Ticked off — how Karri Forest logging threatens wildlife and the credibility of the FSC standard

SEPTEMBER 2015

THE WILDERNESS SOCIETY

AUSTRALIAN CONSERVATION FOUNDATION

WAFA
Western Australian Forest Alliance

IMAGE: (TOP) Channybearup State Forest | Kim Redman **(BOTTOM)** Court State Forest | Kim Redman **(INSET)** Quokka | John Austin

Ticked off—how Karri Forest logging threatens wildlife and the credibility of the FSC standard

September 2015

Author: Jess Beckerling

Contact: jessbeckerling@hotmail.com

The Western Australian Forest Alliance was formed in 1990 to provide an umbrella body for the many community organisations in Perth and throughout the south-west concerned with forest conservation. We are dedicated to the protection of WA's native forests and woodlands. WAFA is a member of the Forest Stewardship Council (FSC) International.

The Australian Conservation Foundation (ACF) is Australia's oldest national conservation body, with over 200,000 supporters. ACF was a founding member and is ongoing participant in FSC Australia.

The Wilderness Society has 40,000 members and 350,000 supporters across Australia, was founded in Tasmania in 1976, and is an active member and supporter of FSC Australia.

1.0 Executive Summary

Karri forests are unique to the small high rainfall areas of the south-west of Western Australia. They have been extensively logged and cleared and the remaining intact karri ecosystems are particularly significant for the preservation of high conservation values.

In October 2014 karri forest logging was awarded Forest Stewardship Council (FSC) accreditation under FSC's Controlled Wood scheme. The Controlled Wood scheme is not as stringent as full FSC certification but does require that High Conservation Values (HCV), including threatened species and old growth forests, are not threatened by logging.

This report examines current scientific literature and government Recovery Plans, from which it is clear that the karri logging accredited by FSC is contributing to the decline of five listed threatened species focused on in the report: the Western Ringtail Possum, Quokka, Woylie, Forest Red-tailed Black Cockatoo and Baudin's Cockatoo, making their extinction more likely. The report details key inconsistencies with FSC requirements to protect HCVs in relation to the studied species and the clear-felling of FSC-defined old growth forests.

Alarming failures by the certifying body, Soil Association Woodmark, are identified, specifically: overlooking key scientific information and government Recovery Plans, failing to comprehend the effects of logging on threatened species and failing to ensure a management plan was in place that would ensure the protection of HCVs, including old growth forests, prior to accreditation.

Consumers look to the FSC logo for an assurance that they are buying responsibly and that their money is going only to ethical forest managers and companies. FSC retains its meaningfulness and place in the market only in so far as it retains the trust of consumers. The failure in Western Australia, documented by this report, means that karri woodchips sourced from high conservation value forests can now end up in paper products branded with the FSC logo.

Based on the evidence, serious weaknesses exist within the FSC and Soil Association Woodmark processes. The report provides recommendations FSC and the certifying body should urgently adopt.

Recommendations

1) Withdraw the Forest Products Commission's Controlled Wood accreditation in accordance with the FSC's Controlled Wood requirement that forest management not be responsible for threats to High Conservation Values.

In all future assessments:

2) Certifying bodies formally consider information provided to them by stakeholders, provide stakeholders with the conclusions drawn from that information and create a formal opportunity for stakeholders to provide feedback on those conclusions prior to finalisation of the report.

3) Certification bodies undertake independent assessments of threatened species likely to occur in a proposed logging area using public databases and information sources; assessors consult, at a minimum, primary documentation for threatened species that detail habitat requirements and threats, such as Recovery Plans and scientific literature.

4) Certification bodies proactively and independently contact key experts on threatened species for advice where important species habitat is planned for logging and logging is a recognised threat or impact.

5) The criteria and checklists used by certifying bodies for assessment of specific logging operations be provided to stakeholders.

6) Stakeholders be consulted and provided with documentation on how both stakeholder and company provided information is interpreted against certifying body processes and Controlled Wood requirements.

7) Certification bodies consult stakeholders on the adequacy of the management proposed by the company to avoid threats to identified HCVs, in addition to consultation on the information used to assess whether HCVs are present.

2.0 Table of Contents

3.0 Introduction

Karri forests grow in the south-west corner of Western Australia and nowhere else in the world. They have been lived in, revered and utilised by Nyungar people for at least 45, 000 years. In 2001, following a highly successful campaign for their protection, a significant area of karri forest was protected from logging but large areas of High Conservation Value forests, including old growth that didn't meet the controversial criteria adopted by State agencies, were left out of the conservation reserve system and continue to be clear-felled. Much-loved, threatened and endangered wildlife live in the karri forests and their survival depends on the willingness of decision-makers to adhere to the experts' recommendations and protect critical habitat.

This paper sets out a brief history of the methods and extent of logging in WA's karri forests. It looks at the resulting structure and functional characteristics of the forests that remain today. Five of the most well studied and threatened karri forest bird and mammal species are considered, including the Forest Black Cockatoos and the critically endangered Western Ringtail Possum. The paper then asks the question: how did karri forest logging achieve Forest Stewardship Council (FSC) accreditation in spite of not meeting the FSC requirement that the logging not threaten High Conservation Values? The paper further considers the challenges this failure poses for FSC and recommends measures to address these problems.

Karri logging has been given a market boost at the expense of FSC's most important commodity – its credibility with consumers. The handling of certification mistakes in WA's karri forests from this point forward provides a significant test of FSC's credibility in Australia.

4.0 Karri forests – extent and significance

The majestic karri (*Eucalyptus diversicolor)* forests grow in the small high rainfall areas of the south-west of Western Australia. Karri trees are the second tallest flowering plant in the world, reaching up to 90m, and are distinctive not only for their height but also for their smooth, silver bark which peels back in sheets in Autumn to reveal a deep orange under-layer. Karri is a dominant species in the Northcliffe-Pemberton region, south of Manjimup and across to Walpole, with outliers found in the Nannup-Augusta-Margaret River region and as far east as the Porongurup Range. It grows in pure stands in deep loamy soils in regions that average 1100mm or more of rainfall annually, or

as mixed karri, jarrah, marri forests in the drier, shallower soils in the 1000mm isohyet region (DAFF, 1998) and also in combination with tingle trees further south around Walpole.

Image 1: Karri forest at dawn in the Warren National Park. Photograph by Simon Neville

The pre-European extent of karri forests is estimated to have been approximately 250,000 hectares (Conservation Commission 2013, p159). Today karri forests cover an even smaller area, in total less than 200,000 hectares (Christensen 1992) with 190,160 in the area managed under the Forest

Management Plan 2014-2023 (Conservation Commission 2013, p160) and the remainder in the small outliers north of Albany in the Porongurup Range and Mt Many Peaks.

The south-west region is globally recognised for its high degree of species richness and endemism and its forests are world renowned (Calver and Wardell-Johnson 2004, p94). It is a beautiful part of the world that hosts an extraordinary number and variety of plants and animals. Flora endemism for the south-west region is between 75 and 80 per cent (Hearn *et al.* 2002, p637) and it is one of BirdLife International's Endemic Bird Areas (BirdLife International 2015).

The south-west eco-region is one of the world's 35 Global Biodiversity Hotspots. Hotspots are characterised by an exceptional diversity of endemic life that is under significant threat. To qualify as a Hotspot the highly biodiverse region must have lost more than 70 per cent of its natural vegetation (Conservation International 2015, par 3). Globally, these 35 hotspots comprise just 2.3 per cent of the Earth's surface and are the only habitat for more than 50 per cent of the Earth's plant species and nearly 43 per cent of its bird, mammal, reptile and amphibian species (Conservational International 2015, par 4). They are the Earth's most threatened ecosystems.

Across WA, 669 flora and fauna species are listed as being threatened with extinction (DPAW 2014c). Here, the focus will be on species in the karri forests. There are 36 threatened and priority fauna species and five threatened and priority flora species identified as being within the karri forests (FPC 2015, pp34-37). The *Wildlife Conservation Act 1950* (WA) provides poor protection for the region's extraordinary biodiversity and the significant threats it faces. The Act is not up to the task of protecting WA's plants and wildlife, perhaps particularly so in the forests, where State Government logging operations are exempt from the Act's fauna provisions.

The absence of legal requirements for the protection of threatened species and their habitats during logging operations means that departmental guidelines set out the only processes for their protection from logging. These guidelines lack scientific rigour and enforceability, and as species-specific examples show, this is resulting in continuing decline of endemic, threatened species in the karri forests.

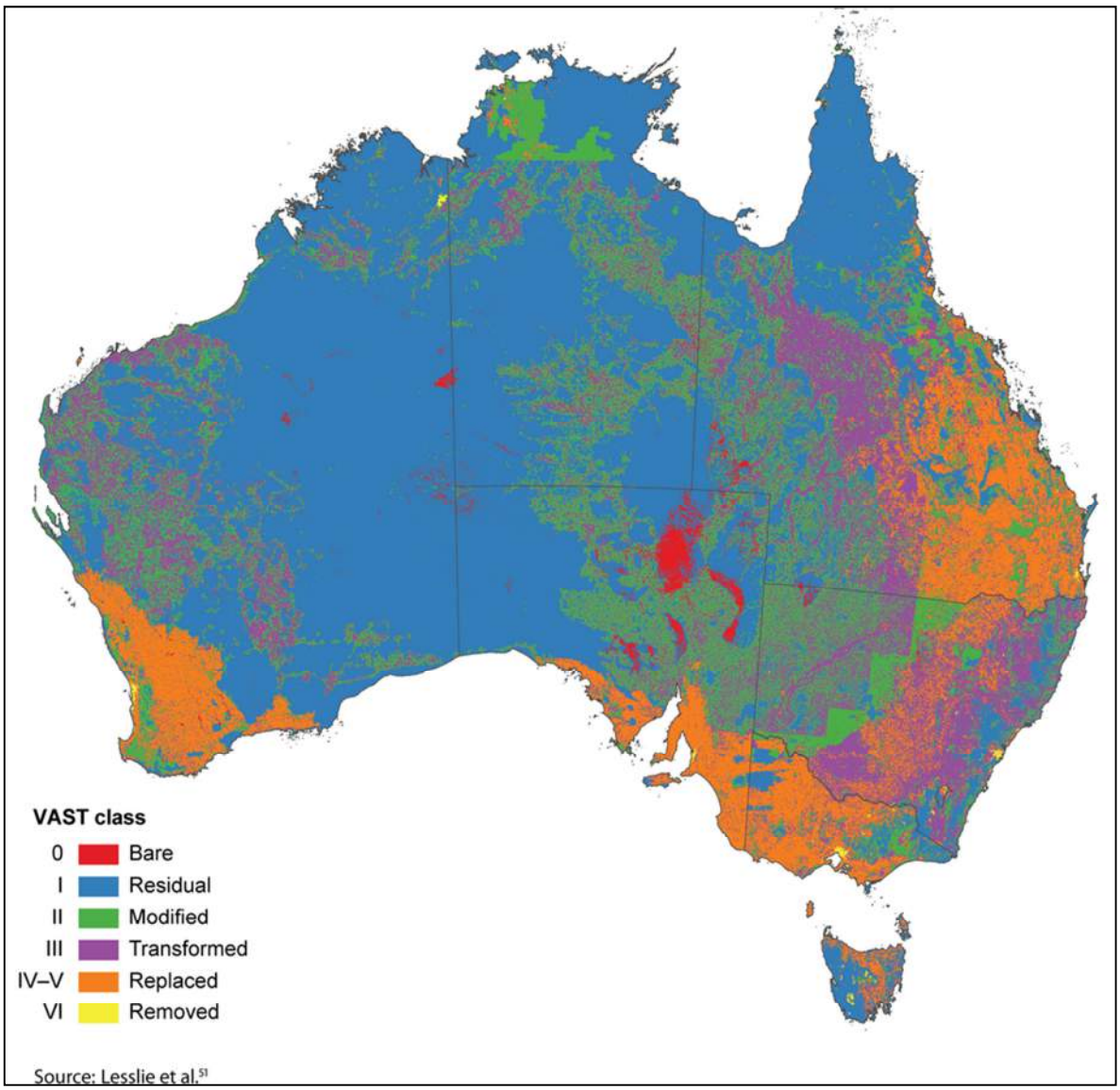


Figure 1: Changes to vegetation since European settlement. Reproduced from State of the Environment Report 2011 Figure 5.19

As well as having great ecological significance, the karri forests are highly valued culturally. Karri forests grow in Nyungar country, specifically in Wardandi, Kaneang, Pibelmen and Minang country, and karri is a Nyungar word. Nyungar people have had a continuous relationship with country for at least 45,000 years and karri forests have been a part of this habitation and relationship throughout this time (Derbal Nara n.d). Non-indigenous cultural association with the karri forests is also strong, and powerful campaigns to protect south-west forests from logging and clearing have seen significant areas reserved in National Parks. However, logging, clearing, inappropriate fire regimes and introduced species and diseases continue to have profound impacts in the region.

5.0 History of logging and the status of today's karri forests

Karri forests have been subject to logging and clearing since Europeans began settling in the south-west and started in earnest with the establishment of large sawmills in the late 19th and early 20th centuries and the group settlement scheme in the 1920s. Logging methods and intensity changed over the decades and the results can be readily seen in the forests today.

Beginning in the late 1800s and reaching a peak in the 1930s (CALM 1999), karri forests were clear-felled using axes and crosscut saws to fell the trees, and horses, bullocks and steam powered engines to haul the logs.

Image 2: Horses hauling logs in the karri forests in 1920s. Image captured from Fred Murphy's 'Timber Getting in Western Australia 1920s & 30s'

Image 3: Logging team using axes and a crosscut saw in 1915. From Weird and Wonderful WA, State Library of WA.

Today, the resulting even-aged regrowth stands are thinned and managed for timber production by the Forest Products Commission (FPC). They are distinctive because of the even-age of the trees and the lack of marri (*Corymbia calophylla)* trees and other species commonly found growing in association with karri. Approximately 11,200 hectares (CALM 1999) were clear-felled, up until 1967, with the majority cut in the 1920s and 1930s. About 4,230 hectares of these regrowth stands

are now available for logging (QON 2014), primarily in the Northcliffe, Pemberton and Manjimup areas. They lack the structural complexity of original forests.

Image 4: Thinning operation of 1920s / 1930s clear-fell regrowth in Crowea forest. The logs are the same size and background forest is made up exclusively of immature even-aged karri trees.

In the 1940s and 1950s, and until 1967 clear-felling was largely replaced by selective logging. Individual trees were felled at varying levels of intensity, often leaving behind an intact ecosystem with only one or two trees removed per hectare. These forests are called two-tiered and they range from ecologically intact ecosystems in which the effects of historic logging are now negligible to mature forests with noticeable regrowth stands. Today approximately 10,000 hectares of two-tiered forests remain available for logging (QON 2013).

Clear-felling was reintroduced as the standard karri forest logging method in 1967 and its heyday really began in 1975 with the advent of the wood-chipping industry in WA. Until 1994 coupes could be up to 200 hectares in size, no habitat was retained and there was no protection for riparian zones. In 1994 the maximum coupe size was reduced to 80 hectares (CALM 1994) and in 2004 it was reduced to 40 hectares (Conservation Commission 2013, p102).

Image 5: Late 1970s clear-felling operation across a permanent stream in Brockman forest near Pemberton. (Courtesy of South-West Forests Defence Foundation)

Image 6: Logs and branches bulldozed into the stream to create a firebreak in Brockman forest in Pemberton in the late 1970s. (Courtesy of South-West Forests Defence Foundation)

Since 1967 approximately 76,000 hectares of karri forest have been clear-felled (QON 1985 and FPC 2014, p136). It has been regrown only with karri trees and has been effectively converted from old

growth karri and karri/marri/jarrah or karri/tingle ecosystems to juvenilised pure karri stands that lack the necessary structure to provide habitat for the full range of karri forest flora and fauna. Approximately 45,000 hectares of this post 1967 clear-felling regrowth remain available for logging, the rest having been incorporated into reserves to create rational boundaries. These immature karri stands make up the majority of the karri still available for logging in the south-west (QON 2013).

In total approximately 84,800 hectares, or 42.5 per cent, of all the remaining karri forest on earth has been clear-felled since 1920, is under 100 years old, and unable to provide habitat for many of the karri forest's threatened species. This percentage increases each year with the clear-felling of two-tiered forest (QON 2013).

6.0 Current logging prescriptions

Around 60,000 hectares, or 32 per cent, of the remaining karri forest, is available for logging under the control of the State Government's FPC (QON 2013). Current logging in karri forests involves clear-felling of two-tiered forests and thinning of regrowth. Regrowth is forest regrown after clear-felling. It is to be thinned several times until it is 100 years old when it is to be clear-felled again (DPAW 2014a).

6.1 Clear-felling – overview and major impacts

Clear-felling describes the near complete removal of forest cover. All the over-storey and mid-storey trees are removed, commonly with the exception of a handful of immature trees per hectare, and the under-storey is bulldozed. Following logging and once all merchantable logs have been removed, the crowns, branches and logs not considered worth removing are heaped up using heavy machinery and burned. The major, well understood ecological impacts of this practice are the destruction of the flora, including the loss of centuries-old trees, the death and displacement of wildlife, serious soil compaction and disturbance, carbon pollution and the loss of complexity in the age and species composition of the forest (Calver and Wardell-Johnson 2004, Burrows *et al.* 2011, Dean *et al.* 2012).

In WA the FPC's planned rotation for karri forests is 100 years; so a century after the first clear-felling event, the regrowth trees will be clear-felled again (CALM 2005). On this rotation, karri forests will never re-establish the complex age structure characteristics of old-growth forests and will never again provide habitat to the wildlife that rely on ancient trees for habitat and nesting hollows.[1]

Image 7: Clear-felled karri forest 2013. (Courtesy of Kim Redman)

Under the *Forest Management Plan 2014-2023*[2], approximately 500 hectares are to be clear-felled each year. At this rate all 10,000 hectares of two-tiered forest available for wood production will have been converted to regrowth within about 20 years.

6.2 Protection of wildlife habitat during clear-felling

Protection of habitat trees for wildlife during clear-felling operations is woefully inadequate. Until 1994 no habitat was protected in clear-felled coupes. Between 1994 and 2014 only two secondary or 'potential' habitat trees were retained per hectare (CALM 1995; CALM 2005), 'potential' meaning

[1] Nesting hollows form in trees that are a minimum of 130 years old. Red-tailed and Baudin's Forest Black Cockatoos require nesting hollows in trees that are on average 230 years old and the scarcity and ongoing loss of these nesting hollows is the major threat of extinction to these endemic birds (see section 7)

[2] Forest Management Plans are required under the *Conservation and Land Management* Act 1984 (WA) to manage conservation, recreation and productive capacity of native forests and exotic plantations.

that they are relatively young trees (between 30cm and 70cm diameter at breast height) and do not provide mature habitat yet but may in the future. Mature, hollow-bearing old trees are considered to be a hazard to timber workers (McCaw *et al.* 2011) and an impediment to regrowth (Rotheram 1983).

In 2014, the FPC conceded there was a need to increase habitat tree retention as a part of its efforts to secure FSC accreditation (FPC 2014). Now two primary habitat trees (trees that do currently have the capacity to provide mature habitat) are also protected per hectare provided they are not within 100m of a reserve boundary (FPC 2015). Unfortunately the increase does little to address the severe impact clear-felling is having on threatened species, and the number of trees selected for retention is known to be inadequate and appears to have no scientific basis (EPA 1992).

The FPC consults the Fauna Distribution Information System before logging and FPC claims that, "Where the …FDIS report has shown the potential presence of a rare, threatened or endangered species, management strategies are implemented in accordance with Parks and Wildlife's approval to ensure the protection of those species identified." (FPC 2015, p37) In fact, as personal communication between FPC and WA Forest Alliance members has routinely confirmed, forests that are known habitat to the Western Ringtail Possum or Red-tailed Black Cockatoo or other threatened or endangered species, are clear-felled regardless of their presence and the standard habitat tree retention program is rarely, if ever, altered as a result of the FDIS report.

More than 20 years ago, in 1992, the WA Environmental Protection Authority's Technical Advisory Panel recommended an increase in the retention of habitat trees saying that the proposal to protect only two trees per hectare was inadequate, that the department's own research showed it to be inadequate and that the figure was based on only one species – a single possum species that alone requires three habitat trees per hectare (EPA 1992 p213). Far from one possum species being the only creature in the forest reliant on particular and limiting habitat, 42 south-west forest species have been recorded using hollows in standing trees and it is known that nine mammals and 17 bird species cannot survive without them (Abbott & Whitford 2002). The reliance of specific species on hollow-bearing trees, canopy connectivity and other old-growth attributes is discussed in Section 3.

The retention program is wholly inadequate, but to make matters worse, not even this bare minimum of trees are always retained and when they are, they are often damaged during the logging operation. Evidence of this can be seen in current and recent clear-felling and the WA Forest Alliance has been documenting these breaches for many years.

In 2013, 35 esteemed scientists called for urgent measures to be put in place to protect the biodiversity of the south-west forests. They found that continued industrial-scale logging in the region is "continuing to reduce critical habitat for threatened species such as nesting hollows in mature trees" and their first recommendation was that "critical habitat for threatened species including forest that retains the structure of the original forests should be urgently protected from degradation and loss" (Andrich *et al.* 2013).

6.3 Loss of marri *(Corymbia calophylla)* from logged areas

The ecological significance of marri trees in the karri forests is not accounted for in the FPC's logging operations. The significance of marri trees to Red-tailed Black Cockatoos and Baudin's Cockatoos is discussed in section 7.

After clear-felling the coupe is replanted only with karri seedlings and any marri that does regrow is removed during the thinning operations. Complex, high conservation value ecosystems are converted to single-species, even-aged karri crops.

Between 1975 (when the wood-chipping industry began in WA) and 2014, 12.5 million tonnes of marri logs, mostly from old growth trees, were wood-chipped and exported for paper production (See Appendix Two). This massive mining of marri from the south-west forests has had profound impacts on hollow-dependent endemic species including the Red-tailed and Baudin's Cockatoos (DPAW 2009) and recruitment of hollow-bearing mature marri has not been able to keep up with the losses (Johnstone *et al.* 2013).

A recent change to logging methods in the jarrah forests means that large marri trees are now protected, but this does not apply in the karri forests (Conservation Commission 2014). Again, there appears to be no scientific justification for the lack of protection of this critical species in the

karri forests, and there is ample evidence that its protection is required for the maintenance of High Conservation Values and the survival of some threatened species.

While some natural karri forests are pure karri stands, much of the karri forest comprises a mix of karri, marri and jarrah (and tingle, but karri/tingle forests are not available for logging). These mixed forests provide nesting and feeding habitat to a wider range of species, including threatened and endangered endemic species.

7.0 Threatened and endangered karri forest species

Karri forests offer nesting, roosting and feeding habitat to a huge diversity of birds, mammals, reptiles, amphibians and invertebrates, many of which are endemic to the south-west. While no comprehensive biological survey of the karri forests has ever been conducted (Burrows *et al.* 2011) some karri forest species have been extensively studied. Seventeen fauna species and five flora species identified as being in the karri forests (FPC 2015, p35-37) are facing a high to extremely high risk of extinction in the wild. Recovery Plans are in place for only 12 of the threatened fauna and one of the threatened flora species (FPC 2015, p35-37). For some of these species, considerable scientific evidence shows that ongoing logging poses a serious risk to their survival in the wild. This report focuses on five karri forest fauna species that have been well studied.

7.1.0 Western Ringtail Possum (*Pseudocheirus occidentalis)*

Image 9: Western Ringtail Possum, adult carrying young. (Courtesy of Alison Cassanet)

7.1.1 Conservation status

Federal (*Environment Protection and Biodiversity Conservation Act* 1999): Vulnerable
State (*Wildlife Conservation Act* 1950 WA): Endangered
NGO (Action Plan for Australian Mammals 2012): Critically Endangered

In December 2014 the WA State Environment Minister raised the official level of threat of extinction of the Western Ringtail Possum from vulnerable to endangered. Environment groups and experts disputed the change saying that the Minister had under-estimated the gravity of the threat and that the Western Ringtail Possum should have been listed as critically endangered in line with the recommendation of three of Australia's leading mammal scientists (*The West Australian* 2014; Perth Now 2015).

> Experts recommended that the Western Ringtail Possum be listed as critically endangered after an overall decline in population of more than 80 per cent over the past 10 years and an expectation of a further serious decline. (Burbidge *et al.* 2014, p542)

The Western Ringtail Possum qualifies as a critically endangered species facing an extremely high risk of extinction in the wild. Substantial research has been done into the threats facing the possum and experts have made recommendations to arrest decline and facilitate recovery (Burbidge *et al.* 2014; Wayne *et al.* 2005; Wayne *et al.* 2006; DPAW 2014).

7.1.2 Distribution, habitat and association with karri forests

> "Any habitat where western ringtail possums occur naturally are considered critical and worthy of protection." (DPAW 2014, p7).

Western Ringtail Possums live only in the south-west of WA in three key zones: the Swan Coastal Plain, Southern Forest and South Coast zones.

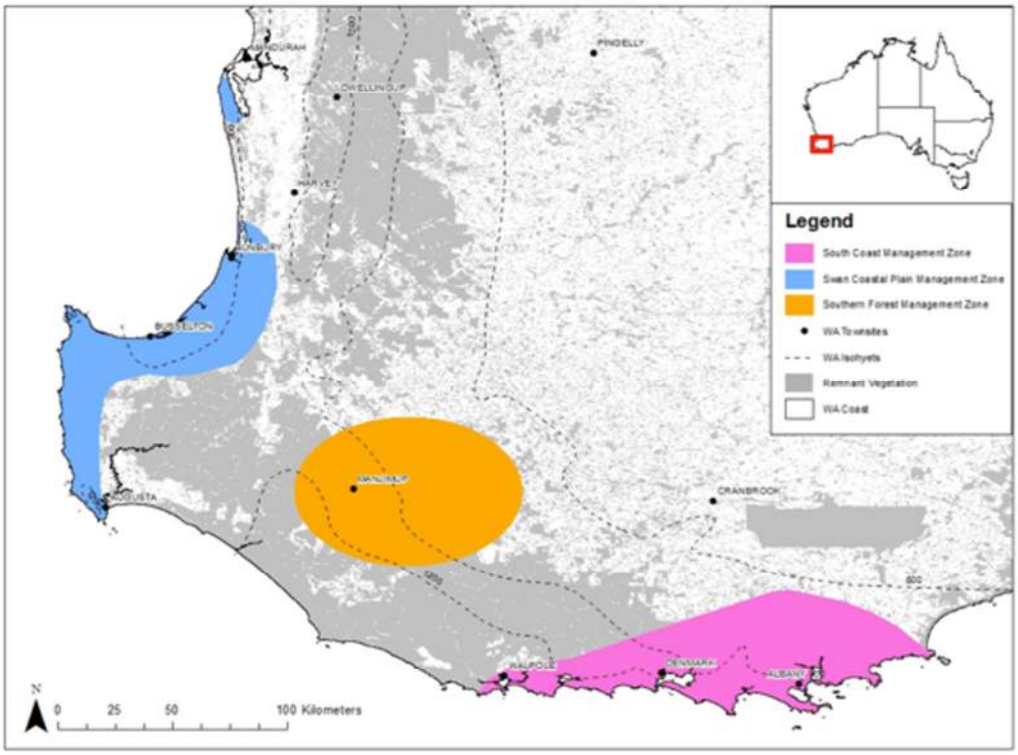


Figure 1: Key 'management zones' for Western Ringtail Possums. Reproduced from DPAW Draft Recovery Plan for Western Ringtail Possums 2014

In the Southern Forest Zone, according to the Recovery Plan, "Habitat critical to survival comprises forests with limited anthropogenic disturbance (unlogged or lightly logged, and a low intensity and low frequency fire history), that are intensively fox-baited and have low indices of fragmentation." (p9) The karri forests from Northcliffe to west of Manjimup are a part of this zone, and while numbers have declined significantly, it is known that Western Ringtails still exist here and require urgent protection (DPAW 2014).

The karri forests have been extensively logged and more than a third of all the world's remaining karri forest has been clear-felled. A further 10,000 hectares of 'two-tiered' forest that meets, or is likely to meet, the habitat requirements for this species are planned for clear-felling. In some of these areas, such as the Channybearup area near Manjimup, official records of the species overlap with ongoing clear-felling operations (DPAW 2015). This is in direct conflict with scientific advice that all habitat where the species exists naturally is considered critical and worthy of protection, particularly in light of the clear evidence that clear-felling is not compatible with Western Ringtail Possum survival and recovery.

7.1.3 Impacts of logging on Western Ringtail Possum

Logging has a severe impact on Western Ringtails. Individuals die during the logging operations and the increased predation by foxes and cats following logging, as well as the post-logging fire, cause further deaths (Wayne *et al*. 2000; 2006; Burrows *et al.*1993; 2002).

An experimental study in Kingston forest near Manjimup in 1997 found that within two weeks of the logging only 31 per cent of the radio collared animals were alive compared with 80 per cent of the control animals. Up to 17.6 per cent of the possums died when the trees they were in were felled (Wayne *et al*. 2000). Further studies have found that the declines continue over the years following logging and that the loss of canopy continuity means that the possums are forced to travel and den on or near to the ground where they are more vulnerable to fox and cat predation (Wayne *et al.* 2006).

The Action Plan for Australian Mammals lists logging as a threat and references the Wayne *et al.* 2006 study which found that the species is more abundant in unlogged forests and forests where logging has been least intense. It also reiterates that logging leads to mortality through, for example, increased predation. Cat predation, which is known to increase following logging, is listed as a severe-catastrophic threat (Burbidge 2014, p543).

The loss of refuge and nesting sites, loss of canopy cover, increased predation and post-logging fire interact to have profound impacts on this species. The structural and functional characteristics of intact forests and the changes to forests resulting from logging need to be considered in relation to the ecology of particular species if we are to meaningfully address their decline and make the necessary changes for their recovery and survival.

7.2.0 Forest Red-tailed Black Cockatoo (*Calyptorhynchus banksii naso)*

Image 10: Female Red-tailed Black Cockatoo (Courtesy of Philippa Beckerling)

7.2.1. Conservation status

Federal (*Environment Protection and Biodiversity Conservation Act* 1999): Vulnerable

State (*Wildlife Conservation Act* 1950 WA): Vulnerable

NGO (Action Plan for Australian Birds 2010): Vulnerable

In 2004 DPAW's (then CALM) principal zoologist Dr Peter Mawson, recommended that the

official level of threat be raised from priority 3 to vulnerable on the grounds that the species was less common than previously thought. Dr Mawson wrote that the loss of mature nesting trees due to logging/woodchipping and competition with feral bees were the reason for the change. The official level of threat was increased as a result of this nomination, but the destruction of vital breeding habitat in logging operations continues.

The WA museum's curator of ornithology, Ron Johnstone, and colleagues have also presented a case that the official level of threat should be increased again to endangered (Johnstone *et al*. 2013).

7.2.2 Distribution, habitat and association with karri forests

The Forest Red-tailed Black Cockatoo *(Calyptorhynchus banksii naso)* is one of five subspecies of the Red-tailed Black Cockatoo (*Calyptorhynchus banksii).* It is the most southern subspecies and is endemic to the south-west of WA.

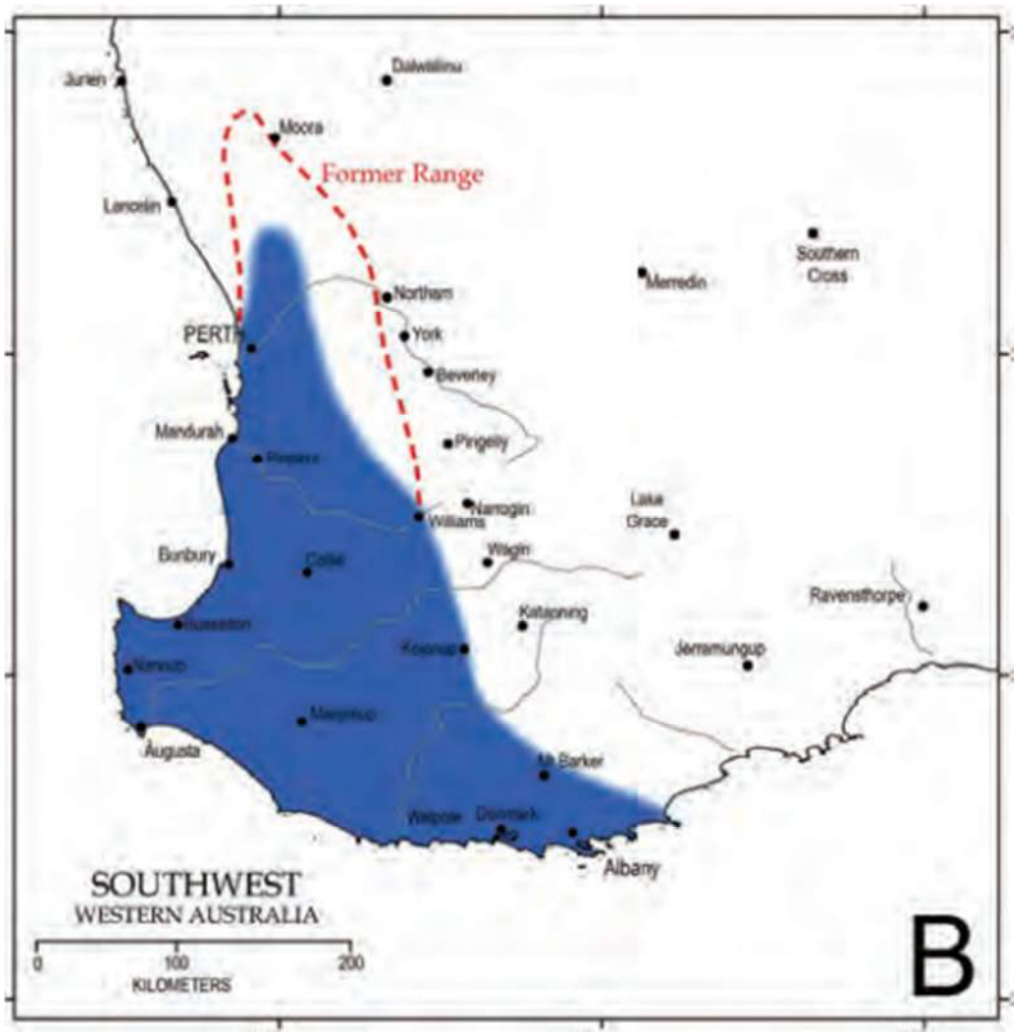


Figure 2: Distribution of FRTBC. Reproduced from Johnstone *et al.* 2013

The Forest Red-tailed Black Cockatoo (FTRBC) has disappeared from approximately 30 per cent of its former range, and has suffered a significant decline in numbers in the past 60 years or so as a result of habitat loss and fragmentation, particularly in the jarrah (*Eucalyptus marginata)* and marri (*Corymbia calophylla)* forests (Johnstone *et al.* 2013).

FRTBC are largely sedentary birds with juveniles travelling on average less than 3 kilometres from their natal trees and adults travelling up to 19 kilometres from nest sites (Johnstone *et al*. 2013).

The jarrah, marri and karri forests are the primary habitat for the FRTBC, and the birds have a particularly strong association with marri trees, which provide their principal food source and nesting habitat. Johnstone *et al.* found in a 17-year study on FRTBC breeding biology that there is a heavy reliance on marri trees over 209 years old for breeding (Johnstone *et al*. 2013). They are also known to nest in large hollows of jarrah and karri trees (Johnstone and Kirkby 1999).

Image 11: Male Forest Red-tailed Black Cockatoo leaving its hollow in a karri tree. (Courtesy of Kim Redman)

7.2.3 Impacts of logging on the Forest Red-tailed Black Cockatoo

Logging in the south-west, particularly clear-felling of mature karri forests, destroys vital nesting hollows that only develop in very old trees. Nesting hollows are already scarce in the landscape as a result of clear-felling and clearing for agriculture and mining and there is broad consensus that habitat loss, particularly nesting habitat loss, is a major ongoing cause of decline (DEC 2008, CALM 2004, TSSC 2008). (See section 2.2.3 Loss of marri trees during logging)

Evidence collected by the WA Forest Alliance in 2015 shows that nesting hollows are still being destroyed in logging operations (see Image 6 and 7), and marri trees up to 430 years old continue to be felled and left to rot or burn (Appendix One and Image 14). FPC advice to the WA Forest Alliance in 2015 confirmed that very old trees, even with obvious nesting hollows, are still routinely cut down in karri clear-felling operations.

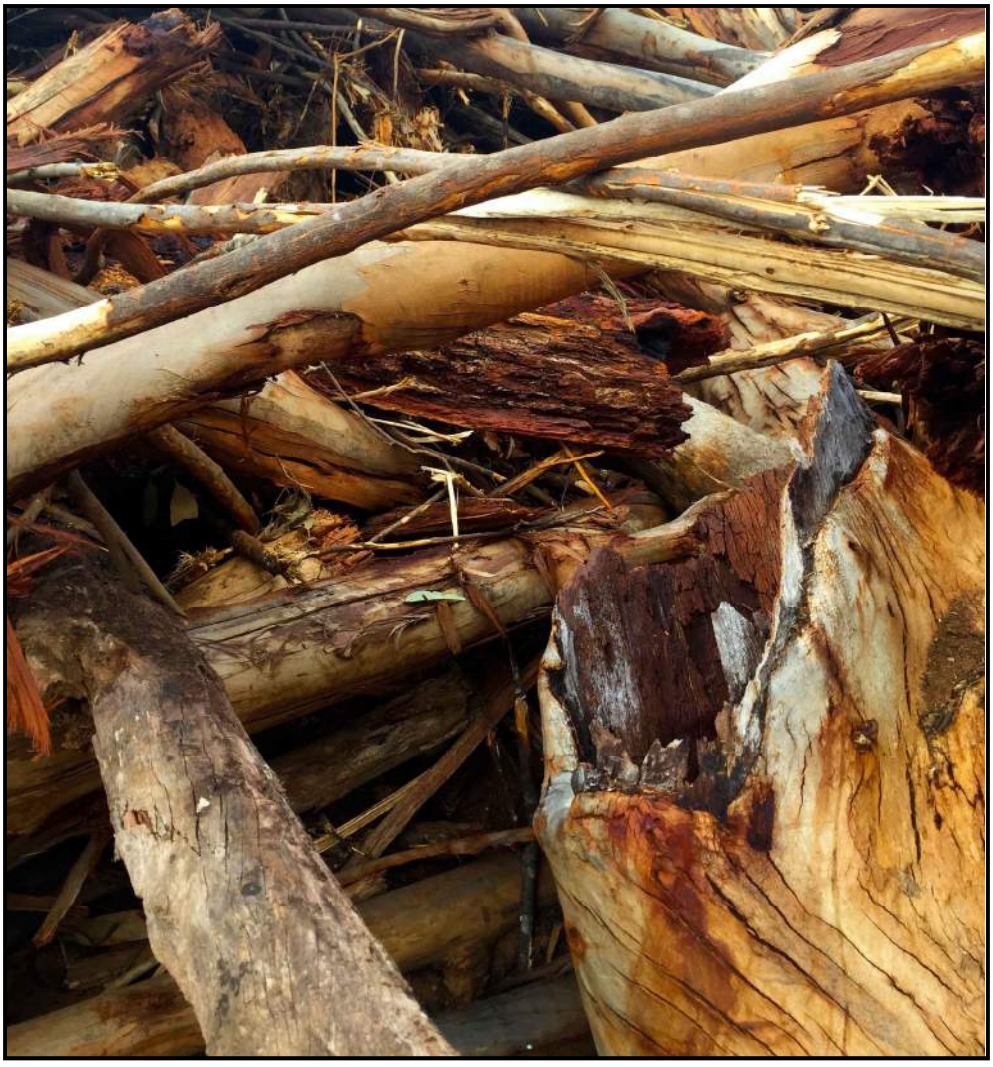


Image 12: Karri tree hollow in the burn pile following clear-felling in Nelson forest 2015

Image 13: Large 'smokestack' style nesting hollow and smaller potential hollow in background in burnpile following clear-felling in Nelson forest 2015

Image 14: Ancient marri tree left to rot or burn in clear-felled forest near Bridgetown 2015

In its advice to the Federal Minister for the Environment, the Threatened Species Scientific

Committee explained that habitat loss is considered to be the major historic cause of decline and that logging is a major ongoing threat:

> "Habitat loss is an historic, current and future threat to the subspecies. It appears to be the principal cause of the historic decline of the subspecies as a result of agriculture, timber harvesting, woodchipping and mining within the subspecies' range (Johnstone 1997; Mawson and Johnstone 1997).
>
> "… forestry practices such as clear felling and 80-year cut rotations may restrict the availability of nest hollows (Saunders and Ingram 1995)."

In their 2013 papers, Johnstone *et al*. summarise the issues saying:

> "The loss of nest trees through logging, fire control and management (prescribed burns), post 'fire clean up', and weather (tree blown over) is of great concern – especially the first three."
>
> "Given the importance of large, old trees for FRTBC breeding habitat, conservation of these trees is of prime importance."
>
> "There have been massive changes in forest structure over the past century (Wallace 1965), and the on-going loss of ancient hollow-bearing trees is such that current prescriptions are unlikely to ensure the continual supply of hollows for FRTBC. We believe that the loss of hollow-bearing trees has outpaced the recruitment of replacement hollows and future shortages of adequate hollows in veteran Marri are inevitable in many areas. Over the past 100 years there has been a steady decline in available nesting and foraging habitat and a steady decline in the range and status of this population (Chapman 2008; Garnett *et al.* 2011). Our data on nest trees indicate that the conservation of this subspecies depends on the availability of nesting resources, especially veteran, hollow-bearing Marri trees. Along with Baudin's Cockatoo, this subspecies faces a bleak future as hollow-bearing trees become scarcer and those that are lost are not replaced by naturally ageing mature trees."
>
> "Stands of veteran Marri require protection from logging operations, post-logging burning and prescribed burning, forest improvement, and clearing for mining."

"We hope this study will provide a wake-up call to individuals, institutions and governments that we are facing a major crisis in southern forests and we require solutions to mitigate further destruction and loss of biodiversity."

7.3.0 Baudin's Cockatoo (*Calyptorhynchus baudinii*)

Image 15: Baudin's Cockatoo (Courtesy of Bobbi Marchini)

7.3.1. Conservation status

Federal (*Environment Protection and Biodiversity Conservation Act* 1999): Vulnerable

State (*Wildlife Conservation Act* 1950 WA): Endangered

NGO (*Action Plan for Australian Birds* 2010): Endangered

7.3.2 Distribution, habitat and association with karri forests

Baudin's Cockatoos are endemic to the south-west of WA where they live and breed in the karri, marri and jarrah forests, generally in the far south-west in areas averaging more than 750mm of rainfall annually (DOE n.d).

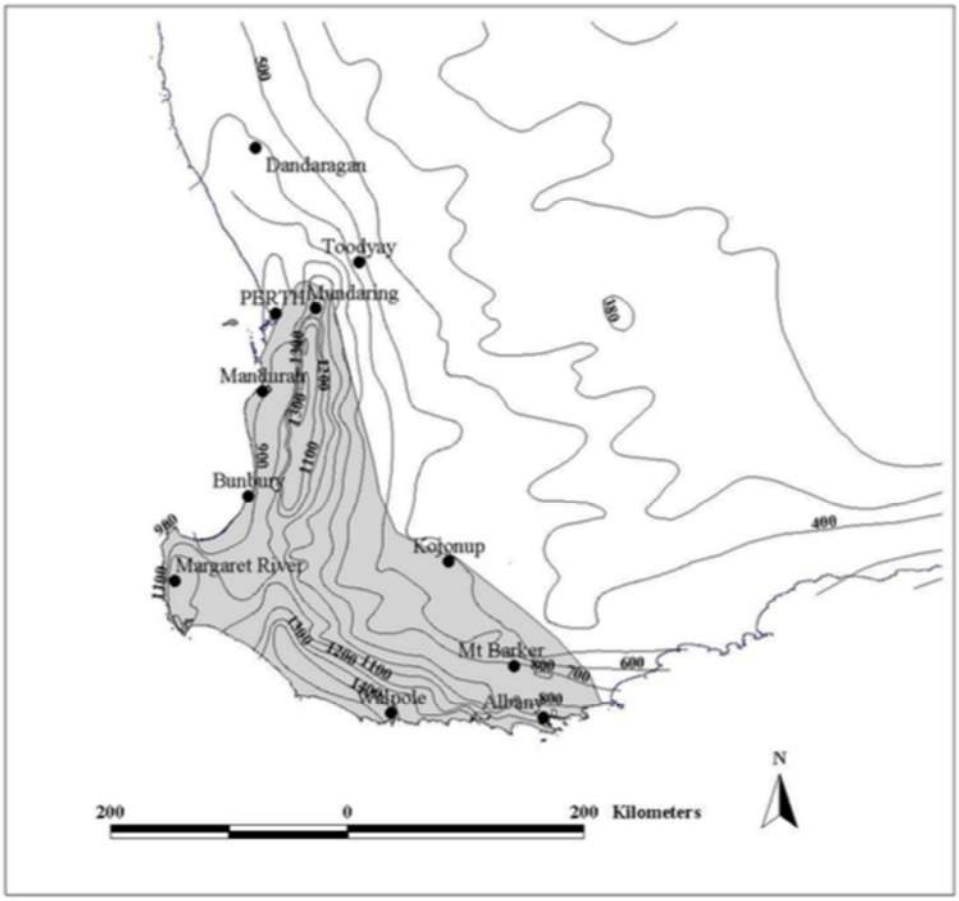


Figure 3: Baudin's Cockatoo's distribution. Reproduced from DPAW Recovery Plan 2008.

Marri nuts are their preferred food source, but they also eat seeds from a number of banksia and hakea species as well as invertebrate larvae found by their stripping bark (DPAW 2008). Baudin's have also adapted to eating apple and pear seeds in commercial orchards, and shooting by orchardists has become a significant threat to their survival (DPAW 2008).

Baudin's Cockatoos appear to have disappeared from 25 per cent of their previous range, and declined in numbers in a further 25 per cent (Garnett and Crowley 2000). It is believed that the overall population has declined by 50 per cent in just three generations, or 58 years (Garnett *et al.* 2011).

7.3.3 Impacts of logging on Baudin's Cockatoo

> "Nest hollow shortage is considered the principal threat, as suitable hollows are considered scarce, only forming in trees at least 130 to 220 years of age, many of which have been preferentially felled (Chapman 2007). The past and present impacts of logging for marri… are reducing the availability of food and nesting trees." (BirdLife International 2015)

Like the Forest Red-tailed Black Cockatoo (FRTBC), Baudin's Cockatoos have a strong association with marri trees. See previous section on FRTBC and section 2.2.3 for information on marri.

There is a correlation between local and seasonal shortages of marri seed and damage to commercial fruit crops and it is believed that destruction of marri habitat is related to the Baudin's Cockatoos feeding on apple and pear seeds (BirdLife 2015).

In the 2008 Recovery Plan, in recognition of the very real threat logging poses to the survival of the Baudin's and Red-tailed Black Cockatoos, recommendations were made to increase the area of forest in reserves, alter the rotation length to allow for development of hollows and protect known nesting trees among other things. None of these changes were made to karri logging guidelines in the subsequent Forest Management Plan (2014-2023) and there is no completion date for implementation of the requirement. There is ongoing conflict between the broad-scale and intensive clear-felling of cockatoo habitat and the scientific advice for preventing their extinction.

7.4.0 Quokka (*Setonix brachyurus*)

Image 16: Quokka. (Courtesy of John Austin)

7.4.1 Conservation status

Federal (*Environment Protection and Biodiversity Conservation Act* 1999): Vulnerable

State (*Wildlife Conservation Act* 1950 WA): Vulnerable

NGO (Action Plan for Australian Mammals 2012): Vulnerable

7.4.2 Distribution, habitat and association with karri forests

The Quokka is known to exist in seven distinct sub-populations in 10 locations including Rottnest and Bald Islands. Mainland populations are considered the most important for the long-term survival of the species because of their higher levels of genetic diversity. The populations are separated from one another with little to no migration between them (DOE 2015). The southern jarrah and karri forests are habitat for one of the five particularly important populations.

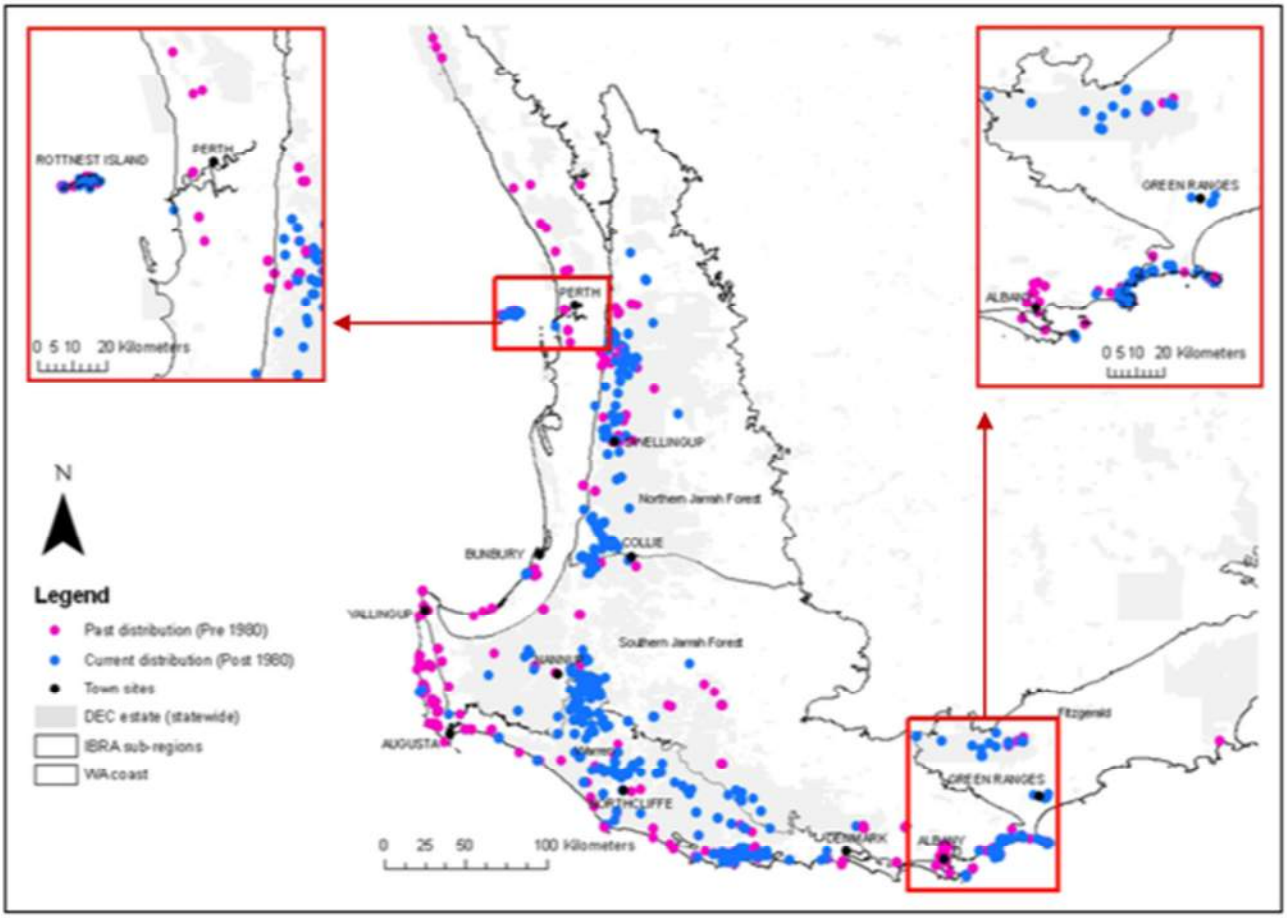


Figure 4: Distribution (past in pink and current in blue) of the Quokka. Reproduced from DEC Recovery Plan 2013

The southern jarrah and karri forests, particularly areas with complex vegetation structure, riparian zones dominated by a sedge understorey and mosaics of long unburnt and recently burnt areas, are now considered critical to the survival of the Quokka (DEC 2013). Connectivity between habitat patches allows for movement and interactions, which is vital to a functioning meta-population (DEC 2013).

It is believed that there are fewer than 700 individuals in this population. Numbers are declining and this population is facing the threat of localised extinction (DOE 2015).

7.4.3 Impacts of logging on the Quokka

Logging and associated activities have significant impacts on the southern forest Quokka population. Well-understood impacts are direct (mortality during clearing and construction of roads, road-kill from increased traffic and when refuges are burnt out) and indirect (increased predation through loss of protective vegetation and further fragmenting of habitat patches) (DEC 2013).

Approximately 60 per cent of Quokkas are recorded in state forest or timber reserves that are likely to be logged in the future (DEC 2013). The Recovery Plan says that as a result of the high proportion of the population in these areas, "timber harvesting and associated activities may be a significant threat."

The Draft Recovery Plan 2010 explains the links between logging and the other known threats to the Quokka:

> "Timber harvesting and associated activities (e.g. roading, silvicultural burns, etc), high intensity and/or high frequency fires, predation from introduced predators, changes to drainage patterns, habitat modification from feral pigs and spread of dieback (*Phytophthora cinnamomi)* have the potential to pose significant threats to quokka populations *(*de Tores *et al*. 2007)."

> "There is also a recognised potential for prescribed burns to be of a higher than intended intensity, often due to the high temperatures and the presence of logging debris, thus resulting in these riparian zones being completely burnt. Consequently, broad scale burning may not always lead to the desired mosaic of habitat patches."

The Quokka is one of nine south-west fauna species that the Department of Environment and Conservation (now DPAW) has found is likely to require "additional management actions in relation to timber harvesting operations" (DEC 2008). The list is evidently incomplete as it does not include the Red-tailed and Baudin's Cockatoos for example, but it does accept the threat posed by

logging. The trivial changes implemented to date, such as changes to the design of informal reserve systems, are inadequate. The 2013 Recovery Plan and Federal Department of the Environment's Species Profile and Threats Database describe the impacts of current logging operations.

7.5.0 Woylie *(Bettongia penicillata ogilbyi)*

Image 17: Woylie (Photograph by J. Lochman reproduced from Australian Wildlife Conservancy publication)

7.5.1 Conservation Status

Federal (*Environment Protection and Biodiversity Conservation Act* 1999): Endangered

State (*Wildlife Conservation Act* 1950 WA): Critically Endangered

NGO (Action Plan for Australian Mammals 2012): Critically Endangered

7.5.2 Distribution, habitat and association with karri forests

Woylies were once widespread across Australia but by the 1970s their distribution had been reduced to three populations in the south-west of WA. Breeding and release programs successfully reintroduced the species to South Australia in the late 1970s. Today, the most important Woylie populations are the genetically distinct indigenous populations in the Perup, Kingston, Tutanning and Dryandra areas. Small populations persist in the Walpole-Denmark and Sunklands-Pemberton areas as well.

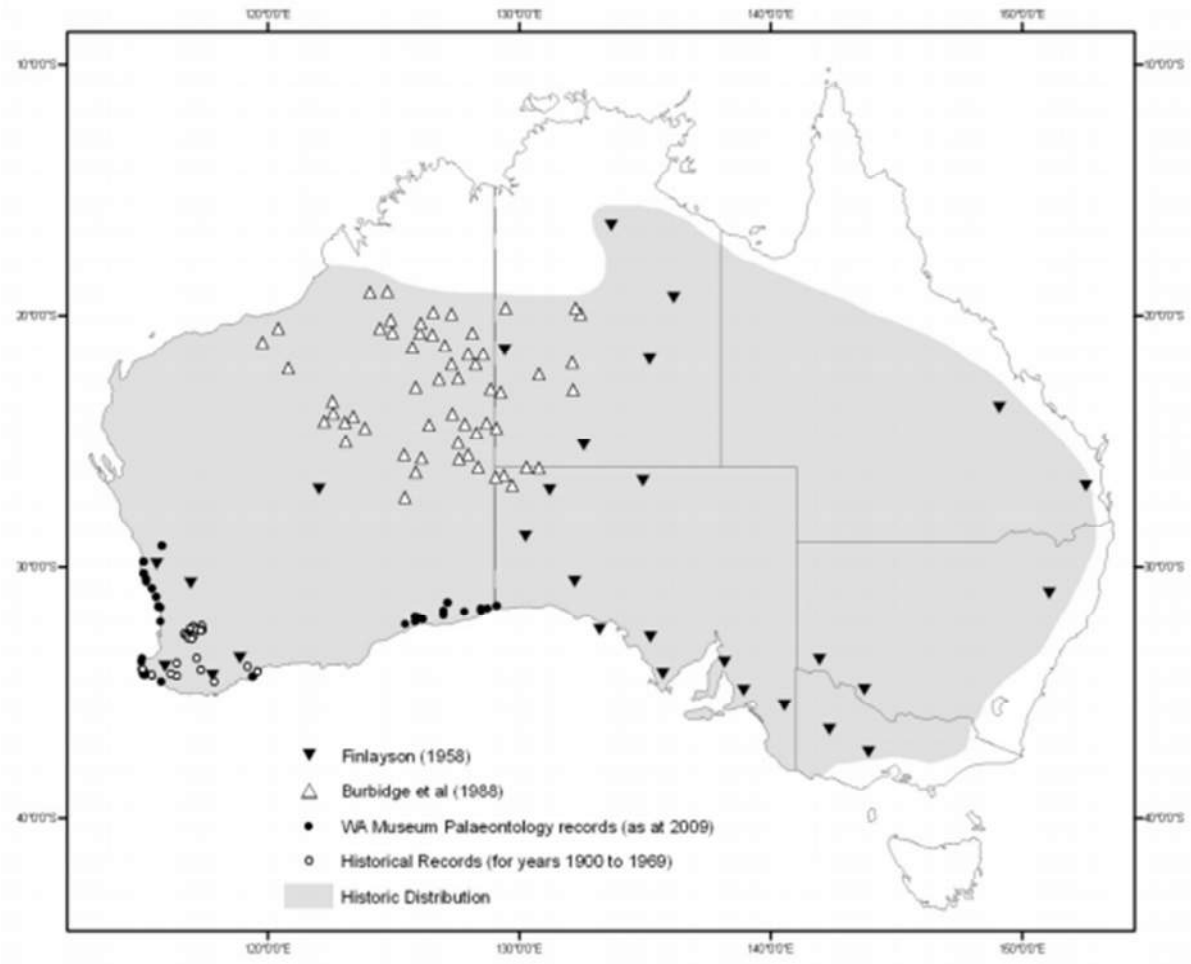


Figure 5 Woylie distribution map (Reproduced from National Recovery Plan 2012)

The 2012 National Recovery Plan identifies habitats where Woylies can persist as:

"• tall eucalypt forest and woodland;

• dense myrtaceous shrubland; and,

• kwongan (proteaceous) or mallee heath

where there is adequate introduced predator control or exclusion."

While the jarrah forests provide the most important habitat for this critically endangered mammal, the FPC identifies the species as highly likely to exist in the karri forests put forward for assessment by the Forest Stewardship Council, saying, "The species has been recorded in the area, there is a confirmed sighting or secondary signs of the species within the area, and extensive or sufficient suitable habitat." Given the fact that the Woylie is now critically endangered, the Recovery Plan states that:

> "All habitat meeting these key requirements within the current range, which is either known to be occupied by woylies or to have the identified potential to be occupied by woylies, is considered habitat critical to the survival of the species." (DEC 2012, p6)

7.5.3 Impacts of logging on Woylies

Substantial habitat loss and alteration resulting from logging, mining and land clearing, the introduction of foxes and cats and the spread of disease including *Phytophthora* dieback have been responsible for the decline in Woylie numbers. More recently, climate change is having further impacts and it is hypothesised that a disease such as Toxoplasmosis could be a factor in the most recent major crash in Woylie numbers as poor health could be pre-disposing individuals to predation (DEC 2012). It is critical that all habitat for Woylies be protected from logging, mining and other clearing.

8.0 Old growth karri forests – definitions, significance and lack of proper protection

A major conflict exists between the definition of old growth forest and the criterion that is being used for identifying karri forests as old growth. The result is that karri forests that meet the definition of old growth continue to be clear-felled and their high conservation value destroyed.

In WA old growth forest is defined as:

> "Ecologically mature forest where the effects of unnatural disturbance are now negligible. The definition focuses on forest in which the upper stratum or overstorey is in a late mature to senescent growth stage." (Conservation Commission 2013, p266)

This definition includes forest that has been subject to some selective logging so long as that logging has not had lasting impacts on the forest's mature characteristics (either structural or ecological) and its effects "are now negligible". But, regardless of this definition and the State Government's commitment to protect old growth forests from logging, the criterion that is actually used by State agencies to identify old growth karri forest requires that karri forest be 'uncut' (Conservation Commission 2005, p12).

As a result, karri forest with even one stump in a hectare (i.e. one tree has been cut down in that hectare at some time since European settlement) does not qualify as old growth according to the criteria in use and can be clear-felled.

All remaining karri forests that have not been clear-felled and retain structural and functional old growth characteristics, including old trees with nesting hollows and developing hollows, canopy connectivity and complex vegetation structure, are significant in the landscape, particularly given the extensive fragmentation and loss of habitat that has occurred across the karri forest. (See section 2 and 3 for details)

The Conservation Commission has a community nomination system for the identification of previously unmapped old growth forests, but this process only considers karri forests that have not been subject to any logging whatsoever, even when that logging constitutes disturbance whose effects are now negligible and the forest meets the ecological maturity aspect of the definition. Further, areas of forest have to be at least two hectares in size, and at least 200m wide. Recently, the Conservation Commission did not assess a nomination for a 13-hectare section of jarrah-marri-karri forest in Channybearup forest in spite of it appearing to meet both the uncut criterion and the old growth definition because it fell just short of being 200m wide. The forest was large enough to be clear-felled, but not to be assessed for protection as old growth.

9.0 Forest Stewardship Council's accreditation of karri forest logging

The FSC's Controlled Wood accreditation scheme prescribes that forest management activities *shall not* threaten High Conservation Values. The express intent is to "…to ensure that critically endangered or threatened high conservation values are identified and conserved." (FSC 2006, p10) As this report has shown, HCVs including threatened, endangered and critically endangered

species and old growth forests are being threatened and destroyed by the FPC's management activities.

High Conservation Values are defined in FSC Australia's HCV Framework (2013) and include, most importantly for the south-west's case:

> HCV 1: Forest areas containing globally, nationally and regionally significant concentrations of biodiversity values (e.g., endemism, endangered species, refugia).
> HCV 2. Forest areas containing regionally significant large landscape level forests, contained within, or containing the management unit, where viable populations of most if not all naturally occurring species exist in natural patterns of distribution and abundance.
> HCV 3. Forest areas that are in or contain rare, threatened or endangered ecosystems. (FSC Australia 2013, pp9-13) HCV 3 includes old growth forests – both uncut, and forests 'that have been logged but retain significant late successional / old growth structure and functions.' (p13)

In order to achieve and maintain Controlled Wood accreditation the forest management enterprise, in this case the State Government's FPC, must keep records of evidence that HCVs have been identified and protected and that stakeholders, including environmental, social and Indigenous groups and individuals, have been consulted on the precautionary measures to avoid threats to HCVs. In the case of the karri forests, none of these steps were properly applied, but controlled wood accreditation was still achieved by FPC.

9.1.1 How the Forest Products Commission underestimated the true extent of old growth forests

In order to comply with the Controlled Wood standard, the FPC needed to convince the FSC certifying body, Soil Association Woodmark, that its logging operations in old growth forests were not threatening the maintenance of the ecological characteristics that define old growth forests as a 'High Conservation Value'.
FSC Australia defines old growth as:

> **Definition of Old growth:** Old-growth forest is ecologically mature forest where the effects of disturbances are now negligible.
> Old-growth and late successional stands and forests include:
> A) ***Type 1 Old Growth:*** stands that have never been logged and that display late successional/old-growth characteristics.

B) ***Type 2 Old Growth:*** stands that have been logged, but which retain significant late-successional/old-growth structure and functions.

(Forest Stewardship Council Australia 2013, p13)

As we have seen, there are problems with the protection of Type 1 Old Growth because the Conservation Commission only assesses forests for protection when they are 200m wide or wider, and as a result, in one example, a 13-hectare section of Channybearup forest nominated for old growth protection was not assessed in spite of appearing to meet the definition and criteria and remains available for clear-felling.

The Conservation Commission's interpretation of the definition in relation to karri forest ignores the criterion of negligibly disturbed under old growth Type 1. While for jarrah forest, there can be up to five stumps per hectare, for karri there can be none. This interpretation wrongly restricts the definition and incorrectly excludes negligibly disturbed forest even where all other criteria are met.

The problems with the protection of Type 2 Old Growth are even more fundamental. Type 2 Old Growth is not recognised as old growth by the State Government. This means it is available for clear-fell logging under government policy. As a part of its application for FSC accreditation the FPC initially claimed that all known old growth was already protected and that no further mapping or identification of Type 2 Old Growth was required (FPC 2013). As a result of discussions between FPC and the certifying body, Soil Association Woodmark, this was altered and FPC acknowledged the presence of Type 2 Old Growth but drastically underestimated its extent and put forward only 84 hectares for *temporary* protection (FPC 2014, p48).

To keep the area of Type 2 Old Growth to such a minimum the FPC applied a threshold of significance that appears to have no scientific basis, and used a mapping method well known to underestimate the true extent of old growth. Specifically, the FPC chose to define Type 2 Old Growth as forest with at least 25 per cent crown senescence per half hectare cell – so to meet the FPC definition more than a quarter of the canopy needs to be senescing, regardless of any other structural or functional characteristics. This is not in concert with the definition used by FSC Australia, other Australian state forest agencies definitions (NSW NPWS 1999, p10; VicForests 2014) or with the scientific literature.

FSC Australia's Type 2 Old Growth definition requires consideration of structural and functional characteristics. This is in line with the scientific recognition of the complex nature of old growth forest ecology. The methodology that FPC applied has the effect of underestimating the true extent of old growth because it fails to consider various old growth structural characteristics and all functional attributes.

FPC also adopted a mapping system known to be inadequate. The FPC uses aerial images and only carries out ground surveys if aerial images confirm the presence of old growth according to the FPC criteria. In 1998, when old growth was being formally mapped in WA, the report found that the use of aerial images without ground-truthing is unsuccessful and results in an underestimate of old growth (Bradshaw 1998). This finding was also made in the old growth mapping process in Victoria by a Commonwealth Government consultant who reviewed the WA system (Bradshaw 1998) and by a joint Commonwealth-State Government assessment in 1997 (Environment Forest Taskforce 1997).

A legitimate Type 2 Old Growth assessment would have looked for forests that have significant old growth structure and functions. Had the FPC factored in the functional attributes of old growth forests such as nesting hollows for threatened and endangered wildlife, complex vegetation structure, canopy and mid-storey continuity, water quality and carbon storage and sequestration, it would have found more of the forest meets the definition and requires protection from logging.

Significance must also be considered at the landscape scale. Areas of forest that have not been heavily logged and that retain old growth structure and function are particularly significant where they exist in a landscape that has been subjected to high levels of disturbance.

The FPC has interpreted the definition of Type 2 Old Growth in a way that minimises the area that must be excluded from logging. As a result, forests that would meet the definition under a more credible and rigorous assessment are being logged in breach of the FSC standard.

9.1.2 What went wrong with the FSC Certifying Body's assessment of old growth?

Soil Association Woodmark awarded the accreditation in spite of these significant flaws. Stakeholders provided evidence of specific Type 2 Old Growth forests that had not been mapped and protected by the FPC, but Soil Association Woodmark went ahead with the accreditation on the basis that the FPC had systems in place for future identification and protection of Type 2 Old Growth (Soil Association Woodmark 2014).

Essentially Soil Association Woodmark accredited a self-policing system for the protection of High Conservation Values in the absence of a management plan that could feasibly ensure their protection. Evidence collected by the WA Forest Alliance in 2015 shows that forests which meet the definition have been clear-felled since the accreditation.

9.2.1 How the Forest Products Commission argued that threatened species are protected

The FPC emphasised the role that the Department of Parks and Wildlife plays in the protection of threatened species (FPC 2015). What it did not mention is that DPAW has no power to require the FPC to protect threatened species or their habitats during logging operations, or the fact that no State or Federal legislation provides for any other agency to do so.

While the Forest Vertebrate Fauna Distribution Information System database is purportedly used by FPC to 'predict the likely occurrence of threatened and priority species' (FPC 2015), the database is rarely if ever augmented with on ground surveys. Crucially, there appears to be no mechanism to protect important habitat outside of the reserve system, and no management response other than the inadequate and scientifically unjustified habitat tree retention program.

The FPC also spoke about Recovery Plans that are in place for some of the threatened flora and fauna species in the karri forests (FPC 2015). Again, it did not mention that Recovery Plans are unenforceable or that for some, such as the Western Ringtail Possum, the Plan specifies that known habitat is now considered critical and worthy of protection but this requirement is ignored.

The FPC is now developing a program for identifying the presence of Black Cockatoos in forests before logging, but while obvious nesting hollows are still being cut down in logging operations, this survey work will not improve their protection or respond meaningfully to the recommendations of experts.

9.2.2 What went wrong with the FSC Certifying Body's assessment of threatened species?

Publicly available information on this is limited, but the public summary report prepared by Soil Association Woodmark summarises the findings:

> "The audit team acknowledge that harvesting results in a localised loss of habitat but that prescriptions are in place to minimise this loss and ensure that as the stand regenerates the habitat characteristics return." (Soil Association Woodmark, 2014, 5.2)

This finding demonstrates a serious failure on the part of the certifying body.

The conclusion that Soil Association reached indicates that it did not appreciate the serious impacts that logging is having on the threatened and endangered karri forest species. It did not account for habitat loss being a major current threat to their survival or the fact that the habitat characteristics do not actually return.

This misapprehension shows that the certifying body had not properly considered or understood scientific literature and on-ground evidence provided by stakeholders. Instead, the certifying body failed to consider clear and readily available species-specific scientific information and advice of the agencies and independent experts and accepted the FPC's flawed analysis that appropriate prescriptions are in place to minimise habitat loss and ensure regeneration.

10.0 Recommendations

Current logging of karri forests does not meet the FSC Controlled Wood requirements and the first step in correcting this must be to withdraw the accreditation.

Recommendation 1: Withdraw the Forest Products Commission's Controlled Wood accreditation in accordance with the FSC's Controlled Wood requirement that forest management not be responsible for threats to High Conservation Values.

The primary failures of the FSC certification body in the Western Australian karri forests occur in three key areas:

- **Failure to fully consider and accurately assess the information provided by stakeholders**.

  The rigour of FSC assessments relies heavily on information from informed stakeholders. Certification Bodies send a small team of often interstate or international assessors, generally for a week, to verify that logging operations meet FSC standards.

  Resource, time, and often local knowledge constraints mean assessors are heavily reliant on logging companies providing complete information. This situation is exacerbated when assessors overlook easily available information, such as Recovery Plans or scientific literature.

  The mechanisms for feedback from assessors to stakeholders regarding how stakeholder information has been interpreted are largely informal, in the form of conversations or one way information provision by stakeholders, until the point when FSC accreditation is granted. Even at this point, only a summary of the decision made by the certification body is available to stakeholders.

  Recommendation 2: Certifying Bodies formally consider information provided to them by stakeholders, provide stakeholders with the conclusions drawn from that information and create a formal opportunity for stakeholders to provide feedback on those conclusions prior to finalisation of the report.

- **Failure to consult leading experts, primary government source documents, and scientific literature directly relevant to preventing threats to specific high conservation values.**

  This results in a failure to rigorously assess the information and management proposals put forward by the company seeking certification.

In the karri forest case there has been a clear failure to incorporate information from readily available primary documents. For example, information on logging threats and important or critical habitat in Recovery Plans for threatened species does not appear to have been incorporated into the FSC assessment decision.

Recommendation 3: Certification Bodies undertake independent assessments of threatened species likely to occur in a proposed logging area. Assessors should consult, at a minimum, primary documentation for threatened species that detail habitat requirements and threats, such as Recovery Plans and scientific literature.

Recommendation 4: Certification Bodies proactively and independently contact key experts on threatened species for advice where important species habitat is planned for logging, and logging is a recognised threat.

- **Failure by Certification Bodies to either establish or transparently report to stakeholders on the criteria used to assess FSC High Conservation Value requirements for Controlled Wood assessment, and failure to consult on the adequacy of measures to prevent threats to HCVs.**

  Much of the task of certification bodies in undertaking FSC assessments is to interpret the language and requirements of FSC and apply it to the specific context. Certification Bodies establish systems to do this.

  In the karri forest case, the granting of Controlled Wood accreditation despite known logging impacts on habitat for threatened and endangered species strongly suggests a failure of criteria to clearly quantify threats to HCVs. Similarly, the acceptance of old growth forest definitions provided by the logging company that fail to consider FSC requirements that old growth forest is defined by its 'structure and function' indicates a need for more rigorous application of FSC requirements.

Recommendation 5: The criteria and checklists used by Certification Bodies for assessment of HCVs are provided to stakeholders.

Recommendation 6: Stakeholders are consulted and provided with documentation on how both stakeholder and company information is interpreted against Certifying Body processes and Controlled Wood requirements.

Recommendation 7: Certification Bodies consult stakeholders on the adequacy of the management proposed by the company to avoid threats to identified HCVs, in addition to consultation on the information used to assess whether HCVs are present.

11.0 Conclusion

The FPC of WA is the first Australian state government logging agency to achieve Controlled Wood status for any part of its logging activities. It is evident that karri forest logging is threatening and destroying HCVs and therefore that the FPC does not comply with the FSC Controlled Wood standard. An error has been made and the FSC complaints processes are now being put to the test. The conduct of these complaints processes and the response of Soil Association Woodmark are important indicators of the ability of FSC to address mistakes and respond to relevant information and stakeholder concern.

FSC has an important place in the market, giving consumers an assurance that they are buying responsibly. None would suffer more from FSC losing its credibility than FSC itself, but the impacts would extend to legitimately responsible companies, and consumers would need to find a new way of selecting wood and paper products. Most directly, forest ecosystems suffer when irresponsible logging is given a market boost it does not deserve. When functioning properly on the other hand, FSC challenges logging companies and agencies to improve their practices, which has multiple benefits for forests and communities.

In addition to the specific environmental and brand consequences for FSC resulting from the karri forest case, the systemic failures apparent in the assessment raise serious questions about the

applicability of the less rigorous FSC Controlled Wood standard in native forests in Australia. This echoes the situation internationally where the application of Controlled Wood has been found to be seriously deficient.

Beyond the immediate FSC and Soil Association Woodmark response to formal complaints regarding the flawed karri accreditation, there are several possible responses to help restore both the integrity of and stakeholder confidence in the FSC system.

One option is a substantial overhaul of the application of Controlled Wood in Australia, by both FSC Australia and the certification bodies such as Soil Association Woodmark that undertake assessments. Such an overhaul should be in line with the recommendations listed above, and a broader consultation with stakeholders on changes that reduce the risk of flawed assessment outcomes that threaten high conservation values.

Such an overhaul is a well-trodden path, with numerous efforts internationally and in Australia to inject adequate rigour into the Controlled Wood system. It remains to be seen whether sufficient changes can be affected to remove the environmental, supply chain, and brand risks that appear inherent in an FSC standard that is intended to apply less onerous requirements than FSC's more rigorous, flagship Forest Management standard.

The second is for companies to choose FSC Forest Management, or 'full' certification. This provides greater rigour in assessments and more transparency to stakeholders, and confers greater market advantages.

In essence, Controlled Wood is failing to prevent logging risks to threatened species and other high conservation values in Western Australia. Consequently, the risks to consumer and stakeholder confidence in FSC branded wood products in Australia, and the value of FSC to the community, are raised substantially.

Urgent action is needed to ensure that the risks of environmental and brand damage from wrongly accredited karri forest logging do not result in permanent scars for Western Australia's threatened species, or the reputation of FSC in Australia.

References

Abbott, Ian and K. Whitford. 2002. Conservation of vertebrate fauna using hollows in forests of south-west Western Australia: strategic risk assessment in relation to ecology, policy, planning, and operations management. *Pacific Conservation Biology* vol. 7: 240-55. Surrey Beatty & Sons, Sydney.

BirdLife International. 2015. Species factsheet: *Zanda baudinii*. http://www.birdlife.org

BirdLife International. 2015. *Endemic Bird Area factsheet: South-west Australia* http://www.birdlife.org

Bradshaw, F. 1998. *Old Growth Mapping: A report prepared from the Western Australian Regional Forest Agreement.*

Burbidge, John., Peter Harrison and John Woinarski. 2014. *The Action Plan for Australian Mammals 2012.* CSIRO Publishing. Victoria, Australia.

Burrows, N, B. Ward & R. Cranfeld. 2002. Short term impacts of logging on understorey vegetation in a Jarrah forest. *Australian Forestry*. 65:47-58.

Burrows, N,, Dell, B., Neyland, M & J. Ruprecht. 2011. *Review of Silviculture in forests of south-west Western Australia* http://www.conservation.wa.gov.au/media/18065/review_of_silviculture_in_forests_of_south-west.pdf

Burrows, N., G. Friend, K. Morris, G. Stoneman, G. Wardell-Johnson & M. Williams. 1993. *A proposed integrated study of the effects of timber harvesting on the Jarrah forest ecosystem*. Perth: Department of Conservation and Land Management.

Calver, Mike and Grant Wardell-Johnson. 2004. "Sustained unsustainability? An evaluation of evidence for a history of overcutting in the jarrah forests of Western Australia and its

consequences for fauna conservation." In *Conservation of Australia's Forest Fauna Second Edition,* edited by Daniel Lunney, 94-115. Mosman: Royal Zoological Society of NSW.

Conservation International. 2015. *What's a Hotspot?* *http://www.conservation.org/How/Pages/Hotspots.aspx*

Dean, Christopher, Grant Wardell-Johnson and James Kirkpatrick. 2012. "Are there are circumstances in which logging primary wet-eucalypt forest will not add to the global carbon burden?" In *Agricultural and Forest Meteorology* 161 (2012) 156–169.

Department Agriculture, Forestry and Fisheries. 1998. *WA Comprehensive Regional Assessment Report – Volume 1.* http://www.daff.gov.au/SiteCollectionDocuments/rfa/regions/wa/wa-rfa-cra-vol-1.pdf

Department of the Environment. 2015. *Calyptorhynchus baudinii* in Species Profile and Threats Database, Department of the Environment, Canberra. http://www.environment.gov.au/sprat.

Department of the Environment. 2015. *Setonix brachyurus* in Species Profile and Threats Database, Department of the Environment, Canberra. http://www.environment.gov.au/sprat.

Environment Forest Taskforce, Environment Australia and Department of Conservation and Land Management. 1997. *Review of Old Growth Data and Mapping in the South West Forest Region of Western Australia.* Commonwealth Government and State of Western Australia.

Forest Stewardship Council Australia. 2013. *High Conservation Values Evaluation Framework.* FSC Australia: West Melbourne.

Forest Stewardship Council International Centre. 2006. *FSC Controlled Wood Standard for Forests Management Enterprises FSC-STD-30-010 (Version 2-0) EN*. FSC, Germany.

Garnett, S. T., Crowley, G. M. 2000. *The Action Plan for Australian Birds 2000*. Environment Australia: Canberra.

Garnett, S.T., Szabo, J.K. and Dutson, G. 2011. *The Action Plan for Australian Birds 2010.* CSIRO Publishing: Collingwood.

Hearn, Roger, K. Williams and S. Comer. 2002. "Warren." *A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions in 2002:* 637-654. Institute of Foresters Australia. 2011. A*ustralian Forestry* 74, 4. http://www.dec.wa.gov.au/pdf/science/bio_audit/warren_p637-655.pdf.

Johnstone, R., Kirkby, T. and Sarti, K. 2013. The breeding biology of the Forest Red-tailed Black Cockatoo Calyptorhynchus banksii naso Gould in south-western Australia. I. Characteristics of nest trees and nest hollows. In *Pacific Conservation Biology* Vol. 19: 121–142. Surrey Beatty & Sons, Sydney.

Johnstone, R. Kirkby, T. and Sarti, K. 2013. The breeding biology of the Forest Red-tailed Black Cockatoo Calyptorhynchus banksii naso Gould in south-western Australia. II. Breeding behaviour and diet. In *Pacific Conservation Biology* Vol. 19: 143 - 155. Surrey Beatty & Sons, Sydney.

Keenan, R.J. and Ryan, M.F. 2006. *Science for Decision Makers*: *Old Growth Forests in Australia.* Bureau of Rural Sciences, Australian Government. http://www.acera.unimelb.edu.au/materials/brochures/SDM-OldGrowthForests.pdf

NSW National Parks and Wildlife Service. 1999. *Old-growth Forest Related Projects - UNE / LNE Regions: A project undertaken as part of the NSW Comprehensive Regional Assessments.* NSW Parks and Wildlife Service.

Perth Now. 2015. *WA's native possum is facing extinction yet our Environment Minister won't list it as Critically Endangered* http://www.perthnow.com.au/news/western-australia/was-native-possum-is-facing-extinction-yet-our-environment-minister-wont-list-it-as-critically-endangered/story-fnhocxo3-1227233669261

Rotheram, Ian. 1983. Suppression of growth of surrounding regeneration by veteran trees of karri (Eucalyptus diversicolor) *Australian Forestry* 46: 8-13.

Saunders DA, Rowley I and Smith GT. 1985. The effects of clearing for agriculture on the

distribution of cockatoos in the southwest of Western Australia. In *'Birds of Eucalypt Forests and Woodlands: Ecology, Conservation and Management*'. (Eds A Keast, HF Recher, H Ford and DA Saunders) pp. 309-321. RAOU and Surrey Beatty and Sons. Melbourne and Chipping Norton.

Soil Association Woodmark. 2014. *Woodmark Standard for Forest Management Enterprises supplying FSC-certified Controlled Wood Public Summary Report.* Soil Association Certification Limited, UK.

The West Australian. 2014. *Fears rise for possums.* https://au.news.yahoo.com/thewest/regional/south-west/a/25822883/fears-rise-for-possums/

VicForests. 2014. *High Conservation Values*. *http://www.vicforests.com.au/high-conservation-values*

Wayne, A., C. Ward, J. Rooney & I. Wheeler. 2000. *The immediate impacts of timber harvesting and associated activities on the ngwayir (*Pseudocheirus occidentalis*) in the jarrah forest of Kingston State Forest Block: Progress report*. Manjimup: Department of Conservation and Land Management.

Wayne, A.F.; Cowling, A.; Rooney, J.F.; Ward, C.G.; Wheeler, I.B. and Lindenmayer, D.B. 2005a. Factors affecting the detection of possums by spotlighting in Western Australia. In *Wildlife Research* 32: 689–700.

Wayne, Adrian; A. Cowling, D.B. Lindenmayer, C.G. Ward, C.V. Vellios, C.F. Donnelly, and M.C. Calver. 2006. The abundance of a threatened arboreal marsupial in relation to anthropogenic disturbances at local and landscape scales in Mediterranean-type forests in south-western Australia. In *Biological Conservation* 127: 463–476

Wayne, A.F.; Ward, C.G.; Vellios, C.V.; Maxwell, M.; Wilson, I.; Wayne, J.; Ward, D.B.; Liddelow, G.; Renwick, J. and Orell, P. (2012). *Ngwayir (Pseudocheirus occidentalis) declines in the Upper Warren, the issue in brief.* Internal Report. Department of Parks and Wildlife, Perth.

Western Australia. Conservation Commission. 2005. *Assessment criteria and process for Conservation Commission review of old-growth amendments*. Conservation Commission of Western Australia.

Western Australia. Conservation Commission. 2013. *Forest Management Plan 2014 – 2023.* Conservation Commission and Department of Parks and Wildlife. Perth: WAGPS

http://www.conservation.wa.gov.au/management-planning/management-plans/forest-management-plan-2014-2023.aspx

Western Australia. Department of Conservation and Land Management. 2000. *Department of Conservation and Land Management Annual Report 1999 – 2000.* Perth: CALM

Western Australia. Department of Conservation and Land Management. 2004. Fauna Nomination Form. Unpublished.

Western Australia. Department of Conservation and Land Management. 2005. Silvicultural Practice in the Karri Forest, Department of Conservation and Land Management, Sustainable Forest Management Series, SFM Guideline No. 3. Perth: CALM

Western Australia. Department of Conservation and Land Management. 1995. *Silviculture specification 2/95, Silviculture practice in the karri forest*. Perth: CALM

Western Australia. Department Environment and Conservation. 2008. Forest Black Cockatoo (Baudin's Cockatoo *Calyptorhynchus baudinii* and Forest Red- tailed Black Cockatoo *Calyptorhynchus banksii naso*) Recovery Plan. DEC. Australian Government.

Western Australia. Department Environment and Conservation. 2008. *Report to the Conservation Commission in Respect to Key Performance Indicator 2 of the Forest Management Plan 2004 – 2013. Brush-tailed Phascogale (Phascogale tapoatafa tapoatafa ssp. WAM M434).* Sustainable Forest Management Division. DEC, Perth, WA.

Western Australia. Department of Parks and Wildlife and WA Museum. Naturemap. http://naturemap.dpaw.wa.gov.au/Forms/Main/Home.aspx

Western Australia. Department of Parks and Wildlife. 2014. Department of Parks and Wildlife 2014, *Karri Silviculture Guideline*. Sustainable Forest Management Series, FEM Guideline 3.

Western Australia. Department of Parks and Wildlife. 2014. Extra protection for WA's native species. http://www.dpaw.wa.gov.au/news/media-statements/minister-for-environment/item/1178-extra-protection-for-wa-s-native-species

Western Australia. Department of Parks and Wildlife. 2014. Western Ringtail Possum

(*Pseudocheirus occidentalis*) Recovery Plan. Wildlife Management Program No. 58. Department of Parks and Wildlife, Perth, WA.

Western Australia. Environmental Protection Authority. *Proposals to amend the 1987 Forest Management Plans and Timber Strategy and proposals to meet Environmental Conditions on the Regional Plans and WACAP ERMP. Report and recommendations of the Environmental Protection Authority. Bulletin 652.* http://epa.wa.gov.au/EPADocLib/716_B652.pdf

Western Australia. Forests Products Commission. 2014. *Forest Products Commission Annual Report 2013 - 2014.* Forest Products Commission. FPC, Perth.

Western Australia. Forests Products Commission. 2015. *Forest Products Commission's management plan for the karri forests September 2013.* Forest Products Commission. FPC, Perth.

Western Australia. Forests Products Commission. 2015. *Forest Products Commission's management plan for the karri forests May 2015.* Forest Products Commission. http://www.fpc.wa.gov.au

Western Australia. Legislative Council, Question on Notice No. 1464 of 1985.

Western Australia. Legislative Council, Question on Notice No. 5990 of 2008.
Western Australia, Legislative Assembly, Question On Notice No. 1015 of 2013.
Western Australia, Legislative Council, Question On Notice No. 682 of 2013.

Western Australia. State Library. 2015. Weird and Wonderful WA.
https://slwa.wordpress.com/2015/06/03/weird-and-wonderful-wa/

Appendix One

THE UNIVERSITY OF WAIKATO
Te Whare Wānanga o Waikato

Private Bag 3105
Hamilton,
New Zealand.
Ph +64 7 838 4278
email c14@waikato.ac.nz

Wednesday, 20 May 2015

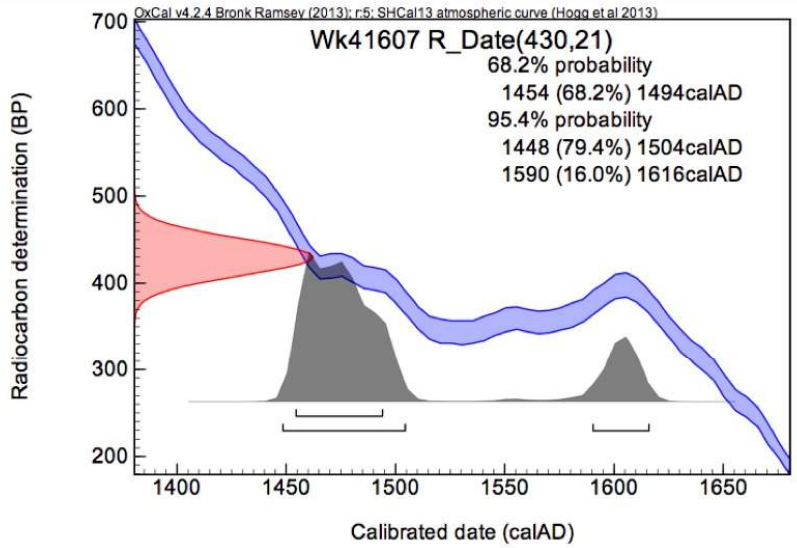
Radiocarbon Dating Laboratory

Report on Radiocarbon Age Determination for Wk- 41607

Submitter	J Beckerling
Submitter's Code	N-15-09M
Site & Location	, Australia
Sample Material	Marri (Eucalyptus callophyla)
Physical Pretreatment	Surfaces scraped clean. The wood was chopped up into small splinters and milled. Washed in demineralized water and dried.
Chemical Pretreatment	Treated with Sodium Chlorite to leave holocellulose, rinsed with distilled water and dried.

$\delta^{13}C$	-24.9 ±	0.2 ‰
$D^{14}C$	-52.1 ±	2.5 ‰
$F^{14}C\%$	94.8 ±	0.3 %
Result	**430 ± 21 BP**	

Comments



- Explanation of the calibrated Oxcal plots can be found at the Oxford Radiocarbon Accelerator Unit's calibration web pages (http://c14.arch.ox.ac.uk/embed.php?File=explanation.php)
- Result is *Conventional Age or Percent Modern Carbon (pMC)* following Stuiver and Polach, 1977, Radiocarbon 19, 355-363. This is based on the Libby half-life of 5568 yr with correction for isotopic fractionation applied. This age is normally quoted in publications and must include the appropriate error term and Wk number.
- Quoted errors are 1 standard deviation due to counting statistics multiplied by an experimentally determined Laboratory Error Multiplier.
- The isotopic fractionation, $\delta^{13}C$, is expressed as ‰ wrt PDB and is measured on sample CO_2.
- $F^{14}C\%$ is also known as *Percent Modern Carbon (pMC)*.

Ali Hogg

Appendix Two

Use of marri 1969-1970 - 2013-2014

Dr Beth Schultz, Western Australian Forest Alliance, July 2015

	Marri sawlogs ($m^{3)}$	Marri chiplogs (m^3)
1969-70	17,799	-
1970-71	26,682	-
1971-72	26,383	-
1972-73	19,985	-
1973-74	18,389	-
1974-75	9,485	-
1975-76	2,421	77,655
1976-77	4,324	241,207
1977-78	13,851	329,190
1978-79	7,238	353,928
1979-80	10,961	439,666
1980-81	11,689	386,664
1981-82	9,120	255,069
1982-83	7,626	284,670
1983-84	8,702	339,389
1984-85	13,093	400,828
1985-86	19,675	428,514
1986-87	14,202	444,076
1987-88	5,061	551,673
1988-89	16,893	459,775
1989-90	34,998	376,076
1990-91	122,703	349,820
1991-92	55,132	424,121
1992-93	41,290	420,548
1993-94	20,206	405,111
1994-95	12,165	505,655
1995-96	9,667	492,484
1996-97	7,232	449,439
1997-98	5,925	413,327
1998-99	10,268	317,596
1999-00	15,015	319,259
2000-01	10,349	258,119
2001-02	5,361	102,618
2002-03	8,401	56,237
2003-04	10,437	37,750
2004-05	4,838	2,907
2005-06	9,407	5,572
2006-07	12,542	3,147
2007-08	14,366	3,973
2008-09	3,885	5,349
2009-10	10,696	1,977
2010-11	13,103	2,310
2011-12	5,792	1,151
2012-13	3,691	10,218
2013-14	2,767	5,836
	Total	**9,961,753 = 12,352,574 tonnes**

From 1975-76, when woodchipping began, until 2014, 10 million cubic metres of marri logs have been sold as chiplogs. Most of the logs came from old growth trees. The Japanese stopped buying marri chiplogs in November 2001. Sources: Forests Department (WA), Marri Wood Chip Project Environmental Impact Statement, undated [1973] Forests Department Annual Reports 1969-70 – 1984-85, CALM Annual Reports 1985-86 – 1999-2000, Forest Products Commission Annual Reports 2000-2001 – 2013-2014 [1] One cubic metre of marri weighs 1.24 tonnes.