Old Growth Forests

What are old growth forests?

Old growth forests are those where the overstorey is in the late mature to over mature (senescent or partly dying) growth stage with the presence of relatively large old trees, many containing hollows and often with the presence of dieback or dead branches in the crown.

Additionally, a diverse structure and composition of species in the subcanopy and understorey and dead standing stags and fallen trees (logs) may be present.

Old growth forest on less fertile sites or old growth woodlands, whilst being not as diverse, are still characterised by a canopy of older trees (many with hollows) but with a sparser understorey and a groundcover of native grasses.

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Senescent Blackbutt tree

Why are they important?

Old growth forests are recognised as having very high aesthetic, cultural and nature conservation values. Their protection and management is extremely important in maintaining biodiversity.

It is estimated that over half of the original forests of NSW have been cleared and that much of what remains is substantially disturbed or modified by grazing, logging, excessive fires, weeds and dieback. Areas of old growth forests, in particular, have been severely reduced and now represent less than 10% of their original extent.

Old growth forests are extremely important in the maintenance of biodiversity (fauna, flora and insect diversity) and ecological functions (nutrient and water cycles).

Specific values of old growth forests used for foraging, nesting, basking or roosting by native animals include:

- diversity of hollows in limbs and trunks of live trees, dead trees (stags) and ground logs;
- more dead wood present both standing and as ground logs;
- usually deep litter layer or native grasses present as ground cover;
- diversity in tree structure and age with older trees producing larger amounts of loose and shedding bark providing greater opportunities for nesting and roosting, and higher levels of food resources such as insects, nectar, pollen and sap;
- mistletoe and epiphytes often present; and
- more availability of nest building materials and locations and perches for resting, basking and hunting of forest birds and owls.

Table 1 provides a list of species that are dependent on tree hollows and other key resources provided by old growth forests.

Mapping of forest growth stages?

Old growth forest and other forest growth stages for public and private lands have been mapped for parts of NSW (refer map 1) using Aerial Photograph Interpretation

Department of Environment & Climate Change NSW

Old growth forest is defined as an area of forest greater than 5 hectares where:

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Old Growth Forest - Northern Tablelands

- the overstorey is in the late to over-mature growth stage with the presence of relatively large old trees (many containing hollows and often with the presence of dieback or dead branches in the crown).
- the age (growth) structure of the stand measured as relative crown cover consists of less than 10% regeneration and advance regrowth and greater than 10% in the late to over-mature (senescent) growth stage.
- the effects of unnatural disturbance is now negligible, and
- old growth woodlands west of the Great Divide, whilst comprising a characteristic canopy of late to over-mature trees (many with hollows), may comprise a woodland structure with a less diverse or often shrubby understorey and a groundcover of grasses and herbs.

(API). These maps give an indication of where old growth forests occur across the landscape.

Forest growth stages

Forest growth stages are determined by structural characteristics of the forest. These include the presence or absence of older, mature to over mature trees with large crowns and the presence or absence of regrowth and limited disturbance. Forest growth stages are described in Figure 1 which illustrates the characteristics associated with growth stages from regrowth to old senescent trees.

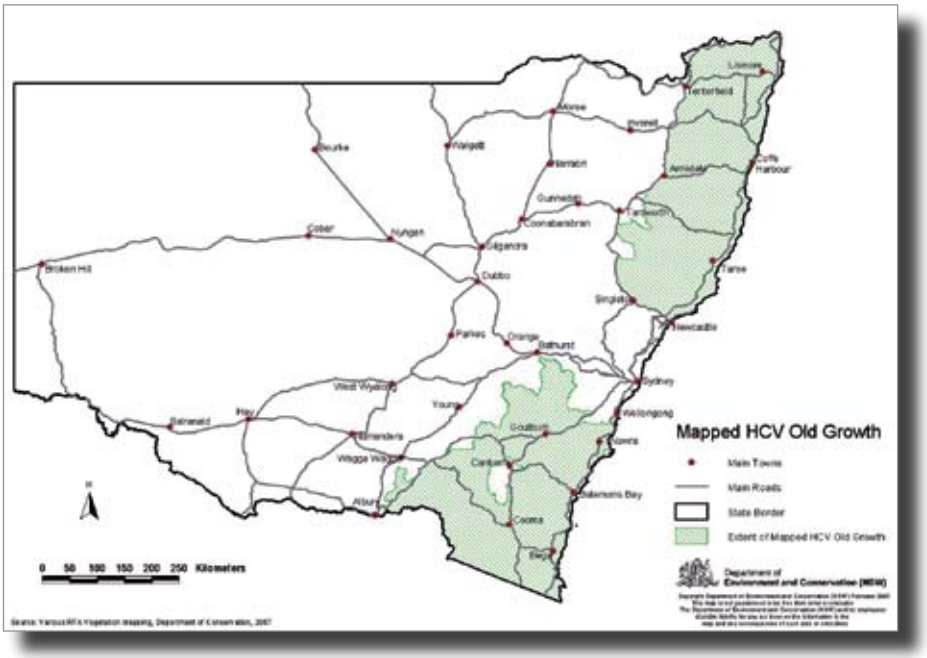
Old growth forest

These are forests where there are many late mature to senescent trees (larger older trees, many with die-back in the crown, and hollows in branches and the trunk). Additionally, there are fewer younger regrowth trees and little evidence of disturbance such as recent logging.

Old growth forests may vary in the size and height of older trees due to site quality and location (e.g. tree size may be less in areas of poorer soil fertility and lower rainfall).

Old growth forests in very productive sites (moist forests) usually contain very tall trees (40 metres or more), are dominated by trees with a large girth (i.e. > 100 cm diameter) and have some trees with large, partly dying crowns. Dead standing trees (stags) and / or logs on the forest floor or in streams may also be present.

Forests and woodlands where the site quality supports less productive forests will usually be less than 25 metres in height and not necessarily of a large diameter. While these trees may contain hollows, it may be generally more difficult to observe any dead limbs in the crown from the ground. These forests are characterised by an open forest structure with a sparser understorey and



Map 1: Extent of Old Growth Forest Mapping

native grass groundcover with smaller diameter dead woody material on the ground.

Old growth forests have minimal disturbance, at least in the upper canopy tree structure, with respect to recent logging or clearing. Where some disturbance is present the extent is not sufficient to affect the old growth characteristics of the forest.

Private Native Forestry and Old Growth Forests

Except for the maintenance of existing roads, harvesting is not permitted in identified old growth forests under the Private Native Forestry (PNF) Code of Practice. To determine whether old growth forests occur on your property landowners can request a map from the Department of Environment and Climate Change. Landowners can then use this map to delineate the old growth forest exclusion zone on their property and Forest Operation Plan. The boundary of the old growth forest should be defined on site by scaling from the map with reference to property landscape features such as boundary fences, gullies, creek lines and ridges. The presence/absence of old growth forest characteristic features such as late-mature to over-mature trees, larger trees with hollows, limited areas of regrowth (less than 10%) and limited unnatural disturbance should also be used.

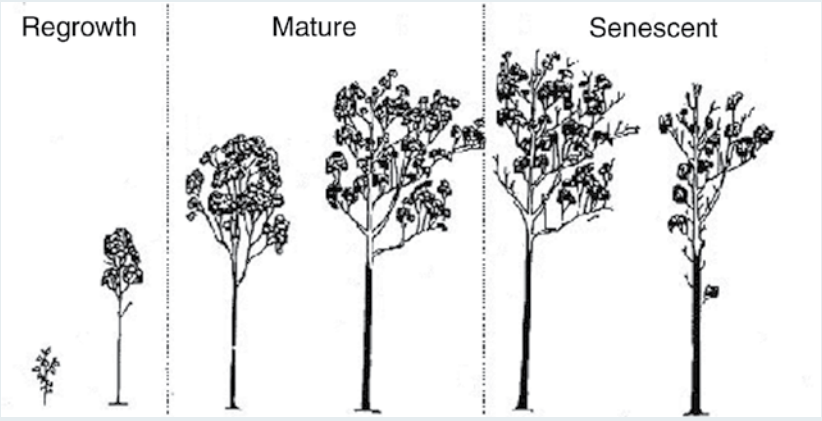
The landowner can accept the map provided as representing the old growth forest on their property or can request the Department of Environment and Climate Change to undertake a review of the mapping. This request will need to be accompanied by some evidence that the area does not meet the old growth forest definition. Examples of this evidence may include photographs of recent or past legally undertaken activities such as logging, clearing or other disturbances at the site.

Disturbance at the site should be measured as detailed in the table below.

Old Growth Forest disturbance indicator descriptions

Disturbance Indicator	**Where site characteristics below are present within 30m of any 6 out of the 10 (as a minimum sample) or 8 out of 15 site sampling points (derived at 50m intervals along a transect within the old growth forest), then disturbance could be a factor in disputing mapped areas.**
1	Recent logging: Evidence of recent logging activity within the last 10 years denoted by bare earth, snig tracks, log dumps, logging debris. Due to the recent nature of disturbance there is little or no regrowth present and often large open areas and associated canopy gaps.
2	Older logging: Visible evidence of older logging activity such as stumps, log dumps and/or constructed snig tracks which have not occurred in the last 10 years. Can cover a range of logging intensities and intervals since last logging. It is not the intention that evidence of historic logging per se is indicative of a significant impact on the structure and floristics of the forest stand in question. Quantitative assessment of 'older logging' should include only stumps > 40 cm diameter IF there is visible disturbance to the canopy in the form of canopy gaps PLUS regrowth clusters or native pioneers or woody weeds. This indicator therefore must be a combination of stumps > 40cm diameter PLUS gaps AND clusters or regrowth OR thick regeneration of native pioneers and weeds.
3	Exotic woody weeds: >30% spatial cover within the 30m radius sample area of exotic woody weeds such as Blackberry, Privet, Camphor Laurel, Lantana etc.
4	Ringbarked or dead standing trees: This includes ringbarked trees and trees affected by dieback or bell bird activity. Generally these dead trees will be > 40 cm diameter & not be dead from natural cases.
5	Grazing infrastructure: This must include the presence of fence lines, yards, dams or other watering points and does not include only the presence of cattle, their tracks or camps. There must be a noticeable and significant impact on the structure (presence of canopy gaps and regrowth) and floristics of the forest stand.
6	Constructed tracks: This includes constructed tracks that have required the removal of canopy trees resulting in linear strips of regrowth clusters of native pioneers or woody weeds and does not include temporary farm or bush tracks.

Figure 1: Growth Stages



Characteristics associated with different growth stages for eucalypt forests in high quality environments (moist forests).

Table 1: Species dependent on tree hollows and other key resources found in old growth forests

Mammals/tree dwelling	*Bats*	*Birds*
Feathertail Glider	Greater Long-eared Bat	Australian King-Parrot
Sugar Glider	Chocolate Wattled Bat	Red-winged Parrot
Squirrel Glider	Hoary Wattled Bat	Crimson Rosella
Yellow-bellied Glider	Gould's Wattled Bat	Pale-headed Rosella
Greater Glider	Eastern False Pipistrelle	Turquoise Parrot
Common brushtail Possum	Greater Broad-nosed Bat	Powerful Owl
Mountain brushtail Possum	Eastern Broad-nosed Bat	Southern Boobook
Common ringtail Possum	Little Broad-nosed Bat	Barking Owl
Eastern pygmy Possum	Northern Broad-nosed Bat	Sooty Owl
Brush-tailed Phascogale	Large Forest Bat	Masked Owl
Ground/partly tree dwelling	Eastern Forest Bat	Barn Owl
Spotted-tailed Quoll	Southern Forest Bat	Australian Owlet-nightjar
Yellow-footed Antechinus	Little Forest Bat	Laughing Kookaburra
Brown Antechinus	Large-footed Myotis	Sacred Kingfisher
Dusky Antechinus	*Birds*	Forest Kingfisher
Bush Rat	Nankeen Kestrel	Dollarbird
Bats	Peregrine Falcon	Australian Ground Thrush
Yellow-bellied Sheathtail Bat	Red-tailed Black Cockatoo	Scarlet Robin
White-striped Freetail Bat	Glossy Black-Cockatoo	Flame Robin
Beccari's Freetail Bat	Yellow-tailed Black Cockatoo	Tree Martin
Eastern Freetail Bat	Sulphur-crested Cockatoo	White-throated Treecreeper
Southern Freetail Bat	Galah	Red-browed Treecreeper
Little Northern Freetail-Bat	Double-eyed Fig-Parrot	Brown Treecreeper
Northern Freetail-Bat	Rainbow Lorikeet	Striated Pardalote
Eastern Long-eared Bat	Scaly-breasted Lorikeet	Spotted Pardalote
Lesser Long-eared Bat	Musk Lorikeet	Buff-rumped Thornbill
Gould's Long-eared Bat	Little Lorikeet	Dusky Woodswallow

Old Growth Forests are considered rare across the landscape. Their protection is very important to the maintenance of biodiversity.

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