

Old-Growth Forest Identification and Protection: History and Overview

The national definition of old-growth forest, developed as part of the National Forest Policy Statement (NFPS) in 1992, is:

Forest that is ecologically mature and has been subjected to negligible unnatural disturbance such as logging, roading and clearing. The definition focuses on forest in which the upper stratum or overstorey is in the late mature to over-mature growth phases.¹

Old-growth forest identification in the South West of WA began in the mid-1990s as a part of the development of the Regional Forest Agreement (RFA). The Department of Conservation and Land Management (now Department of Biodiversity Conservation and Attractions, DBCA) developed applied definitions and identification procedures to map and describe old-growth forests during this process.

The WA ‘Comprehensive Regional Assessment’ report (1998), prepared by CALM as the underpinning report for the preparation of the WA RFA, states at page 166:

In summary, the working definition for the mapping of old-growth is:

- *karri and karri/tingle forest – uncut forest which is mature or senescent;*
- *jarrah and jarrah/tingle forest – uncut forest or forest subject to minimal disturbance as defined above and which is not known to be affected by *Phytophthora cinnamomi*;*
- *jarrah woodland—all woodland which is not known to be affected by *Phytophthora cinnamomi*; and*
- *wandoo forest and woodland—uncut forest or woodland*

In March 2017, the Department of Parks and Wildlife (now DBCA) took over responsibility for the assessment of community nominations of unmapped old-growth forests from the Conservation Commission. As a part of this transfer of responsibility the Department made changes to the criteria and procedure for the protection of old-growth jarrah forests while leaving those for old-growth karri unchanged.

The restrictive criteria for both old-growth jarrah and karri forests are resulting in old-growth forests being disqualified from protection. Karri forests, including stands within

¹Australian Government, *National Forest Policy Statement*. Glossary,p3.
http://www.agriculture.gov.au/SiteCollectionDocuments/forestry/australias-forest-policies/nat_nfps.pdf

Lewin, Channybearup and Nelson blocks and jarrah forests such as parts of Barrabup, Rocky and Helms blocks have been disqualified. Changes to the criteria need to be made to protect all old-growth forests.

Karri old-growth forest definition, criteria and identification procedures

1. Current Definition and Criteria for Identification:

In karri-dominant forests, old-growth forest is defined as *'uncut (never harvested) forest that is dominated by overstorey trees possessing mature or senescent characteristics.'* In this definition, a mature or senescent forest is *'one where mature or senescent trees have a crown cover of 25% or more.'*²

Areas excluded from the old-growth forest layer will include:

Areas of karri... forest that have been previously cut over. (p26)

This means that where just one tree has been cut down at some time in the past 150 years, that 2-hectare area of forest does not qualify for old-growth status. Forests with all the characteristics of old-growth forests are being excluded on this basis.

2. Minimum Area Rule

Old-growth karri forests are further excluded from protection by a minimum area rule that DBCA applies to its mapping process. The procedure, illustrated in maps below, first of all assesses the forests at the 0.5-hectare grid cell level, and then uses an algorithm that compares four adjacent 0.5-hectare cells in a square alignment. Only those 2-hectare squares that are made up of four 'uncut' 0.5-hectare cells meet the rule and are found to be old growth.

This means that where one stump is found in a 2-hectare square, an entire 2-hectare stand is excluded. This has two impacts:

- (i) Small and irregularly shaped old-growth areas are not protected, and
- (ii) Larger, contiguous stands of old-growth forest are broken up into smaller stands with connecting stands subject to clear-felling, degrading the surrounding forest and reducing the ecological integrity of the whole stand.

This minimum area rule is not applied to other informal reserves, including Diverse Ecotype Zones and stream reserves and should not be applied to old-growth forests.

²DPAW, 2017, *Procedures for the Ao. FEM075*. Department of Parks and Wildlife, Perth, p14.

3. Example of Old-growth Karri Forests excluded from Identification and Protection - Case study of Lewin 05/06 near One Tree Bridge, west of Manjimup.



Photographs 1 and 2 (above) were taken in Lewin 06 in June 2018 within Survey Area 7 in the maps on page 4.

Figure 1 shows the areas in Lewin 05/06 that were surveyed by DBCA in 2017 for unmapped old-growth. Signs of disturbance are indicated with yellow stars (stumps) and red circles (clearings for roads / landings). A 0.5-hectare grid overlaid on the survey areas shows the scale.

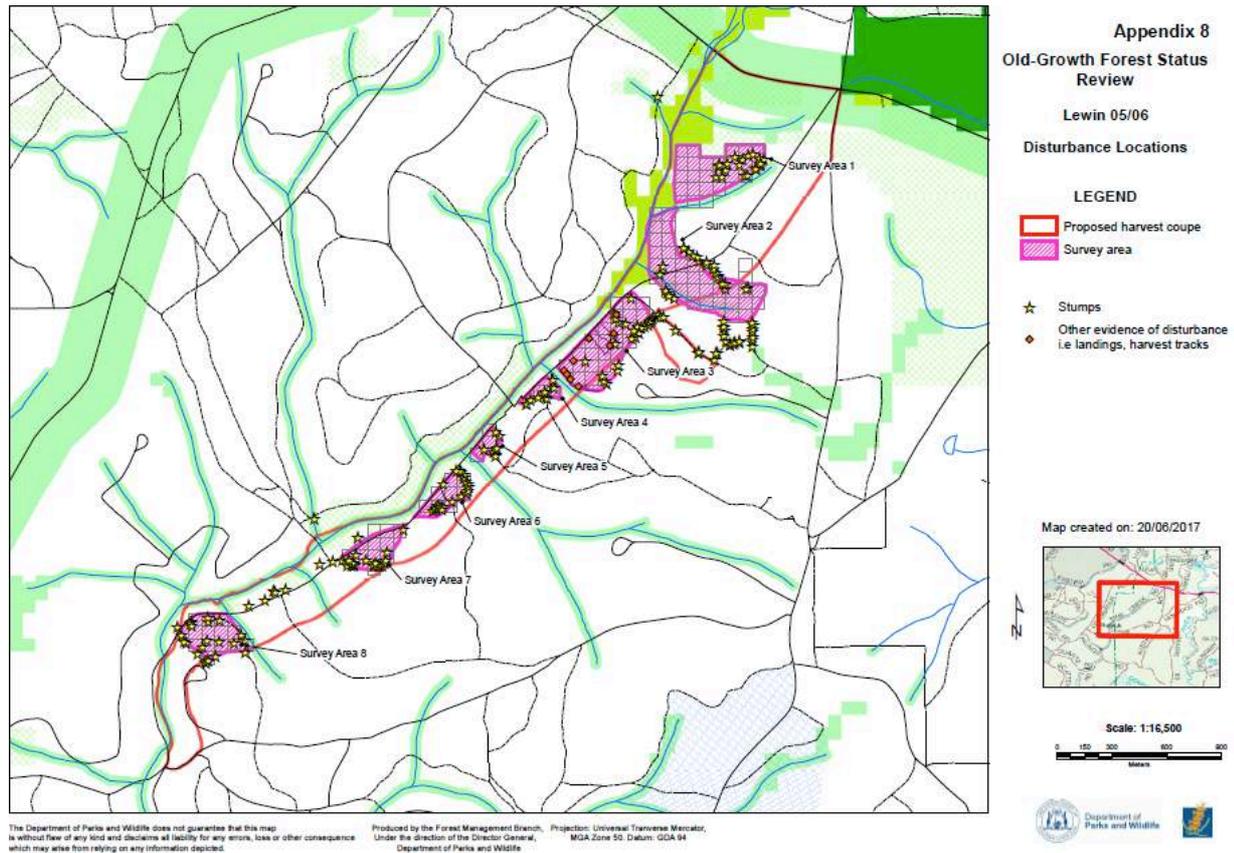


Figure 2 shows the four polygons found to meet the uncut and minimum area criteria.

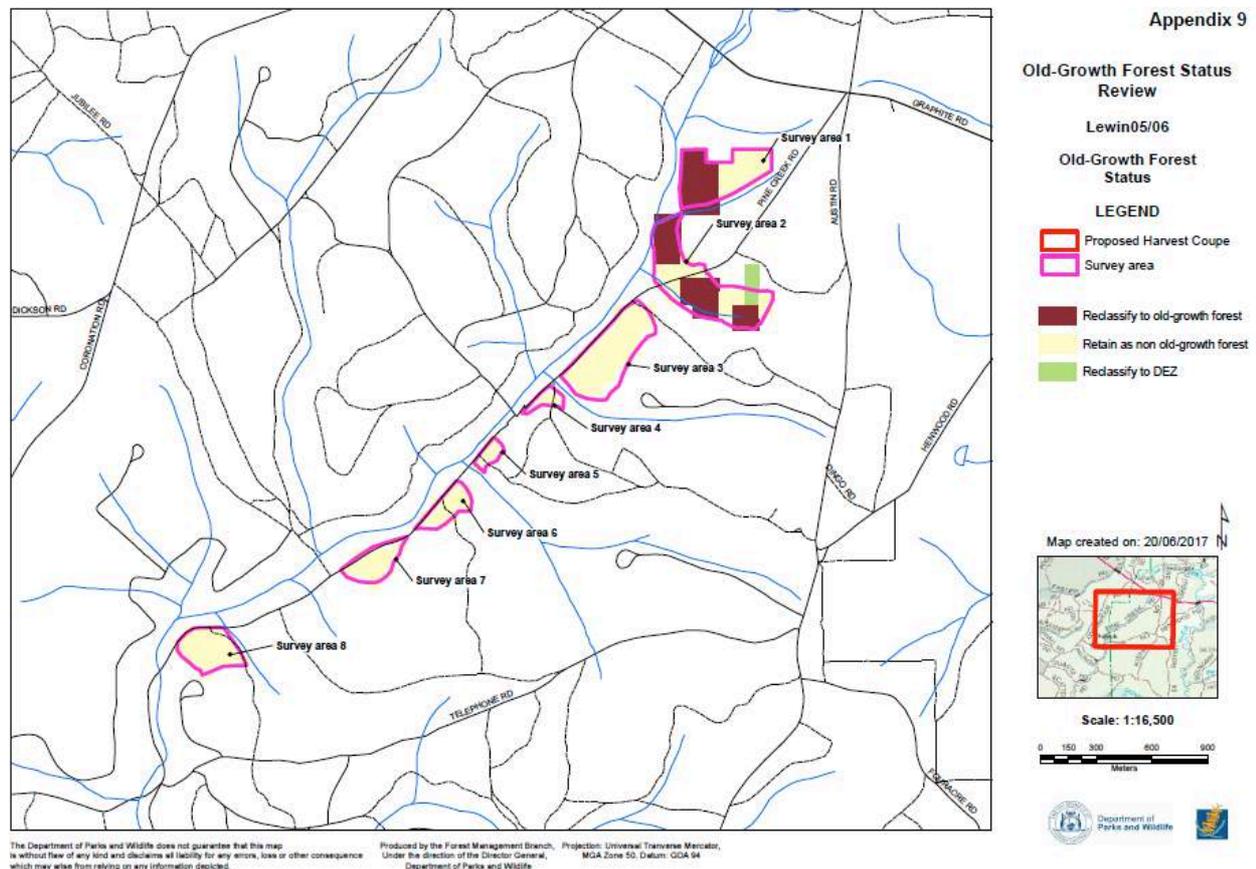
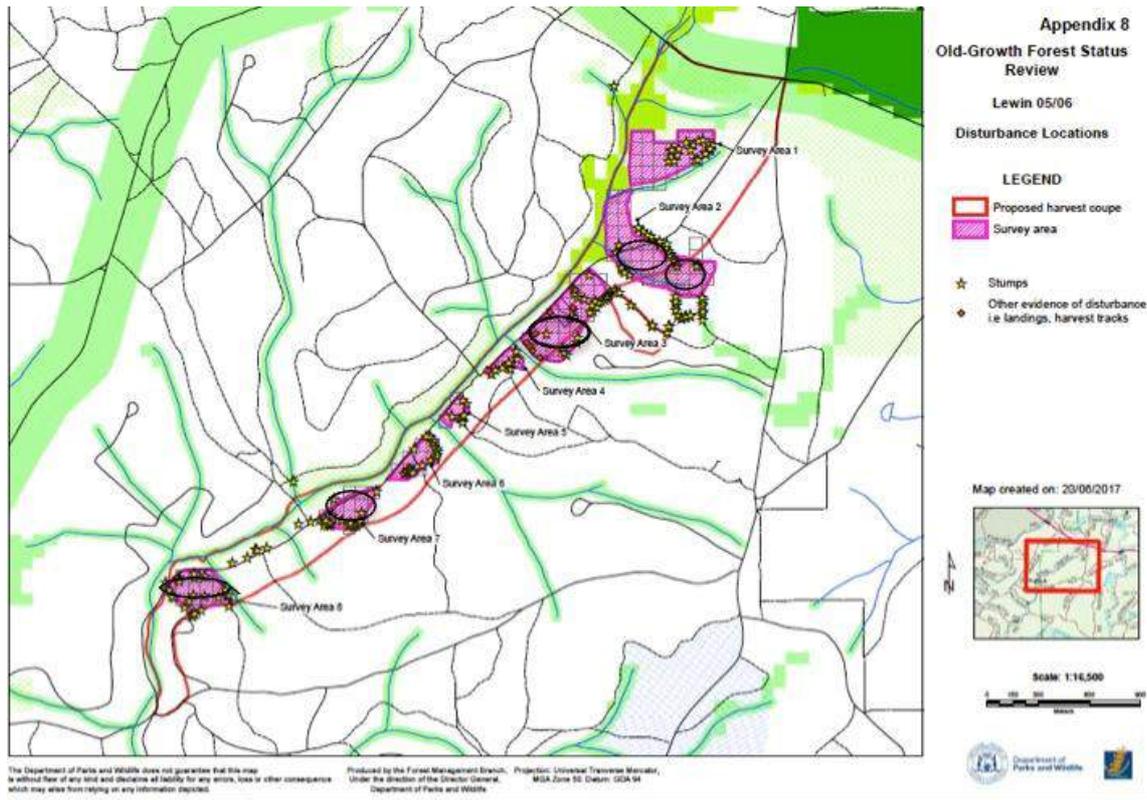


Figure 3 shows, within the black ovals, those areas that meet the 'uncut' criterion but that were excluded by the minimum area rule.



The figures above have been reproduced from DBCA's Lewin old-growth report.³ The black circles have been added subsequently to illustrate the areas excluded by the minimum area rule.

The figures show that the majority of the uncut old-growth forest identified in the Lewin 06 survey has been excluded from protection on the basis of not meeting the minimum area rule, either because it is arranged in a linear, rather than square, alignment, or because there are fewer than 4 adjacent 0.5-ha cells.

The photographs on page 3 were taken in Survey Area 7 (of Figures 1, 2 and 3) and show an old-growth forest that has been disqualified from old-growth classification and is scheduled for clear-felling.

Note that the previously unmapped Diverse Ecotype Zone shown in green in Survey Area 2 (Figure 2 above) is a linear 1.5-hectare size and shape, that is, it doesn't meet the minimum area rule applied to old-growth, but has been mapped and will be demarcated in the field to protect it from logging. By extension it is therefore clear that there is no

³Western Australian Department Biodiversity Conservation and Attractions, 2017. *Old-growth report Lewin05-06 Final, May 2017*. DBCA Kensington, WA.

technical reason, either mapping or field related, to prevent small, irregular shaped stands of old growth from being protected.

3. Recommendations

WA Forest Alliance recommends that:

1. All old-growth karri forests be protected, including where they do not meet the 2-hectare square minimum size and shape rule, and
2. Karri forests that have been lightly, selectively logged in the past and are now classified by DBCA and FPC as 'two-tiered' be recognised as old-growth forest and protected.

WA Forest Alliance recommends the following definition and criteria for karri old growth:

In karri-dominant forests, old-growth forest is defined as uncut (never logged) forest or forest subject to minimal unnatural disturbance. A structural characteristic of old-growth karri forests is an uneven aged canopy where gaps in the senescent tree layer allow new regeneration and there is a high degree of diversity in the ages of the trees. Old-growth functions such as nesting hollows, foraging habitat, understorey refugia and substantial levels of carbon storage, including long-term maintenance of soil organic carbon stocks are evident. In this definition, previously uncut karri forests and negligibly disturbed 'two-tiered' karri forests are considered old growth.

Areas excluded from the old-growth forest layer will include areas of karri forest that have been previously clear-felled or intensively logged.

Old-growth karri forests are identified and protected at the 0.5-hectare grid cell level.

Benchmarks of (i) no more than 2 stumps per 0.5-hectare grid cell and (ii) minimum of 15% mature and senescent canopy cover would inform the need for surveys.ⁱ

Surveys would be used to confirm the presence of old-growth structure and functions, as was the case when the Conservation Commission (now Conservation and Parks Commission) was responsible for assessing forests for unmapped old growth.

Jarrah old-growth forest definition and identification procedures

1. Current Definition and Criteria for Identification

*In jarrah and jarrah tingle dominant types, old-growth forest is defined as ‘uncut (never logged) forest or forest subject to minimal disturbance and that is not affected by *Phytophthora cinnamomi* (RFA 1998a).⁴*

2. Changes since DBCA assumed responsibility of unmapped old-growth assessments

In 2017, under the Forest Management Plan 2014-2023 (p42), the responsibility for assessing nominations of unmapped old-growth forests was transferred from the Conservation and Parks Commission to the Department of Biodiversity, Conservation and Attractions (DBCA, previously Department of Parks and Wildlife).

Under the previous Conservation Commission assessment process, jarrah forests with intact, mature canopies were classified as old-growth including where a number of stumps from logging activities were present:

Therefore if evidence of disturbance exists (e.g stumps etc) but the sampling indicates no significant difference in the structure of the overstorey, the area will normally be considered as minimally disturbed old-growth and returned to the corporate database as old-growth.⁵

A benchmark of 5 stumps per hectare was developed from an earlier pilot study, but the Conservation Commission would sample areas with up to 10 stumps per hectare as potential candidates for old-growth forest classification:

A threshold figure of the order of 5 stumps per hectare was developed from the pilot study analysis, as a guide for minimally disturbed old-growth forest. However, the Conservation Commission does recognize the concerns raised in relation to the natural range in both forest density and spatial pattern across the geographic range of forest species, and the variability of the silvicultural practices which have been applied. For this reason, the Conservation Commission proposes to assess the criteria in conjunction with other

⁴Department of Parks and Wildlife, 2017. *Procedures for the assessment, identification and demarcation of old-growth forest* FEM Procedure No. FEM075, Department of Parks and Wildlife, Perth(p7)

⁵Conservation Commission of Western Australia, 2005. *Assessment criteria and process for the Conservation Commission review of old-growth amendments*. CPC Kensington, WA. (p31) <http://www.conservation.wa.gov.au/media/1037/Old-GrowthAmmendments2.pdf>

*information such as relative crown cover estimates and the available records, to improve the assessment and to provide transparent information to stakeholders.*⁶

Conservation Commission old growth assessments employed the above process. Surveys in Gregory 03, Arcadia 03 and Warrup 06 found negligibly disturbed old-growth forests with averages of 5, 3.8 and 4.5 stumps per hectare respectively.⁷

The DPAW *Old-Growth Forest Procedures* March 2017 has made a significant change to these procedures. Now forests with more than 6 stumps per 2-hectare block are automatically disqualified from old-growth status regardless of overstorey maturity:

*In western jarrah forest (defined as areas receiving higher than 900 mm annual rainfall as per the silviculture guidelines) a threshold of 6 or less stumps per two hectares indicates a minimally disturbed area.*⁸

The DPAW (now DBCA) threshold of 6 stumps per 2-hectare block is substantially more restrictive than the Conservation Commission's benchmark of 5 stumps per individual hectare with associated field surveys to assess canopy maturity. Old-growth forest found in Gregory 03, Arcadia 03 and Warrup 06 would have been logged had the DPAW procedure been in place at the time of their assessments.

Areas that are potential candidates for old-growth classification are reduced by a further blanket threshold of no more than 2 stumps per 0.5-hectare cell, including where the removal of trees has had a negligible impact on the structural integrity and maturity of the surrounding forest and would not have disqualified the forest under the Conservation Commission's procedures:

*The combination of four half-hectare FMIS grid cells cannot contain areas which are more than minimally disturbed at the 0.5 hectare grid cell i.e. any FMIS grid cell cannot have more than two stumps in it.*⁹

This restricts the criteria further and increases the likelihood of negligibly disturbed jarrah forests that retain old-growth structure and functions being disqualified from old-growth classification.

⁶Ibid, p 29-31

⁷ Reports for these and other forests assessed by the Commission between 2006 and 2017 are available here: <http://www.conservation.wa.gov.au/periodic-assessments/old-growth-overview/public-nominations.aspx>

⁸Department of Parks and Wildlife, 2017. *Procedures for the assessment, identification and demarcation of old-growth forest* FEM Procedure No. FEM075, Department of Parks and Wildlife, Perth (p21)

⁹Ibid, p24.

3. Independent assessment process

The Conservation and Parks Commission carried out independent field assessments:

Following the decision to undertake field inspection, the Conservation Commission will inspect and sample the target area. The field-work will be undertaken by the Conservation Commission independently of all parties.¹⁰

DBCA is involved in coupe planning and lacks the independence of the Conservation and Parks Commission. In Barrabup 03, the first test case of the DBCA Procedure in 2017, the FPC also undertook field-work used in the old-growth assessment:

The Forest Products Commission had commenced stump survey work in the northern portion of Survey Area 1, and their dataset was validated by sampling in the field to confirm it was fit-for-purpose to use in this assessment. (DBCA, 2017, p4)

DBCA Forest Management Branch Manager Dr Martin Rayner confirmed in an email to old-growth nominees Ellie and Martin McKie that FPC stump survey data were used in the DBCA report, saying:

I confirm that the FPC did survey all of Survey area 1, while DBCA resurveyed the southern portion and did spot checks in the northern portion.

4. Recommendations

WA Forest Alliance recommends the following definition and criteria for old-growth jarrah identification:

In jarrah-dominant forests, old-growth forest is defined as uncut (never logged) forest or forest subject to minimal unnatural disturbance. Disturbance is regarded as minimal if evidence of disturbance exists (e.g stumps or presence of *Phytophthora* spp.) but the sampling indicates no significant difference in the structure of the overstorey or ecological function of the forest. Old-growth functions such as nesting hollows, foraging habitat, understorey refugia and substantial levels of carbon storage, including long-term maintenance of soil

¹⁰Conservation Commission of Western Australia, 2005. *Assessment criteria and process for the Conservation Commission review of old-growth amendments*. CPC Kensington, WA. (p24) <http://www.conservation.wa.gov.au/media/1037/Old-GrowthAmendments2.pdf>

organic carbon stocks are evident. In such cases the area will be considered as minimally disturbed old growth and entered into the corporate database as old growth.

The presence of dieback caused by *Phytophthora spp.* does not affect the definition or identification of old-growth jarrah forest.

Old-growth jarrah forests are identified and protected at the 0.5-hectare grid cell level.

Conclusion

Images of old-growth forests being prepared for logging, 500-year old trees stockpiled for woodchips or firewood, and ancient trees reduced to stumps in vast areas of churned up mud and burned limbs attract outrage in the West Australian public.

In recent months the WA Forest Alliance Facebook page has reached hundreds of thousands of people who have expressed their frustration that this practice continues in spite of the State's commitment to protect old-growth forests. Polling shows that majority of West Australians both in rural and urban areas oppose the ongoing logging of these forests and understand that these are current issues that remain to be resolved.

We recommend that in order to deliver to national and international standards and community expectations for forest and wildlife conservation, the reliability of the old-growth forest procedures be improved so that all of the spectacular South West old-growth forests are protected.
