What are old growth forests?

Old growth forests are those where the overstorey is in the late mature to overmature (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.

Areas of drier old growth forests and woodlands may be less diverse than more productive sites but are still characterised by a canopy of older trees (many with hollows) but with a sparse understorey and a groundcover of native grasses.

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 lands in north east NSW have been mapped using Aerial Photograph Interpretation (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. Forest growth stages for the north coast have been mapped into different growth stage categories. These categories generally relate to the age of the forest, the amount of older trees compared to regrowth and mature trees, and amount of disturbance. The categories of each of the growth stages are further described below. Figure 1 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 very few 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.

Old growth forests and woodlands on drier or less productive sites (for example in the Tableland areas) are generally characterised by an open forest structure with a sparser understorey and native grass groundcover with smaller diameter dead woody material on the forest floor.

**Definition of old growth forests**

“an old growth forest is an ecologically mature forest where the effects of disturbances are now negligible” (JANIS 1997).

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.

**Disturbed old forest**

These forests are characterised by similar growth stage features as those described above but contain more obvious disturbance to the upper canopy (e.g. logging related canopy gaps and uneven crown heights) even though many large old trees are present. There will also be signs of subcanopy disturbance (e.g. stumps, snig tracks, weeds). There may also be > 5 dead standing trees per hectare due to previous ringbarking or other disturbance such as dieback.
**Mature forest**

Mature forests are generally dominated by mature trees with fewer very old trees and some areas of regrowth.

Signs of disturbance will be more evident as some logging and clearing may have occurred. For these forests a number of disturbances may be observable under the canopy confirming a previous logging history.

**Disturbed mature forest**

Disturbed mature forests contain more obvious disturbance to the upper canopy and the lower layers as evidenced (over the majority of the area) by signs of recent and/or old logging such that there are visible logging related canopy gaps and uneven crown heights. There may also be localised areas where the understorey is dominated by native regrowth and/or lantana and other weeds.

**Young forest**

Young forests are dominated by greater than 30% regrowth and there is evidence of intensive past disturbance such as logging gaps. While there may be older senescing trees these forests are primarily comprised of even-aged regrowth. A range of disturbances in addition to the growth stage will be visible on site.

**References and Further Reading**

- Resource and Conservation Division (1999), *Old Growth Forest Related Projects UNE/LNE CRA Regions*. NSW Comprehensive Regional Assessments, Department of the Prime Minister and Cabinet, Canberra.

**Spotted Tailed Quoll** - a hollow dependent species found in old growth forests.
Old Growth Forests are considered rare across the landscape. Their protection is very important to the maintenance of biodiversity.

DEC website: www.environment.nsw.gov.au

Further Information
Environment Protection and Regulation Division
North East Branch
Department of Environment and Conservation
24 Moonee Street
COFFS HARBOUR NSW 2450
Phone: 6651 5946

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