Submission from South-West Forests Defence Foundation Inc.

PO Box 203, Nedlands WA 6009
Prepared by Beth Schultz [redacted] 10th February 2020

Department of Water and Environmental Regulation: *Native vegetation in Western Australia.* Issues paper for public consultation. November 2019

Preliminary

This consultation initiative is welcome. However, as long as this State and country pursue a policy of growth in population, consumption and the economy, the best attempts to protect native vegetation and its biodiversity can have only marginal success.

While this issue is beyond the scope of DWER's public consultation, it must be raised because it gives rise to a feeling of futility in the writing of a submission.

1. Introduction

The Introduction sets out the extent and importance of WA's native vegetation (henceforth NV). It also says,"WA's native vegetation supports the productive capacity of many important sectors of the State's economy including agriculture, pastoralism, forestry, wildflower and seed harvesting, beekeeping and nature-based tourism."

Agriculture, pastoralism, forestry, wildflower and seed harvesting remove and degrade NV. Beekeeping and nature-based tourism inevitably degrade it. Unless strictly regulated and monitored, they are all a threat to NV. The push for growth and increased profits and the lack of resources for the monitoring agency risk overriding all efforts to protect native vegetation and enforce regulations.

In the case of forestry, the prime objective is the production of good quality sawlogs. However, after a century of mismanagement, the quality and quantity of NF sawlogs have declined precipitously. Old growth trees, essential habitat for thousands of species, are still being felled (see attachment 1). Much of the jarrah forest has been logged up to five times. Forty per cent of the karri forest is between 0 and 50 years of age. Most of the wood goes to low value products (woodchips for karri, fuelwood and firewood for jarrah). Forest biodiversity is seriously threatened.

A major threat to all native vegetation is fire. There is a wealth of scientific research into fire management in the natural environment and the adverse impacts of fire on biodiversity (see attachment 2). Current prescribed burning is far too frequent and extensive, especially the south-west forest region, where logging and burning are the principal disturbances.

It is surely no coincidence that between 1999 and 2018, the number of fauna species in this region on WA's threatened species list increased from 19 to 42 with 24 species moved to a higher category of threat. The number of threatened flora species went from 79 to 113.[1]

Recommendation 1: Greatly increase the resources for monitoring and enforcing compliance with regulations. P. v and passim

Recommendation 2: Phase out native forest logging under any pretext as quickly as possible. P. 1.

Recommendation 3: Adopt the EPA recommendation that, in planning the annual burn program, assessment of fire requirements for biodiversity outcomes be given first consideration, and that any shortcomings from this approach for the other objectives be taken into account in a second round process to achieve all priority objectives.[2] P. 2

---

[1] Western Australia, Legislative Council, Question on Notice No. 1883 of 2019, Table Paper No. tp-2555

[2] Environmental Protection Authority Perth, Western Australia. *Review of the Fire Policies and Management Practices of the Department of Conservation and Land Management,* Section 16(e) report and recommendations of the Environmental Protection Authority, Bulletin 1151 October 2004.

2. Responding to the challenge

Recommendation 4: Require LGAs to protect remnant NV and properly fund conservation management of reserves for which they have management responsibilities. P. 2

Recommendation 5: Include the national goals for native vegetation in a single framework and policy under the *Environmental Protection* Act as a State native vegetation policy, and ensure the goals legally and specifically apply, and are superior to, all other State Acts. This includes all the Acts listed on pages 13 and 14. P. 6

Recommendation 6: Provide adequate funding for community conservation groups so that they can increase their invaluable contribution to the conservation of native vegetation in Western Australia. P. 6

Recommendation 7: Produce and make publicly available in real time statewide datasets of native vegetation condition. P. 10

Recommendation 8: Adopt Objective b, and conserve and restore native vegetation to maintain and improve ecological function and biodiversity at a landscape scale. 'Balance' (Objective a) invariably favours economic outcomes at the expense of the environment. P. 12

Recommendation 9: Integrate all the site-based vegetation and flora surveys by all parties into detailed vegetation maps to improve the knowledge base, and make them available to community conservation groups and scientists for us to make submissions and understand the extent of vegetation in various regions. P. 16

Recommendation 10: Fully fund the Department of Biodiversity, Conservation and Attractions (DBCA) so that it can conserve and protect the State's biodiversity as required by law. P. 14

Recommendation 11: Continue to fund and support the Index of Biodiversity Surveys for Assessments (IBSA) P. 17

Recommendation 12: Declare all TECs, habitat of rare species and remnant vegetation in Wheatbelt as Environmentally Sensitive Areas under the EP Act. P. 20

Recommendation 13: Greatly reduce the use of offsets. Allow only genuine like-for-like offsetting, and if this is not possible, let the decision to clear native vegetation be seen as a political decision, not a departmental recommendation, P. 20 and passim

Recommendation14: Greatly reduce the more than 40 exemptions that allow native vegetation to be cleared without assessment under the clearing provisions of the *Environmental Protection Act 1986*. P. 22. There must be no exemptions in the Perth and Peel sub-regions or the Wheatbelt.

Recommendation15: Prosecute and penalise to the full extent of the law all unlawful clearing. P. 22

Recommendation16: Avoid clearing and burning of roadside vegetation because it has biodiversity and scenic values. Reduce the speed limit rather than clear the native vegetation. Pp. 24 and 28

Recommendation 17: Continue and increase support for the Western Australian Government's Aboriginal Ranger Program, basing it on advice from Aboriginal people themselves. P. 27

Recommendation 18: Increase support for private land conservation by giving carbon credits for protected vegetation even if it cannot be cleared, and removing Stamp Duty on the sale of land covered by a conservation covenant with the National Trust of Australia (WA), DBCA and, under a current proposal, the EPA. P. 29

Recommendation 19: Give all Bush Forever sites secure conservation tenure as 'A' class nature reserves or 'A' class reserves for the purpose of nature conservation and passive recreation only with no other uses permitted and ensure all sites have appropriate conservation managers. P 3-

Recommendation 20: Limit the uses for pastoral leases to sustainable livestock grazing on native vegetation, ecologically sustainable tourism and carbon farming, and prohibit dam construction and clearing for introduced pasture. P. 30

Recommendation 21: Increase investment in improved land condition monitoring systems and processes for the rangelands, including more use of remote sensing technologies and analyses, and fully publish the findings. P 30

Recommendation 22: Do not allow conversion of pastoral leases to freehold tenure or similar. The 39 per cent of WA under pastoral leases must remain in public ownership. P. 30

Old growth karri logs at the woodchip mill, February 2020

Jess Beckerling, Convener of the WA Forest Alliance Inc.

Science and prescribed burning in Western Australia

Beth Schultz [redacted] – January 2020

There is a wealth of scientific research into fire management in the natural environment and the impacts of fire on the environment. Some of the findings and published references are listed below.

1. Improving fire management

1.1 In most bioregions, prescribed burning is likely to have very little effect on subsequent extent of unplanned fire, and large areas of treatment are required to substantially reduce the area burned by unplanned fire.[1]

1.2 Prescribed fires carry the risk of escape, and are unsuitable in many vegetation types because the fires cannot be controlled safely.[2]

1.3 Ignition management (stopping fires from starting and putting them out rapidly when they do start) is the best way to minimise the area burnt in wildfires.[3]

1.4 While prescribed burning gives some protection for five years, for the next 15 years it increases the 'fuel load' and the risk of fire.[4]

1.5 The 1961 report of the Royal Commission on the bushfires of 1960 and 1961 said that most of the forest in the Dwellingup division had been controlled burnt in recent years, and the litter on various parts of the forest represented accumulations generally speaking of from 0 to 8 years.[5]

1.6 Fuel age is an imprecise surrogate for fire hazard in species-rich Mediterranean-type shrublands. A better method of estimating the 'fuel load' is to measure the height of the litter.[6]

1.7 A shift in emphasis away from broad-scale fuel-reduction to intensive fuel treatments close to property will more effectively mitigate impacts from wildfires on peri-urban communities.[7]

1.8 It has been claimed that Australian Aborigines burnt most of Australia about every one to five years.[8] Research and experience disprove the claim regarding, for example, the karri forest.[9]

1.9 The technique proposed for constructing a fire history in south-west WA using the dark rings on grasstree trunks is unreliable. The grasstree record in its current form cannot be interpreted as fire history, and the grasstree technique should not be used to support fire management.[10]

1.10 The frequency of fires in south-west WA increased after the arrival of Europeans.[11]

1.11 The removal of mature trees since European settlement may have triggered tree and shrub regeneration, resulting in higher mid-storey cover and fire fuel hazard. Thus, managing stands for the persistence and replacement of mature trees may contribute to long-term fuel reduction in Australian forests and woodlands.[12]

1.12 Studies on fuel hazard in long-unburned forests are scarce. Protecting long-unburned sites from fire and managing to transition a larger proportion of forest to a long-unburned state may benefit fuel-hazard management within these forests in the long-term.[13]

1.13 Long unburnt karri forest has a low 'fuel load'.[14]

1.14 Mammals such as woylies, potoroos and quendas, which used to be present in very large numbers and are now locally extinct or threatened with extinction, reduced the 'fuel load' by digging into the soil and turning over the litter.[15]

1.15 Having an annual target for fuel reduction burning is unhelpful and may be counterproductive. Better criteria for successful fire management than reaching an annual target for fuel reduction burning in the three south-west forest regions need to be developed [16]

1.16 The Victorian Government introduced an annual burn target of 5 per cent of public land then quickly changed its policy to one based on risk management.[17]

1.17 With the projected warming and drying climate and increasing fire hazard, adaptive fire management may need to include heightened wildfire suppression and lengthened intervals for prescribed fire to best support the persistence of perennial plant species and plant biodiversity.[18]

2. Assessing the costs of prescribed burning

2.1 Smoke from wildfires and prescribed burns is a serious health hazard.[19]

2.2 There is no scientific evidence that plants are genetically adapted to fire.[20]

2.3 Frequent fires have a disastrous effect on many species of flora and fauna and the habitat structure.[21]

2.4 Young karri trees are fire sensitive for up to 25 years[22] but karri forest, including karri in national parks, is burnt on average every 10 years. This may kill young naturally regenerated karri.

2.5 In native plant communities infested with *Phytophthora cinnamomi,* fire has the potential to increase both the severity and extent of the disease.[23]

2.6 In jarrah forest, prescribed burning on a five- to seven-year rotation is likely to permanently simplify the litter flora and fauna, with far-reaching effects on forest and hygiene.[24]
2.7 Most prescribed burning has been conducted in spring, the worst possible time for nesting birds[25] and flowering plants. As well as loss of habitat, there is a risk of re- ignition.
2.8 Recent research shows that patch mosaic burning does not necessarily conserve biodiversity.[26]
2.9 In research conducted in semi-arid Australia, older vegetation was shown to be disproportionately important for the conservation of birds, reptiles, and small mammals. [27]
2.10 Fire and logging are driving ecosystem collapse in Mountain Ash forest.[28]
2.11 Plants that recover from fire by resprouting may take 13 years to tolerate another fire. Repeated fires at intervals shorter than resprouters become fire tolerant may make the species locally extinct.[29]
2.12 Mistletoes, a keystone resource in forests and woodlands, are obligate seeders that depend on seed importation after fire. They can only recolonise when their hosts have regenerated after fire so fire is the most pervasive threatening process operating today.[30]
2.13 Burning to protect flora may not protect fauna. The responses of fauna species to fire are largely unknown.[31]
2.14 Frequent low-intensity fires ('prescribed burning') cause substantial changes in the structure of invertebrate assemblages and the loss of species associated with the decomposer cycle. This has serious implications for forest health.[32]
2.15 In the absence of wildfires, recurring low intensity prescribed burns are likely to reduce plant richness, diversity, and density, and change understorey species composition and structure.[33]
2.16 The most detailed long-term study suggests that frequent mild fires will lead to the decline and loss of some species of birds now perceived as common and little affected by mild fires.[34]
2.17 Some native mammals need long unburnt vegetation (honey possums take 25.6 years to reach maximum abundance after a fire).[35]
2.18 Prescribed burns sometimes escape and cause extensive damage. In 2011, an escaped prescribed burn burnt down 32 houses in Margaret River[36] and another burnt through 52,000 ha of forest and bush south of Nannup[37] killing untold numbers of native fauna and depriving any that survived of habitat for years, possibly decades.
2.19 The relevant government agency, now the Department of Biodiversity, Conservation and Attractions, has no methodology for reliably estimating the number of dead or injured fauna following wildfires or prescribed burns.[38]
2.20 Fire destroys habitat and leaves fauna no protection from predators such as foxes and cats.[39] If there is no cover, predation will be high.
2.21 Big old trees with nesting hollows, which take at least 130 years to develop and are essential for hollow-dependent species such as cockatoos, catch fire, burn through and fall over in both prescribed burns and wildfires.[40]
2.22 Prescribed burns and escapes have burnt through peatlands in south-west WA, destroying organic soils accumulated over thousands of years and the unique biodiversity they contain.[41]
2.23 Prescribed burns encourage invasion of roadside vegetation by weeds that are often more flammable than the native vegetation they replace.[42]
2.24 Below-ground abiotic soil environments may take over a century to recover from the impacts of clearfell logging and fire, which should be limited wherever possible, especially in areas previously subject to these disturbances.[43]

Conclusion

In Western Australia, under current fire management, lives have been lost, homes burnt down, farms damaged and biodiversity degraded and depleted. We need fire management based on scientific research and evidence, including recognition of the increasing impacts of climate change. Fire management must maintain and protect biodiversity as well as people and property, and be implemented by all sectors of government and the community throughout the State. There must be wide, fully informed public consultation and input. Rapid detection and response, including having appropriate fire-fighting aircraft strategically stationed across the South West throughout the fire season, need to be fully funded and developed. Local people with fire fighting equipment, training and experience should be encouraged to respond to local fires without waiting for departmental action.

References

[1] Price, OF, Penman, TD, Bradstock, RA, Boer, MM and Clarke, H (2015). Biogeographical variation in the potential effectiveness of prescribed fire in south-eastern Australia. *Journal of Biogeography* , **42,** 11, 2234-2245.

[2] Furlaud, JM, Williamson GJ and. Bowman, DMJS (2018). Simulating the effectiveness of prescribed burning at altering wildfire behaviour in Tasmania, Australia. *International Journal of Wildland Fire* **2018**, *27*, 15–28. https://doi.org/10.1071/WF1706.

[3] Cary, G *et al.* (2009). Relative importance of fuel management, ignition management and weather for area burned: from five landscape–fire–succession models *International Journal of Wildland Fire* 18,147–156.

[4] Zylstra, PJ (2018). Flammability dynamics in the Australian Alps. *Austral Ecology,* **43**, 578-591.

[5] "Statements that the Forests Department does not carry out controlled burning in the Dwellingup forests are entirely without justification. The Department has control burnt extensive areas each year for the last 40 years and more than ever at the present day. At the present time about 10 per cent of the forest in the district is being controlled burnt annually." Rodger, G. J. (1961). *Report of the Royal Commission appointed to enquire into and report upon the bush fires of December, 1960 and January, February and March, 1961 in Western Australia,* pp. 15, 20.

[6] Westcott, VC, Enright, NJ, Miller, BP, Fontaine, JB, Lade, JC, and Lamont, BB (2014). Biomass and litter accumulation patterns in species-rich shrublands for fire hazard assessment. *International Journal of Wildland Fire,* **23**, 860-871.

[7] Gibbons, P *et al.* (2012). Land management practices associated with house loss in wildfires PLoS ONE | www.plosone.org 4 January 2012 | Volume 7 | Issue 1.

[8] Gammage, B (2011). *The biggest estate on earth: How Aborigines made Australia*, p. 168. Allen & Unwin.

[9] Hallam, S J (1979). *Fire and hearth*. Advocate Press Pty Ltd, Melbourne

[10] Miller, BP, Walshe, T, Enright, NJ.and Lamont, BB (2012). Grasstree stem analysis reveals insufficient data for inference of fire history. *Journal of the Royal Society of Western Australia*, 95: 95–102, 2012.

[11] Mooney, SD *et al.* (2010). Late Quaternary fire regimes of Australasia, *Quaternary Science Reviews* Volume 30, Issues 1-2, 28-46.

[12] Wilson, N, Cary, GJ and Gibbons, P (2018). Relationships between mature trees and fire fuel hazard in Australian forest. *International Journal of Wildland Fire* **2018**, *27*, 353–362.

[13] Dixon, KM, Cary, GJ, Worboys, GL, Seddon, J and Gibbons, P (2018). A comparison of fuel hazard in recently burned and long-unburned forests and woodlands. *International Journal of Wildland Fire* **2018**, *27*, 609–622 https://doi.org/10.1071/WF18037

[14] Underwood, RJ and Christensen, PES (1981). *Forest fire management in Western Australia.* Special Focus No. 1, Forests Department of Western Australia, Government Printing Office, Perth, p. 19.

[15] Fleming, PA, Anderson, H, Prendergast, AS, Bretz, MR, Valentine, LE. and Hardy, GE.StJ. (2013). Is the loss of Australian digging mammals contributing to a deterioration in ecosystem function? *Mammal Review* The Mammal Society and John Wiley & Sons Ltd. ISSN 0305-1838.

[16] Ellis, S, Kanowski, P and Whelan, R (2004), *National Inquiry on Bushfire Mitigation and Management*, Commonwealth of Australia, Canberra.

[17] Victorian Government (2015). *Safer together: A new approach to reducing the risk of bushfire in Victoria.*

[18] Enright, NJ, Fontaine, JB, Lamont, BB, Miller, BP and Westcott, VC (2014). Resistance and resilience to changing climate and fire regime depend on plant functional traits. *Journal of Ecology*, doi: 10.1111/1365-2745.12306.

[19] Williamson, GJ, Bowman, MJS, Price, OF, Henderson, SB and Johnston, FH (2016). A transdisciplinary approach to understanding the health effects of wildfire and prescribed fire smoke regimes. *Environmental Research Letters* 11 (2016) 125009 doi:10.1088/1748-9326/11/12/125009

[20] Bradshaw, SD, Dixon KW, Lambers, H, Cross, AT, Bailey, J and Hopper, SD (2018). Understanding the long-term impact of prescribed burning in mediterranean-climate biodiversity hotspots, with a focus on south-western Australia. *International Journal of Wildland Fire,* https://doi.org/10.1071/WF18067

[21] Dixon, IR, Keys, K, Paynter, R Keighery, B, Dixon, KW and Hopper, SD (1995). *Kings Park Bushland Management Plan 1995-2005.* Kings Park and Botanic Garden, Perth,

[22] Conservation Commission of Western Australia (2008). *Forest Management Plan 2004-2013 Mid-term audit of performance report,* p. 181.

[23] Moore, N, Barrett, S, Howard, K, Craig, MD, Bowen, B, Shearer, B., and Hardy, G (2014). Time since fire and average fire interval are the best predictors of *Phytophthora cinnamomi* activity in heathlands of south-western Australia. *Australian Journal of Botany*, **6**2, 587-593.

[24] Springett, JA (1976). The effect of prescribed burning on the soil fauna and on litter decomposition inWestern Australian forests*. Australian Journal of Ecology*. **1**: 77-82.

[25] Davies, SJJF (1979). The breeding seasons of birds in south-western Australia. *Journal of the Royal Society of Western Australia.* **62**: 53-64.

[26] Parr, CI and Anderson, AN (2009). Patch mosaic burning for biodiversity conservation: a critique of the pyrodiversity paradigm. *Conservation Biology* Volume 20, No. 6, 1610-1619.

[27] Kelly, LT Bennett, AF, Clarke, MF and McCarthy, MA (2014). Optimal fire histories for biodiversity conservation. *Conservation Biology*, **29** (2), pp. 473–481

[28] Lindenmayer, DB and Sato, C (2018). Hidden collapse is driven by fire and logging in a sociological forest ecosystem. *Proc Natl Acad Sci USA* May 15, 2018 115 (20) 5181-5186; https://doi.org/10.1073/pnas.1721738115

[29] Bradstock, RA and Myerscough, PJ (1988). The survival and population response to frequent fires of two woody resprouters *Banksia serrata* and *Isopogon anemonifolius*. *Australian Journal of Botany.* **36**: 415-431.

[30] Start, AN (2015). The mistletoe flora of southwestern Western Australia, with a particular reference to host relationships and fire. *Australian Journal of Botany*, **63,** 636-646.

[31] Clarke, Michael F (2008). Catering for the needs of fauna in fire management: science or just wishful thinking? *Wildlife Research,* 35, 385–394.

[32] York, A (1999). Long-term effects of repeated prescribed burning on forest invertebrates: management implications for the conservation of biodiversity. IN *Australia's Biodiversity - Responses to Fire. Plants, Birds and Invertebrates.* Biodiversity Technical Paper, No. 1, 181-266. Department of the Environment and Heritage. Canberra.

[33] Maikano, Gloria Neo, Cohn, Janet and Di Stefano, Julian (2018). Are germination cues for soil-stored seed banks different in structurally different fire-prone communities? *Austral Ecology* **43,** 89–101

[34] Woinarski, JCZ (1999). Fire and Australian birds: a review. IN *Australia's Biodiversity - Responses to Fire.* (Ed. Australia, E.), 55-180. Department of the Environment and Heritage. Canberra.

[35] Bradshaw, SD and Bradshaw, FJ (2017). Long-term recovery from fire by a population of honey possums *(Tarsipes rostratus)* in the extreme south-west of Western Australia. A*ustralian Journal of Zoology*, **65**, 1–11

[36] Government of Western Australia (2012). *Appreciating the risk: the Report of the Special Inquiry into the November 2011 Margaret River Bushfire*

[37] Parliament of Western Australia, Hansard, Legislative Council Question on Notice No. 5615 of 2012.

[38] Parliament of Western Australia, Hansard, Legislative Council Question on Notice No. 3232 of 2010.

[39] Gill, MA and Catling, PC Fire regimes and biodiversity of forested landscapes of southern Australia IN *Flammable Australia: The Fire Regimes and Biodiversity of a Continent* (2002). Edited by Bradstock, RA Williams, JE and Gill, MA Cambridge University Press.

[40] Garnett, ST, Szabo, J.K. and Dutson, G. (2010). *Action Plan for Australian Birds,* CSIRO Publishing, pages 223, 232.

[41] Horwitz, P, Judd, S and Sommer, B (2003). Fire and organic substrates: soil structure, water quality and biodiversity in far southwest Western Australia. IN *Fire in ecosystems of south-west Western Australia: Impacts and management* (Eds .I. Abbott and N. Burrows) pp. 381-393. Backhuys Publishers, The Netherlands.

[42] Milberg, Per and Lamont, Byron B (1995). Fire enhances weed invasion of roadside vegetation in southwestern Australia. *Biological Conservation* 73, 45-49.

[43] Bowd, EJ, Banks, CS, Strong, CL and Lindenmayer, DB (2019). Long-term impacts of wildfire and logging on forest soils. *Nature geoscience* www.nature.com/naturegeoscience