

## **Major issues associated with Regional Forest Agreement and links to EPBC Act Reforms**

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I have worked in Australian forests since 1983. I have written 816 peer-reviewed scientific articles in the national and international literature on Australian forest biodiversity and forest management. I was Research Director of the Threatened Species Recovery Hub and am a Fellow of the Australian Academy of Science and a Fellow of the Ecological Society of America. I am among the most highly cited forest ecologists in the world (71 048 citations as of 17 March 2021). I have won numerous national and international awards for my research. I run several of the largest, long-term monitoring studies in eastern Australia, including in native forests and in (softwood) plantations. I held a prestigious ARC Laureate Fellowship from 2013 til 2018.

The Australian Government has proposed to exempt Regional Forest Agreements from the EPBC Act. Based on more than 37 years of experience in forest ecology and management, both in Australia and overseas, I argue that it is clear that there are some major problems associated with the proposal to exempt Regional Forest Agreements from the EPBC Act. These problems are outlined in the following short summary. The overwhelming conclusion is that the Regional Forest Agreements have failed to meet their aims to protect biodiversity, secure employment, and provide resource security for the native forest logging industry (Lindenmayer *et al.* 2015) (Lindenmayer 2018). I would welcome the opportunity to make further representations to the Senate Inquiry on these matters.

1. The Regional Forest Agreements were designed to protect Australia's forest biodiversity. They have clearly failed to do this (Lindenmayer *et al.* 2015) (Lindenmayer 2018). This is highlighted by significant declines in a large number of Australian forest-dependent threatened species. For example, populations of Leadbeater's Possum and the Greater Glider have declined by 50% and 80% in the past 20 years. The extent of logged forest in the landscape has been demonstrated to be a key driver of decline in both species (Lindenmayer *et al.* 2020a). At the same time there has been major declines in an array of forest-dependent bird species (Lindenmayer and Sato 2018).
2. Spatial analyses conducted Victoria-wide have clearly shown that areas proposed for logging under the Timber Release Plan in that State over the next 5 years are also places of high conservation value for Victoria's 70 threatened forest-dependent

species (Taylor and Lindenmayer 2019). The problems associated with this major source of conflict in land uses are magnified by the results of a series of studies that have shown that the current reserve is inadequate for a range of key threatened species (Todd *et al.* 2016) (Taylor *et al.* 2017) and hence off-reserve forests are essential for the long-term persistence of these species. **Exempting RFAs from the EPBC Act would undermine efforts to secure the persistence of these species.** Moreover, an underpinned principle of the National Forest Policy Statement is that reserve systems should be Comprehensive, Adequate and Representative. All analyses to date indicate that there are not adequate to properly protect biodiversity (Todd *et al.* 2016) (Taylor *et al.* 2017).

3. The Regional Forest Agreements were designed to ensure that areas of high conservation value are not logged. This includes areas on steep slopes that are critical to the maintenance of the integrity of water supplies for human consumption and for agriculture. Recent analyses have shown that there have been major breaches of logging prescriptions in Victorian water catchments with areas well above 30 degrees having been logged. Indeed, 75% of all logging coupes in some catchments have logged areas that exceed the specified slope threshold of 30 degrees (Taylor and Lindenmayer 2021). This underscores the failure of not only codes of forest practice, but also overarching initiatives such as the Regional Forest Agreements.
4. Ongoing logging under the Regional Agreements threatens the integrity of many forest ecosystems. For example, logging is one of the key drivers of the risk of ecosystem collapse in montane forests in Victoria (Bergstrom *et al.* 2021), including the Mountain Ash ecosystem which has been classified under the IUCN Red Listed Ecosystem system as Critically Endangered (Burns *et al.* 2015) (Sato and Lindenmayer 2017).
5. Regional Forest Agreements were designed to generate certainty in resource availability for logging operations (Lindenmayer *et al.* 2015) (Lindenmayer 2018). This has clearly failed as wood shortages are apparent in both Victoria and New South Wales. For example, in the case of the wet forests of Victoria, recurrent wildfires mean there is a very low (~20%) probability of stands of trees growing old enough to provide sawlogs (Cary *et al.* 2021). That is, there is a 4 in 5 (80%) chance that forests will be burned severely before the 80 year period required for stands of trees to reach an age to be suitable for sawlog production (Cary *et al.* 2021). Resource availability challenges means that areas that have high conservation value and/or are on steep slopes (and which should be exempt from logging) have in fact been targeted for logging (Taylor and Lindenmayer 2021). Notably, the recent 2019-2020 wildfires had major impacts on forests that were planned to be logged in the next 5 years in Victoria (under the Timber Release Plan) – approximately 60% of forest planned for logging in East Gippsland was burnt in those fires and 30% of forest Statewide (Lindenmayer and Taylor 2020). This underscores the problems with resource availability for the native forest logging industry.
6. Ongoing logging under the Regional Forest Agreements is adding significantly to the fire burden in the forests of south-eastern Australia. This is because logging significantly elevates the risk of high-severity wildfire (Lindenmayer *et al.* 2020c;

Taylor *et al.* 2014). This effect has been seen in forests around the world (e.g. see (Thompson *et al.* 2007; Tiribelli *et al.* 2018; Zald and Dunn 2017)). This means that biodiversity in Australian forests (which has been massively impacted by wildfires (Ward 2020)) is at increased risk from further high severity wildfires. Regional Forest Agreements fail to account for the interacting effects of logging and fire on the decline in forest biodiversity.

7. Long-term monitoring is essential to understand the status of forest biodiversity (Wintle and Lindenmayer 2008). Regional Forest Agreements have failed to ensure that adequate monitoring takes place. This means there is no basis for determining sustainability (or otherwise). The best forest monitoring currently being undertaken is being done by third parties and not Government agencies responsible for management of public native forest estates – including State Governments that have co-signed Regional Forest Agreements.
8. The basis for the Regional Forest Agreements is extremely dated. For example, the agreements do not account for other key drivers of forest integrity such as the effects of climate change (Lindenmayer *et al.* 2015) (Lindenmayer 2018). This is highly problematic for species that are at risk not only from the effects of climate change but also the impacts of logging operations. That is, they are risk of multiple negatively impacting drivers of decline (Lindenmayer *et al.* 2020b).
9. Regional Forest Agreements fail to properly account for forest values other than timber. Indeed, formal environmental and economic accounting has shown that water, tourism, agriculture and carbon values far exceed the value of native forest timber in jurisdictions such as the Central Highlands of Victoria (Keith *et al.* 2017a; Keith *et al.* 2017b; c). Regional Forest Agreements should aim to provide for the best and highest values from native forests for the owners of those forests (the Australian public). They have failed to do this. Regional Forest Agreements have also failed to properly engage with the Traditional Owners on native forests and seek their opinions and input on how they should be managed.
10. One of the key features of the Regional Forest Agreements was to secure the economic viability of the native forest logging sector. This has clearly failed (Lindenmayer *et al.* 2015) (Lindenmayer 2018). There is abundance evidence that the native forest logging sector is uneconomic. For example, the Corporate Business Case submitted by VicForests shows that logging operations are a major loss-making entity in regions such as East Gippsland (VicForests 2013). Indeed, various analyses indicate that Victoria would be economically and financially better off (by up to \$110m per year) if the forest industry was transitioned into a plantation-only industry (Keith *et al.* 2017a; Keith *et al.* 2017b; c). Yet other studies suggest that Victoria would be \$192m a year better off financially if the native forest logging industry was stopped and wood products were sourced from plantations (see <https://www.theguardian.com/environment/2020/apr/13/ending-logging-in-victoria-now-would-save-taxpayers-192m-budget-office-estimates>) – recognizing that: (1) 88% of all sawn timber in Victoria already comes from plantations, (2) 75% of all plantation-grown eucalypt pulplogs are exported overseas (rather than processed in

Victoria where it would create manufacturing jobs for Australians), and **(3)** plantation eucalypt pulplogs are preferred feedstock for paper production.

In summary, the Samuel Review had recommended that Regional Forest Agreements should be reformed – but also subject to National Environmental Standards. It is our belief that these standards must **not** override the EPBC Act. Rather, the standards must ensure that: **(1)** forest biodiversity is properly protected (both in adequate reserves and in off-reserve areas), **(2)** that science-based forestry practices and prescriptions are properly implemented and audited [and not routinely breached – see Taylor and Lindenmayer (2021)], **(3)** that forest biodiversity is properly monitored (and then rigorously reported), and **(4)** forestry operations meet true triple bottom line standards (that is, they are economically, socially and environmentally appropriate). Under current Regional Forest Agreements, none of these four requirements have been met.

## **References**

- Bergstrom, D., B. C. Wienecke, J. van den Hoff, L. Hughes, D. B. Lindenmayer, and e. al. 2021. Ecosystem collapse from the tropics to the poles. *Global Change Biology*.
- Burns, E. L., D. B. Lindenmayer, J. Stein, W. Blanchard, L. McBurney, D. Blair, and S. C. Banks. 2015. Ecosystem assessment of mountain ash forest in the Central Highlands of Victoria, south-eastern Australia. *Austral Ecology* 40:386-399.
- Cary, G., W. Blanchard, C. N. Foster, and D. B. Lindenmayer. 2021. Effects of altered fire regimes on critical timber production and conservation rotations. *International Journal of Wildland Fire* in press.
- Keith, H., M. Vardon, J. A. Stein, J. L. Stein, and D. B. Lindenmayer. 2017a. Experimental Ecosystem Accounts for the Central Highlands of Victoria. Summary Report. The Australian National University and the Threatened Species Recovery Hub, Canberra, Australia. Available at [http://www.nespthreatenedspecies.edu.au/Ecosystem%20Summary%20Report\\_V3b\\_low.pdf](http://www.nespthreatenedspecies.edu.au/Ecosystem%20Summary%20Report_V3b_low.pdf).
- Keith, H., M. Vardon, J. A. R. Stein, J. L. Stein, and D. B. Lindenmayer. 2017b. Ecosystem accounts define explicit and spatial trade-offs for managing natural resources. *Nature Ecology and Evolution* 1:1683-1692.
- Keith, H., M. Vardon, J. A. R. Stein, J. L. Stein, and D. B. Lindenmayer. 2017c. Experimental Ecosystem Accounts for the Central Highlands of Victoria. Final Report. The Australian National University and the Threatened Species Recovery Hub, Canberra, Australia. Available at [http://www.nespthreatenedspecies.edu.au/Ecosystem%20Complete%20Report\\_V5\\_highest%20quality.pdf](http://www.nespthreatenedspecies.edu.au/Ecosystem%20Complete%20Report_V5_highest%20quality.pdf).
- Lindenmayer, D., W. Blanchard, D. Blair, L. McBurney, C. Taylor, B. Scheele, M. J. Westgate, N. Robinson, and C. Foster. 2020a. The response of arboreal marsupials to long-term changes in forest disturbance. *Animal Conservation*:<https://doi.org/10.1111/acv.12634>.
- Lindenmayer, D. B. 2018. Flawed forest policy: flawed Regional Forest Agreements. *Australasian Journal of Environmental Management* 25:258-266.
- Lindenmayer, D. B., D. Blair, L. McBurney, and S. C. Banks. 2015. The need for a comprehensive reassessment of the Regional Forest Agreements in Australia. *Pacific Conservation Biology* 24:266-270.
- Lindenmayer, D. B., C. Foster, M. Westgate, B. C. Scheele, and W. Blanchard. 2020b. Managing interacting disturbances: lessons from a case study in Australian forests. *Journal of Applied Ecology* 57:1711-1716.

- Lindenmayer, D. B., R. Kooyman, C. Taylor, M. Ward, and J. Watson. 2020c. Recent Australian wildfires made worse by logging and associated forest management. *Nature Ecology and Evolution* 4:898-900.
- Lindenmayer, D. B., and C. Sato. 2018. Hidden collapse is driven by fire and logging in a socioecological forest ecosystem. *Proceedings of the National Academy of Sciences* 115:5181-5186.
- Lindenmayer, D. B., and C. Taylor. 2020. New spatial analyses of Australian wildfires highlight the need for new fire, resource and conservation policies. *Proceedings of the National Academy of Sciences* 117:12481-12485
- Sato, C., and D. B. Lindenmayer. 2017. Meeting the global ecosystem collapse challenge. *Conservation Letters* 11:1-7.
- Taylor, C., N. Cadenhead, D. B. Lindenmayer, and B. A. Wintle. 2017. Improving the design of a conservation reserve for a critically endangered species. *PLOS One* 12:e0169629.
- Taylor, C., and D. B. Lindenmayer. 2019. The adequacy of Victoria's protected areas for conserving its forest-dependent fauna *Austral Ecology* 44 1076-1090.
- Taylor, C., and D. B. Lindenmayer. 2021. Stakeholder engagement in a Forest Stewardship Council Controlled Wood assessment. *Environmental Science and Policy* in press.
- Taylor, C., M. A. McCarthy, and D. B. Lindenmayer. 2014. Non-linear effects of stand age on fire severity. *Conservation Letters* 7:355-370.
- Thompson, J. R., T. A. Spies, and L. M. Ganio. 2007. Reburn severity in managed and unmanaged vegetation in a large wildfire. *Proceedings of the National Academy of Sciences* 104:10743-10748.
- Tiribelli, F., J. M. Morales, J. H. Gowda, M. Mermoz, and T. Kitzberger. 2018. Non-additive effects of alternative stable states on landscape flammability in NW Patagonia: Fire history and simulation modelling evidence. *International Journal of Wildland Fire* 28:149–159.
- Todd, C. R., D. B. Lindenmayer, K. Stamation, S. Acevedo-Cattaneo, S. Smith, and L. F. Lumsden. 2016. Assessing reserve effectiveness: Application to a threatened species in a dynamic fire prone forest landscape. *Ecological Modelling* 338:90-100.
- VicForests. 2013. Corporate and business plans, 2013-2014 to 2015-2016. VicForests, Melbourne.
- Ward, M., Tulloch, A.I.T., Radford, J.Q., Williams, B.A., Reside, A.E., Macdonald, S.L., Mayfield, H.J., Maron. M., Possingham, H.P., Vine, S.J., O'Connor, J.L., Massingham, E.J., Greenville, A.C., Woinarski, J.C.Z., Garnett. S.T., Lintermans, M., Scheele, B.C., Carwardine, J., Nimmo, D.G., Lindenmayer, D.B., Kooyman, R.M., Simmonds, J.S., Sonter, L.J. and Watson, J.E.M. 2020. Impact of 2019-2020 mega-fires on Australian fauna habitat. *Nature Ecology and Evolution*:<https://doi.org/10.1038/s41559-41020-41251-41551>.
- Wintle, B. A., and D. B. Lindenmayer. 2008. Adaptive risk management for certifiably sustainable forestry. *Forest Ecology and Management* 256:1311-1319.
- Zald, S. J., and C. Dunn. 2017. Severe fire weather and intensive forest management increase fire severity in a multi-ownership landscape. *Ecosphere* 28:1068-1080.
- Bergstrom D., Wienecke B. C., van den Hoff J., Hughes L., Lindenmayer D. B. & al. e. (2021) Ecosystem collapse from the tropics to the poles. *Global Change Biol.*
- Burns E. L., Lindenmayer D. B., Stein J., Blanchard W., McBurney L., Blair D. & Banks S. C. (2015) Ecosystem assessment of mountain ash forest in the Central Highlands of Victoria, south-eastern Australia. *Austral Ecol* **40**, 386-99.
- Cary G., Blanchard W., Foster C. N. & Lindenmayer D. B. (2021) Effects of altered fire regimes on critical timber production and conservation rotations. *International Journal of Wildland Fire* **in press**.
- Keith H., Vardon M., Stein J. A., Stein J. L. & Lindenmayer D. B. (2017a) Experimental Ecosystem Accounts for the Central Highlands of Victoria. Summary Report. The Australian National University

- and the Threatened Species Recovery Hub, Canberra, Australia. Available at [http://www.nespthreatenedspecies.edu.au/Ecosystem%20Summary%20Report\\_V3b\\_low.pdf](http://www.nespthreatenedspecies.edu.au/Ecosystem%20Summary%20Report_V3b_low.pdf).
- Keith H., Vardon M., Stein J. A. R., Stein J. L. & Lindenmayer D. B. (2017b) Ecosystem accounts define explicit and spatial trade-offs for managing natural resources. *Nature Ecol Evol* **1**, 1683-92.
- Keith H., Vardon M., Stein J. A. R., Stein J. L. & Lindenmayer D. B. (2017c) Experimental Ecosystem Accounts for the Central Highlands of Victoria. Final Report. The Australian National University and the Threatened Species Recovery Hub, Canberra, Australia. Available at [http://www.nespthreatenedspecies.edu.au/Ecosystem%20Complete%20Report\\_V5\\_highest%20quality.pdf](http://www.nespthreatenedspecies.edu.au/Ecosystem%20Complete%20Report_V5_highest%20quality.pdf).
- Lindenmayer D., Blanchard W., Blair D., McBurney L., Taylor C., Scheele B., Westgate M. J., Robinson N. & Foster C. (2020a) The response of arboreal marsupials to long-term changes in forest disturbance. *Animal Conservation*, <https://doi.org/10.1111/acv.12634>.
- Lindenmayer D. B. (2018) Flawed forest policy: flawed Regional Forest Agreements. *Australasian Journal of Environmental Management* **25**, 258-66.
- Lindenmayer D. B., Blair D., McBurney L. & Banks S. C. (2015) The need for a comprehensive reassessment of the Regional Forest Agreements in Australia. *Pacific Conservation Biology* **24**, 266-70.
- Lindenmayer D. B., Foster C., Westgate M., Scheele B. C. & Blanchard W. (2020b) Managing interacting disturbances: lessons from a case study in Australian forests. *J. Appl. Ecol.* **57**, 1711-6.
- Lindenmayer D. B., Kooyman R., Taylor C., Ward M. & Watson J. (2020c) Recent Australian wildfires made worse by logging and associated forest management. *Nature Ecol Evol* **4**, 898-900.
- Lindenmayer D. B. & Sato C. (2018) Hidden collapse is driven by fire and logging in a socioecological forest ecosystem. *Proc Natl Acad Sci USA* **115**, 5181-6.
- Lindenmayer D. B. & Taylor C. (2020) New spatial analyses of Australian wildfires highlight the need for new fire, resource and conservation policies. *Proc Natl Acad Sci USA* **117**, 12481-5
- Sato C. & Lindenmayer D. B. (2017) Meeting the global ecosystem collapse challenge. *Conserv Lett* **11**, 1-7.
- Taylor C., Cadenhead N., Lindenmayer D. B. & Wintle B. A. (2017) Improving the design of a conservation reserve for a critically endangered species. *PLOS One* **12**, e0169629.
- Taylor C. & Lindenmayer D. B. (2019) The adequacy of Victoria's protected areas for conserving its forest-dependent fauna *Austral Ecol* **44** 1076-90.
- Taylor C. & Lindenmayer D. B. (2021) Stakeholder engagement in a Forest Stewardship Council Controlled Wood assessment. *Environmental Science and Policy* **in press**.
- Taylor C., McCarthy M. A. & Lindenmayer D. B. (2014) Non-linear effects of stand age on fire severity. *Conserv Lett* **7**, 355-70.
- Thompson J. R., Spies T. A. & Ganio L. M. (2007) Reburn severity in managed and unmanaged vegetation in a large wildfire. *Proc Natl Acad Sci USA* **104**, 10743-8.
- Tiribelli F., Morales J. M., Gowda J. H., Mermoz M. & Kitzberger T. (2018) Non-additive effects of alternative stable states on landscape flammability in NW Patagonia: Fire history and simulation modelling evidence. *International Journal of Wildland Fire* **28**, 149-59.
- Todd C. R., Lindenmayer D. B., Stamation K., Acevedo-Cattaneo S., Smith S. & Lumsden L. F. (2016) Assessing reserve effectiveness: Application to a threatened species in a dynamic fire prone forest landscape. *Ecol Model* **338**, 90-100.
- VicForests. (2013) Corporate and business plans, 2013-2014 to 2015-2016. VicForests, Melbourne.
- Ward M., Tulloch, A.I.T., Radford, J.Q., Williams, B.A., Reside, A.E., Macdonald, S.L., Mayfield, H.J., Maron. M., Possingham, H.P., Vine, S.J., O'Connor, J.L., Massingham, E.J., Greenville, A.C., Woinarski, J.C.Z., Garnett. S.T., Lintermans, M., Scheele, B.C., Carwardine, J., Nimmo, D.G., Lindenmayer, D.B., Kooyman, R.M., Simmonds, J.S., Sonter, L.J. and Watson, J.E.M. (2020) Impact of 2019-2020 mega-fires on Australian fauna habitat. *Nature Ecol Evol*, <https://doi.org/10.1038/s41559-020-1251-1>.
- Wintle B. A. & Lindenmayer D. B. (2008) Adaptive risk management for certifiably sustainable forestry. *Forest Ecology and Management* **256**, 1311-9.

Zald S. J. & Dunn C. (2017) Severe fire weather and intensive forest management increase fire severity in a multi-ownership landscape. *Ecosphere* **28**, 1068-80.