orientalis</i> subsp. <i>orientalis</i>	Indian Weed
<i>Solanum prinophyllum</i>	Forest Nightshade + (N-Nar)
<i>Vernonia cinerea</i>	Forest Nightshade + (N-Nar)
<i>Veronica plebeia</i>	Trailing Speedwell +
<i>Viola hederacea</i>	Ivy Leaved Violet
<i>Wahlenbergia gracilis</i>	Bluebell +
Rushes / Grasses	
<i>Austrostipa ramosissima</i>	Stout Bamboo Grass
<i>Cymbopogon refractus</i>	Barbed Wire Grass
<i>Dichelachne micrantha</i>	Shorthair Plume Grass
<i>Digitaria parviflora</i>	Small-leaved Finger Grass
<i>Echinopogon caespitosus</i> var. <i>caespitosus</i>	Bushy Hedgehog Grass +
<i>Echinopogon ovatus</i>	Forest Hedgehog Grass +
<i>Entolasia marginata</i>	Bordered Panic
<i>Entolasia stricta</i>	Wiry Panic
<i>Eragrostis leptostachya</i>	Paddock Love-grass
<i>Imperata cylindrica</i> var. <i>major</i>	Blady Grass
<i>Lomandra filiformis</i>	Wattle Mat Rush
<i>Lomandra longifolia</i>	Ribbon Grass
<i>Lomandra multiflora</i> subsp. <i>multiflora</i>	Many-flowered Mat Rush
<i>Microlaena stipoides</i>	Weeping Grass +
<i>Oplismenus aemulus</i>	Basket Grass +
<i>Paspalidium distans</i>	Spreading Panic Grass
<i>Themeda australis</i>	Kangaroo Grass
Vines	
<i>Clematis aristata</i>	Old Mans Beard
<i>Clematis glycinoides</i>	Headache Vine
<i>Geitonoplesium cymosum</i>	Scrambling Lily
<i>Glycine clandestina</i>	Twining Glycine +
<i>Glycine microphylla</i>	Small-leaved Glycine
<i>Glycine tabacina</i>	Slender Sweet Root
<i>Hardenbergia violacea</i>	Purple Coral Pea +
<i>Pandorea pandorana</i>	Wonga Wonga Vine
<i>Rubus parvifolius</i>	Native Raspberry
<i>Stephania japonica</i> var. <i>discolor</i>	Snake Vine

+ = Key indicator species; N = North of; S = South of; Haw = Hawkesbury; Hun = Hunter; Illa = Illawarra; Nar = Narooma; Sho = Shoalhaven; Syd = Sydney; Ulla = Ulladulla; (R) = Restricted to lower Nepean River.

For further help with plant identification see plantNET.rbgsvd.nsw.gov.au/search/simple.htm