

Littoral Rainforest

in the South East Corner, Sydney Basin and NSW North Coast bioregions

Introduction

These guidelines provide background information to assist land managers and approval authorities to identify remnants of Littoral Rainforest an Endangered Ecological Community (EEC). For more detailed information refer to the Littoral Rainforest 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 very high of extinction in NSW under the *Threatened Species Conservation Act 1995*.

What is Littoral Rainforest?

Littoral Rainforest is a closed forest ecological community recognised by its close proximity to the ocean (generally <2km) and closed canopy (i.e. ~70% of the sky obscured by tree leaves and limbs). Vegetation structure can range from low thickets in wind exposed environments to tall forest in more protected sites. The plant species in this ecological community are predominantly rainforest species with moist, evergreen, leathery leaves and vines may be a major component of the canopy. Whilst dominated by rainforest species, scattered individuals of sclerophyllous (hard-leaved) plants, such as Smooth-barked Apple (*Angophora costata*), Coastal Banksia (*Banksia integrifolia*), Bangalay (*Eucalyptus botryoides*) and Forest Red Gum (*E. tereticornis*) may also be present.

In NSW, Littoral Rainforest comprises five maritime influenced ecological communities (known as suballiances) of the Subtropical Rainforest subformation. Each of these five suballiances are considered to be distinct

forms of this ecological community based on characteristic species present, landscape position and climatic factors.

Suballiance 16: Small-leaved Lilly Pilly – Broad-leaved Lilly Pilly (*Syzygium leuhmannii* – *Acmena hemilampira*)

Suballiance 17: Tuckeroo (*Cupaniopsis anacardioides*)

Suballiance 18: Brush-Box (*Lophostemon confertus*)

Suballiance 19: Yellow Tulipwood – Yellow Aspen – Red Olive Berry – Brown Pine (*Drypetes deplanchei*–*Sarcomelicope simplicifolia* – *Elaeodendron australe* – *Podocarpus elatus*)

Suballiance 20: Lilly Pilly – Fig tree – Cabbage-tree Palm – Brown Pine (*Acmena smithii* – *Ficus* spp. – *Livistona australis* – *Podocarpus elatus*)

Suballiance numbering based on Floyd (1990). Refer to reference list for further details.

More detailed information on the plant species composition of Littoral Rainforest is provided in the Supplementary Information guideline.



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A closed canopy, approx. 70% of the sky is blocked by trees.



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Where is Littoral Rainforest found?

Littoral Rainforest is found on exposed and sheltered coastal headlands, beach sand dunes, soils derived from bedrock behind beach deposited sands and sheltered areas around coastal estuaries, north from Bega in southern NSW (see map). It is usually found in areas protected from fire.



Each Littoral Rainforest suballiance generally occurs in different localities in the landscape as outlined below:

Suballiance 16: Well developed (i.e. structurally complex with various layers of vegetation) on deep sand, north from South West Rocks area.

Suballiance 17: Well developed, on deep sand more exposed to salt-spray, north from Port Stephens.

Suballiance 18: Exposed coastal headlands, usually acting as a protective barrier to remnants of sub-alliance 17 or 19. North from Port Stephens.

Suballiance 19: Well developed on deep sand. Southern extension of sub-alliance 16, occurring south from South West Rocks area.

Suballiance 20: Simpler form of suballiance 19 (i.e. less structurally complex). Only found south of Sydney.

Littoral Rainforest is not restricted to sandy soils; it can also be found in protected areas around coastal estuaries where soils are derived from river sediments or on more rocky substrates close to the waters edge. The landscape setting of being close proximity to the marine environment and climatic conditions, along with low fire frequency, more readily determines the presence of Littoral Rainforest.



Suballiance 18, on a headland overlooking Coffs Harbour airport.

How can I identify areas of Littoral Rainforest

The following are 'Key Indicators' to look for when identifying Littoral Rainforest:

1. Is the site in close proximity to the ocean or marine environment and is north of Bega?
2. Is the site on a coastal headland, hind dune or other place subject to the marine environment and climatic influences?
3. Does the site have a closed canopy (i.e. ~70% of the sky obscured by tree leaves and limbs - % cover may be lower if disturbed)?
4. Is it evident that there has been a low occurrence of fire (i.e. few burnt tree trunks, well developed shrub layer; few sclerophyllous plants)?
5. Is the shrub and tree layer made up of rainforest plants and vines (i.e. evergreen, moist, leathery type leaves)?
6. Does the site consist of a combination of the characteristic species (check with local botanist, consult reference books or see plantnet.rbgsyd.nsw.gov.au)?

If you answered yes to the above questions your site is likely to consist of Littoral Rainforest.

EECs that are similar to / may adjoin with or intergrade with Littoral Rainforest

This community would have previously occurred with or closely resemble other ecological communities that are now also listed as EECs. These EECs are:

1. *Bangalay Sand Forest (BSF)*, *Swamp Sclerophyll Forest (SSF)* or *Swamp Oak Floodplain Forest* will intergrade in areas near the coast that experience more frequent fires and/or have impeded drainage and/or higher water-table. Note, the communities may have a shrub layer of rainforest type plants with a non-rainforest tree layer.



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Dense shade cast on the ground limits growth of groundcovers in Littoral Rainforest.

2. *Themeda* Grassland on seaciffs and coastal headlands may be adjacent to Littoral Rainforest.
3. Other types of Sub-tropical Rainforest may occur near the ocean but species composition and structure will differ. They are most easily distinguished by the higher number of epiphytes (e.g. staghorns, elkhorns etc) and the lower number of salt tolerant plants species.

Degraded sites – determining the conservation value of remnants

The degree of disturbance (i.e. the site condition) of any remnant may vary depending on past land use, management practices and/or natural disturbance. Whilst not exhaustive, the following are a number of disturbance variations:

1. Presence of woody understorey weeds such as Lantana (*Lantana camara*), Bitou Bush (*Chrysanthemoides monilifera*) and/or the West Australian native Golden Wreath Wattle (*Acacia saligna*);
2. Groundcover overrun with weeds such as Asparagus Fern (*Asparagus aethiopicus*), Morning Glory (*Ipomoea cairica*), Corky Passionfruit (*Passiflora* spp.), and/or Gloriosa Lily (*Gloriosa superba*);
3. Recently burnt or disturbed with regenerating sclerophyll species. Given time and absence of fire these sites may regenerate to Littoral Rainforest;
4. Area regenerating with rainforest plants after being historically sand-mined;
5. Rainforest species present with canopy cover reduced due to disturbance (i.e. storms; clearing).



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Scentless Rosewood (*Synoum glandulosum*).

Heavily degraded remnants of Littoral Rainforest and those in poor condition are still considered as the EEC. Such remnants may still have conservation value for a number of reasons including:

1. As part of a corridor that has connective importance for dispersal of native flora and fauna;
2. As an island of rainforest species surrounded by sclerophyll ecological communities or land cleared for urban/agricultural development;
3. Providing important habitat and food source for native mammal and bird species;
4. It may contain threatened species of flora such as, Scented Acronychia (*Acronychia littoralis*), White Lace Flower (*Archidendron hendersonii*), Stinking Cryptocarya (*Cryptocarya foetida*), Brush Bloodwood (*Baloghia marmorata*), White-flowered Wax Plant (*Cynanchum elegans*), Coast Fountainea (*Fontainea oraria*), Monkey Nut (*Hicksbeachia pinnatifolia*), Rough-shelled Queensland Nut (*Macadamia tetraphylla*), Northern Euodia (*Melicope vitiflora*), Native Senna (*Senna acclinis*), Coolamon (*Syzygium moorei*), Silver Bush (*Sophora tomentosa* subsp. *australis*), Magenta Lilly Pilly (*Syzygium paniculatum*) and/or Xylosma (*Xylosma terrae-reginae*).
5. Maintaining a healthy native seed bank.

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



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Cabbage Tree Palms in the shrub layer of a Littoral Rainforest.

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
- Floyd, A.G. (1989) *Rainforest trees of mainland South-Eastern Australia*. Inkata Press, Melbourne.
- Floyd, A.G. (1990) *Australian rainforests in New South Wales. Vol 1 and 2*. Surrey Beatty and Sons.
- Littoral Rainforest species profile threatenedspecies.environment.nsw.gov.au/tsprofile/profile.aspx?id=10929
- Harden, G. (ed) *Flora of NSW Vols 1 – 4* (1990-2002). NSW University Press.
- Harden, G., McDonald, B. and Williams, J. (2006) *Rainforest trees and shrubs: a field guide to their identification*. Botanic Gardens Trust, Sydney.
- NSW Scientific Committee Determinations: environment.nsw.gov.au/committee/ListofScientificCommitteeDeterminations.htm

- 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). environment.nsw.gov.au/bioregions/BioregionsPrintable.htm



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Brush Box (*Lophostemon confertus*). Common to Subsalliance 18, north of Port Stephens.



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Littoral Rainforest at Gerroa, south of Sydney.

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