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Perspectives on 50 Years of Work on Logging and Forest Biodiversity Conservation in Australia, and Prospects for Future Change

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ABSTRACT

The management and conservation of Australia's native forests has been highly contested for many decades. Since the 1970s, there have been major changes in the science underpinning and general perspectives on relationships between logging and forest biodiversity conservation. Science has quantified the impacts of logging operations on biodiversity at a range of scales – from the tree to stand, landscape, and ecosystem levels. It has also highlighted deficiencies in the protection of forest biodiversity, resulting in an expansion of the protected area network in forests, as well as changes in the way forests are managed. In this paper, I briefly discuss some of the changes in the understanding of logging impacts on biodiversity over the past ~50 years, particularly in terms of the array of contributions made by the esteemed ecologist Jamie Kirkpatrick. These include his contributions to the following: (1) the development of new ways of identifying the most important areas as places to reserve; (2) assessments of the conservation values, including world heritage values, of particular areas; (3) forest management change via his rigorous scientific appraisals of forest policies and legislative instruments such as Regional Forest Agreements (RFAs). Just as there have been enormous changes in the management and conservation of Australia's native forests over the past 50+ years, there will likely also be large changes in the coming 10–50 years. On that basis, I conclude with some commentary on future prospects for forest biodiversity conservation in Australia.

1 | Introduction

The management of Australia's native forests has been highly contested for many decades (Routley and Routley 1975, Dargavel 1995, Kirkpatrick 1998, Ajani 2007, Lindenmayer 2024). Debates have characterised many, often interrelated, topics including: ongoing access to timber, logging impacts on biodiversity, the need for an expanded protected area network, the conversion of native forests to plantations, the economic viability of the native forest logging industry, the scientific validity and environmental effectiveness of legislative instruments such as Regional Forest Agreements (RFAs), and relationships between logging and the severity of subsequent wildfires (among many others). Some scientific debates are largely settled, although policy and management solutions to associated problems are not resolved. Examples of resolved issues include the importance of intact forest ecosystems for the maintenance of biodiversity and the other natural values (Watson et al. 2018), the current inadequacy of existing reserve systems for protecting all forest biodiversity (Barr et al. 2016; Taylor and Lindenmayer 2019), and the negative impacts on biodiversity of land clearing for plantation establishment (e.g., Tyndale-Biscoe and Smith 1969). Other debates remain unresolved, like how to best manage increasing fire risks in native

forests (Bennett et al. 2024; Lindenmayer et al. 2025). In yet other cases, the apparent resolution of problems relating to logging impacts and forest conservation may be undone by changes in forest policy (Lindenmayer et al. 2025).

Some individuals have significantly influenced the science and policy of forest conservation and management. One of these people is Jamie Kirkpatrick, who had a major influence on many topics. Examples include the understanding of the ecology of forests and other types of vegetation (Kirkpatrick et al. 1974; Barker and Kirkpatrick 1994), how forests are changed by disturbances (Kirkpatrick 1984; Kirkpatrick et al. 2010), the selection of areas for protection as reserves (Kirkpatrick 1983; Kirkpatrick and Brown 1994), and the role of science in forest policy-making and legislative documents such as RFAs (Kirkpatrick 1998). Jamie Kirkpatrick was also an important contributor to inquiries into the native forest logging industry, such as the Lemonthyme Inquiry in Tasmania (Commonwealth of Australia 1987).

In this paper, I provide a short overview of progress on native forest logging and impacts on forest biodiversity conservation over the past 50 years. I then present a brief summary of some of the differences in the trajectory of forest conservation and management in the different states of Australia, where native forest logging has occurred. I outline a small subset of Jamie Kirkpatrick's many important contributions which have had a major and lasting influence on the forest biodiversity conservation and management in this country. The fields of forestry, logging impacts on the environment, forest biodiversity conservation, and forest management are continuing to evolve, and in the final part of this paper, I discuss some emerging issues that could have important effects in the future on Australia's forests and the species which inhabit them.

2 | Progress on Mitigating Logging Impacts and Forest Biodiversity Conservation in the Past 50 Years

2.1 | Forestry and Forest Biodiversity Conservation in the 1970s

It is important to consider what things were like in forests and forest management 50 years ago (the 1970s) to underscore the extent to which they have changed. For example, some wood production forests like those in southern New South Wales were characterised by large cut blocks (coupes) spanning many square kilometres (Routley and Routley 1975) (see Figure 1). The prevailing and long-held philosophy at that time was that old growth was an impediment to wood production (Jacobs 1955) and it needed to be replaced with fast-growing, "productive" young regrowth forests (e.g., Forestry Commission of Victoria 1928; Ferguson 1985). In the 1970s, the impacts of logging on biodiversity were considered negligible or, at worst, only short-lived (Lindenmayer 2024). There were relatively limited areas of forest (and especially high-productivity forest) in Australia's protected area network, with much of the National Park system dominated by places deemed unsuitable for other uses such as agriculture, forestry and urban settlements – the so-called "worthless lands hypothesis" (Hall 1988). The 1970s was also well before the

FIGURE 1 | Aerial photograph of a cut block in the Eden woodchip concession zone in south-eastern New South Wales in the 1960s (reproduced from Routley and Routley 1975).

vast majority of people began to be concerned about climate change and, in turn, before the enormous carbon storage capacity of intact forests was recognised (Keith et al. 2010). At this time, the native forest logging industry was considered to be an important part of the economy and a major employer in regional Australia.

2.2 | Some Changes Since the 1970s

Over the decades since the 1970s, there have been enormous changes in the understanding of logging impacts on forest ecosystems and forest biodiversity conservation in Australia. It is well beyond the scope of this brief article to explore even a small subset of topics; I outline a small number of the more important ones below. Some of these changes have arisen through a seemingly endless number of reports on, and inquiries into, native forest logging, at an average of one per year for the past 50 years around Australia (Lindenmayer 2024). Allied with this, there have been many high-quality studies of direct and indirect logging impacts on forest biodiversity. For example, Harry Recher and his colleagues worked through the 1970s and beyond to show the damaging impacts of clearfelling on wildlife in the Eden region in southern New South Wales (Recher et al. 1980). Indeed, many of the recommendations in Recher et al. (1980), such as leaving buffer strips around creeks, retaining habitat trees, and reducing coupe sizes, were implemented, most likely because of the scientific underpinning for these measures that they provided.

Since the 1970s, there has been increasing recognition (derived from an expanding body of empirical studies) that native forest logging has significant negative impacts on a range of groups of biota. These impacts include cumulative effects on species occurrence resulting from an increasing number of cut blocks in a landscape over time (Lindenmayer et al. 2020). There are also substantial spatial conflicts between logging and

biodiversity conservation, as the areas of highest conservation value for threatened species are also those typically targeted for logging under timber harvesting schedules (Taylor and Lindenmayer 2019; Ward et al. 2024; Ashman et al. 2025).

In addition, there has been greater recognition of the fact that silvicultural systems such as clear-cutting have long-lasting negative effects on forest ecosystems. These include: (1) Eroding habitat suitability for many animal and plant species (Lindenmayer et al. 2019; Ward et al. 2024). (2) Modifying soil condition and soil nutrient level (Bowd et al. 2019). (3) Altering aquatic ecosystems (Grayson et al. 1992), including reducing water yields from logged catchments (Vertessy et al. 2001; Taylor et al. 2019) and degrading environments for aquatic biota (Richman et al. 2015). (4) Generating large amounts of carbon emissions (Keith et al. 2014). Some of these impacts can manifest at a range of scales, from individual trees to landscapes, and even entire ecosystems. They include: (1) Reducing the abundance of key elements of stand structure such as tree ferns (Ough and Murphy 2004) and large old trees (Lindenmayer et al. 2018), which provide critical habitat for a wide range of species (Gibbons and Lindenmayer 2002). (2) Altering the tree species composition of forest stands, particularly the dominant tree species, resulting in areas becoming unsuitable for foraging for species such as the Southern Greater Glider (*Petauroides volans*) and the Koala (*Phascolarctos cinereus*) (Au et al. 2019). (3) Altering patterns of forest cover so that wood production landscapes are characterised by extensive areas of fragmented, young regrowth forest (Taylor and Lindenmayer 2020), with corresponding cumulative negative effects on site occupancy by species such as Leadbeater's Possum (*Gymnobelideus leadbeateri*) (Lindenmayer et al. 2020). (4) Modifying disturbance regimes in ways that can increase the risk of ecosystem collapse (Bergstrom et al. 2021).

Beyond the ecological impacts of clear-cutting, this silvicultural system has also become increasingly unpopular with many stakeholders. In the 1980s, government logging agencies in places such as Victoria and Tasmania sought to experiment with, and in some cases apply, alternative logging regimes to clear felling (Squire 1987; Hickey and Neyland 2000). Despite changes to the way logging is conducted in some jurisdictions, public support for ongoing native forest logging has continued to decline (DELWP 2019). By 2025, the overwhelming majority of people wanted both more protected areas and the end of native forest logging, with an associated transition to a plantation-only forestry industry (Biodiversity Council 2025).

By the late 1980s and 1990s, a suite of studies began to highlight the ecological and cultural values of old-growth forests in Australia (Dyne 1991; Burgman 1996). The results of this work ran counter to forestry agency policies implemented over the preceding 50 or more years that aimed to liquidate old-growth forest and convert it to regrowth stands (Ferguson 1985). Although the value of old-growth forests has been increasingly recognised since the 1990s, they have suffered substantial and ongoing losses. In states such as Victoria, old-growth forest cover has declined by 77% over the past 25 years due to fire, logging, and a combination of both (Lindenmayer and Taylor 2020a).

Over the past 50 years, there have been substantial changes in the prescriptions associated with forest management and codes of practice designed to mitigate the impacts of logging on environmental values (e.g., Forestry Commission of Tasmania 1993; DELWP 2022). States such as Tasmania have a Forest Practices Authority that has oversight of on-the-ground forest management. Changes in prescriptions over the years include those around improvements to stream buffers, levels of tree retention in logged areas, logging exclusions on steep slopes, and protection of threatened animals and plants. Despite these changes, there have been frequent breaches of these prescriptions (Taylor and Lindenmayer 2021, 2022; Pepper 2025) – as highlighted in the outcomes of corresponding court cases (Mortimer 2020; Lindenmayer and Burnett 2021).

In the late 1990s, the Australian Government signed RFAs with a range of state governments (e.g., Commonwealth of Australia and State of Tasmania 1997; Commonwealth of Australia and State of Victoria 1998). The RFA process was instigated, in part, in an attempt to resolve long-running conflicts over forest management and balance environmental and forest industry demands (Kirkpatrick 1998). RFAs were designed to create certainty of access to timber resources for the native forest logging industry, underpin the economic prosperity of the forest industry, and at the same time ensure the conservation of forest biodiversity (DWEHA 2009). However, over the past 25 years, it has become clear that the RFAs did not achieve these broad aims, given a lack of sustainability in timber yields, major financial losses in the native forest timber industry, and ongoing declines in many elements of biodiversity (Lindenmayer 2018). These outcomes underscored many of the early concerns about the RFAs raised by Jamie Kirkpatrick after they were first signed (Kirkpatrick 1998) as further examined below.

It was well understood in the 1970s that most of the forest ecosystems which remained in Australia (and which had escaped previous clearing) were poorly preserved (Specht et al. 1974). Over the 50 years since then, there has been a substantial increase in the extent of native forest that has been reserved in the protected area network in Australia (Figure 2). A spatial analysis conducted using the Collaborative Australian Protected Areas Database (CAPAD) with records until 2022, together with the Forests of Australia 2023 dataset, shows a significant increase in the proportion of the forest estate that has been conserved in the protected area network between 1970 and 2022 (DAFF 2023a, 2023b; DCCEEW 2024). As I outline further below, Jamie Kirkpatrick made a seminal contribution to the ways reserves should be selected by being the first person to invent new algorithms to identify the minimum set of areas that need to be protected to achieve particular conservation objectives (Kirkpatrick 1983).

Over the past decade, a body of evidence has been accumulating that shows that logged and regenerated forests are at risk of burning at elevated severity. This includes work from Victoria, Tasmania, and New South Wales (Taylor et al. 2014; Furlaud et al. 2021; Wilson et al. 2022). High-severity wildfires can, in turn, have major impacts on biodiversity (Lindenmayer et al. 2013), especially in areas where there has been a history of repeated previous disturbance (Driscoll et al. 2024).

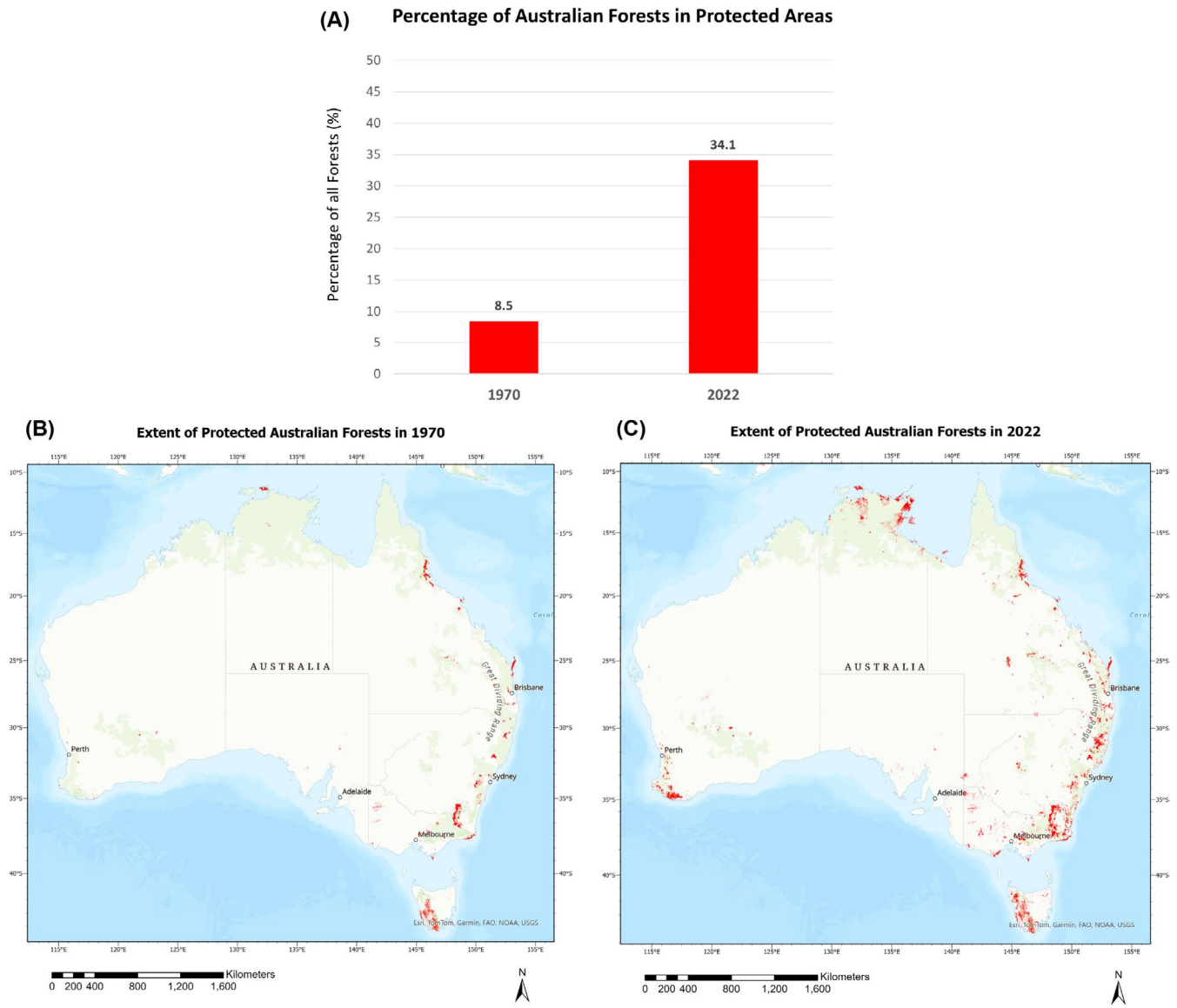

FIGURE 2 | (A) The percentage change of the forest estate in Australia that has been set aside as protected areas from 1970 to 2022. (B) Extent of forests in protected areas in 1970, Australia. (C) Extent of forests in protected areas in 2022, Australia. To compile summary statistics, the Forests 2023 database was edited to remove woodlands, plantations, non-forests, and mangroves, with the remaining extent of forest cover then intersected with the CAPAD. To calculate the extent of protected forests in 1970, only protected areas gazetted in 1970 or prior were included. As no spatial dataset exists for the extent of forest cover in 1970, the Forests of Australia 2023 dataset was also used to intersect with the 1970 protected areas.

3 | Comparison Between Different Jurisdictions on Forest Management and Biodiversity

There have been marked temporal differences between the 1970s and the present in forest conservation and management in the different states where native forest logging has occurred. Native forest logging ceased in Victoria and Western Australia in 2024, although there is extensive thinning and other kinds of widespread tree removals from forests in both states (see below for the case of Victoria). Native forest logging is continuing in Tasmania, with plans to open up a further 39 000 ha of forest for wood production that had previously been exempt from logging (Holmes 2024) and that was designated as "future reserve land" under the Tasmanian RFA (Commonwealth of Australia and State of Tasmania 1997). Native forest logging is also continuing in New South Wales, where the state government has committed to the establishment of a Great Koala National Park in northern New South Wales, but the size of the protected area remains contentious, with concerted pressure from the forest industry and timber unions to make it as small as possible. Queensland has a relatively small native forest logging industry, although there is lobbying to see it expanded in that state and recommence in places where it was previously excluded (Feely 2022).

4 | Jamie Kirkpatrick's Influence on Forest Policy and Management

Jamie Kirkpatrick had an enormous impact on forest ecology, forest conservation, and forest policy. He published a myriad of outstanding studies on the biology, ecology, and conservation

of plant species and communities, animals, and entire ecosystems (e.g., Kirkpatrick et al. 1974, 2010; Kirkpatrick and Harwood 1983; Kirkpatrick 1984). His sustained productivity in this area of important research was truly extraordinary.

4.1 | Reserve Selection Algorithms

One of Jamie Kirkpatrick's significant contributions was his development of the initial science behind reserve selection. He developed the first known algorithms to help select the minimum set of areas needed to meet particular conservation goals and then applied them to reserve selection for threatened species on the central east coast of Tasmania (Kirkpatrick 1983). Jamie Kirkpatrick further demonstrated how such algorithms could be employed to select reserves in Tasmania for wetland plants (Kirkpatrick and Harwood 1983), and then for vascular plant species and communities as part of work for the Resource Assessment Commission (Kirkpatrick and Brown 1991). This work influenced inquiries such as those by the Resource Assessment Commission (RAC 1992) and then as part of the RFA process, although not particularly satisfactorily (see below; Kirkpatrick 1998).

4.2 | Regional Forest Agreements (RFAs)

Jamie Kirkpatrick recognised early that there were major problems in the RFAs, especially how the science was compromised by political dealing, which he described as "inept" (Kirkpatrick 1998). He highlighted how the RFA process had failed to engage properly with community interests, especially those with concerns about conservation values. He believed that while an expanded reserve system under the RFA in Tasmania (see Commonwealth of Australia and State of Tasmania 1997) was an improvement on what it had been previously, it fell well short of what was needed. Jamie Kirkpatrick thought that this was, in part, because the RFA process did not engage fully with reserve selection science (see above) and, as a result, failed to adequately protect key areas of high conservation value (Kirkpatrick 1998). Moreover, a large part of the reserve system under the Tasmanian RFA was available for mining!

Jamie Kirkpatrick argued in his 1998 paper (Kirkpatrick 1998) that these problems would mean that the RFA process would not quell forest conflicts. Work 20 years later highlighted how correct he was; the RFAs had failed to meet conservation objectives (Lindenmayer 2018). Similar outcomes to those in Tasmania have characterised the RFAs in other jurisdictions such as the Central Highlands of Victoria (Commonwealth of Australia and State of Victoria 1998). In that case, formal analyses showed that the reserve system was inadequate for many threatened forest-dependent species (Taylor and Lindenmayer 2019) and bitter forest conflicts persisted in the courts and elsewhere for decades after the Central Highlands RFA was signed (e.g., Mortimer 2020). Notably, as of 2024, native forest logging was supposedly halted in Victoria (but see below), and by 2025, there is no longer an RFA agreement in force between the Victorian and Australian Governments—both outcomes being a clear reflection of the failure of RFAs.

4.3 | Contributions to Scientific Panels, Assessments and Inquiries

Beyond his enormous contributions to basic ecological science and the science of reserve selection, Jamie Kirkpatrick was an immense contributor to forest policy through his very active involvement in numerous inquiries (e.g., Lemonthyme and Southern Forests Commission of Inquiry; Commonwealth of Australia 1987) and panels (such as one for the RFA process; Kirkpatrick 1998), as well as major reports (e.g., those on Wilderness and World Heritage Values; DPIWE 2003). These and numerous other inquiries and reports would have been much lesser documents, and their conclusions far less rigorous, without the considerable contributions of Jamie Kirkpatrick.

5 | Informal Horizon Scan—Emerging Issues in Forest Management and Biodiversity Conservation

Predicting the future has, and always will be, fraught due to the inherent complexity and uncertainty of forests in Australia. Yet it is also worth exploring some of the potential future issues associated with logging impacts, forest management, and forest biodiversity conservation.

5.1 | Policy Reversal and a Return to Native Forest Logging

Although native forest logging has supposedly ended in states such as Victoria, it could easily return. For example, Victorian Coalition policy is to bring back the native forest logging industry, but potentially without the past legal frameworks to hold state government logging agencies and logging contractors to account. This would, quite clearly, be a highly retrograde step for forest biodiversity conservation.

A key part of preventing policy reversal is to both: (1) highlight the extent of likely future economic losses associated with the native forest logging industry (e.g., Frontier Economics 2023), and (2) marry disciplines within economics and the environment, such as environmental accounting, to highlight that values other than wood production, such as water production and nature-based tourism, are worth far more to regional, state and national economies (e.g., Keith et al. 2017). Wood production conflicts significantly with other uses, such as water production, via significantly depressed long-term water yields in young logged and regenerated stands regrowing after timber harvesting (Vertessy et al. 2001; Taylor and Lindenmayer 2019).

5.2 | Ongoing Logging in the Name of Fire Control

There are major concerns about the extent, frequency, severity, and homogeneity of wildfires in the Australian forest estate, including their impacts on biodiversity (Doherty et al. 2024; Driscoll et al. 2024). Some lobby groups have argued that widespread Active Management (*sensu* Bennett et al. 2024) is needed throughout forests (AFPA 2020) to reduce the risks of high-severity wildfires (Keenan 2024). Active Management includes

such activities as thinning, post-disturbance (salvage) logging following natural disturbances, recurrent prescribed burning, and road building, singularly or in combination. Thinning programs under Active Management include proposed thinning in national parks (AFPA 2020). These calls for widespread thinning are despite the fact that empirical studies following the 2009 Victorian wildfires and the 2019–2020 Black Summer fires both show that thinning either makes little difference to fire severity or, in some cases, can make it worse (Taylor et al. 2020, 2021). Conversely, an analysis of the impacts on biodiversity of the 2019–2020 wildfires showed that the pre-fire condition of vegetation created by past logging and/or prescribed fire has a significant negative effect on post-fire species response (Driscoll et al. 2024).

Part of Active Management in Victoria has included the use of "western industrial practices" under what have been termed "forest gardening" and "cultural thinning" to log First Nations land. These practices are based on a strategy written by international forestry consultants (Djaara and Wartaka 2022; Wuka 2022). There is even a charity called The Healthy Forests Foundation run by former executives from the now defunct Victorian forestry agency, VicForests, that aims to help First Nations peoples to log their country (ABC News Australia 2024).

Part of the underlying rationale for Active Management activities like forest gardening and cultural thinning is the restoration of forests to their pre-colonial structure. This is based on the notion that forests were open and park-like before the British invasion (e.g., see Gammage 2011), but several studies suggest this proposition is not consistent with the scientific and historical evidence for some forest types (Hateley 2014; Lindenmayer, Taylor, et al. 2024).

It is possible that part of the push to conduct Active Management in places such as national parks may be linked to the declining timber availability in state forests. Past overcutting, coupled with extensive wildfires, has had significant impacts on timber availability in places such as Victoria, where, for example, 30% of what was planned to be cut statewide in the 5 years from 2019 were burnt in the Black Summer wildfires (Lindenmayer and Taylor 2020b). Logging of national parks, whatever alternative name is used for it, would likely have significant negative impacts on the ecological and biodiversity values of such areas (Lindenmayer et al. 2025).

Some of the proponents of Active Management are taking their lead from counterparts in North America (Lindenmayer et al. 2025). However, considerable caution is needed in the uncritical adoption of the approach from one jurisdiction, one region or biome, and one continent to another (Spies et al. 2012). For example, whilst some aspects of Active Management might be appropriate in a North American context because of a fire deficit in some ecosystem types (Parks et al. 2025), a similar situation does not exist in many parts of forested Australia, where there has been a substantial increase in the frequency, severity, and extent of wildfires in recent years (Collins et al. 2021, Lindenmayer et al. 2023). Application of more fire to already extensively burnt Australian landscapes could have significant negative impacts on an array of fire-sensitive species (Driscoll et al. 2024). On this basis, the application of Active Management needs careful thought. Indeed, proponents of Active Management acknowledge that disturbance exclusion can be part of the approach (Bennett et al. 2024), and this is likely to be particularly important in protected areas.

A key future issue is to find constructive ways to connect western science and Indigenous knowledge to help promote truly sustainable and culturally appropriate management practices in native forests, as has been employed in recent studies of cultural fire and woodland conservation in inland NSW (Bowd et al. 2025) and elsewhere, such as south-west Australia (Prober et al. 2013). An important outcome must be to ensure the exclusion of intensive and destructive industrial forestry practices from Australia's remaining native forests.

5.3 | Dealing With an Increasing Disturbance Burden

There is an increasing body of compelling evidence that logged and regenerated forests are at risk of burning at elevated fire severity. Such logging-fire relationships can last for 40–70 years after logging operations are completed and forests are regrown (Taylor et al. 2014; Wilson et al. 2022) and have been reported from a wide range of places, including outside of Australia (e.g., western North America; Bradley et al. 2016, Levine et al. 2022). Given such long-lived additional fire burdens associated with past management, coupled with the effects of climate change on fire regimes (van Oldenborgh et al. 2021), a key emerging issue in forest management is to determine how to best deal with high levels of flammability. One way is to assist forests to grow through to a less flammable old-growth state (Zylstra et al. 2023). However, this takes time, and in the interim, resources are needed to suppress fires when they are ignited in young flammable forests. New technologies such as drone fleets and autonomous vehicles that can readily (and very rapidly) carry large payloads (exceeding 1000 kg) to ignition points may be part of the solution to this problem (Lindenmayer et al. 2022).

5.4 | Lack of Support for Parks Management Agencies

If areas are no longer to be logged, then one option is to change their tenure so that they become part of the formal protected area system. Such a change is important to improve conservation outcomes for forest biodiversity as recommended for the Great Koala National Park in NSW and the Great Forest National Park in Victoria. However, there needs to be appropriate levels of monitoring and resources to ensure that new forest protected areas can be appropriately managed into the future, including the control of invasive species, management of increased numbers of human visitors, and fire management. Budget cuts in states such as Victoria have seen organisations like Parks Victoria substantially defunded and unable to adequately manage the existing protected area estate. Higher levels of funding are especially important given the steadily increasing area of forests in national parks and reserves around

Australia (see Figure 2). New forms of environmental finance, such as Green Bonds, might be needed to help generate the levels of funding needed to better manage reserves, including ones newly added to the protected area estate (e.g., Pendal Group 2024).

5.5 | Flawed Carbon Schemes That Result in Leakage

Considerable work is being done to create carbon methods as part of forest management. Some of the proposed methods would entail payments to agencies to manage forests in ways that will attempt to limit carbon emissions (Australian Climate and Biodiversity Foundation 2024). These proposals may sound good, but closer inspection reveals some potential problems. There is, for example, a risk of leakage (Lindenmayer, Keith, and Mackey 2024). That is, a forest agency may announce that it will no longer plan to log an area and claim carbon credits (and associated income streams). However, this may be a steep and remote location that may not have ever been logged in the first place (thus failing the requirement for additionality; see Maron et al. 2012), but the carbon credit scheme may allow logging elsewhere – even if such logging operations are demonstrably uneconomic (as have been shown in economic analyses; see Frontier Economics 2023).

The potential consequences of flawed carbon schemes are that logging will continue to generate significant carbon emissions, with the carbon credit funds maintaining otherwise uneconomic and ecologically unsustainable operations (Lindenmayer, Keith, and Mackey 2024). A better outcome in these circumstances might simply be to close the industry and rapidly transition wood production to plantations, without the need for carbon credits (Chapman et al. 2025).

5.6 | Risks of Inappropriate Land Conversion

Native forest logging has been uneconomic for many years in most parts of Australia (Frontier Economics 2023) and the industry cannot persist without significant ongoing subsidies (Chapman et al. 2025). Native forest logging continues to fail economically, no matter how many inquiries and reports are completed, and irrespective of how much money is handed to the industry (more than $1.3 billion in Tasmania and $1.5 billion in Victoria over the past two decades) and how much money is given to loss-making government agencies. The danger with such ongoing losses and widespread industry unprofitability is the potential for governments to want to sell public forests. In private hands, there may be pressure for land conversion, such as to establish plantations of exotic trees (e.g., Radiata Pine *Pinus radiata*). Notably, a range of studies has shown that land conversion has major negative impacts on biodiversity, which outweigh the considerably detrimental effects of logging (Marsh et al. 2025). Indeed, the large-scale conversion of extensive areas of native forest to plantations in Tasmania (DPIWE 2003) was one of the fundamental flaws in its RFA. On this basis, governments must ensure (such as through appropriate legislation) that native forests are not subject to land conversion to other types of land cover.

5.7 | Opportunities for Alternative Kinds of Feedstock for Wood Products

The vast majority of sawn timber in Australia (~90%) now comes from plantations compared to 50 years ago (DAFF 2023a, 2023b). Conversely, the majority of wood volume extracted from native forests goes to the woodchip, paper pulp, and box liner streams (DAFF 2023a, 2023b). Plantation wood could readily substitute for these current uses of native forest timber (Poyry 2011; Lindenmayer and Taylor 2022). There may even be opportunities to move into fast-growing, non-tree crops such as hemp to provide feedstock for making paper and packaging. Such transitions may be important given the frequency with which forests are burning and the need to grow crops quickly to ensure there is a high probability of them reaching a harvestable age before being lost to fire (Cary et al. 2021).

6 | Conclusions

Native forest logging has been one of the most contentious theatres of resource management conflict in Australia for more than 50 years. Against this background of ongoing conflict, there have been major changes in the understanding of logging impacts and relationships to forest conservation since the 1970s. Some of these changes have been underpinned by an increasing body of science demonstrating the negative environmental impacts of logging operations, the development of reserve selection algorithms to enhance conservation planning, and the need for an expansion of the protected area estate. At the same time, it has become increasingly apparent that native forest logging is not an economically viable industry (Frontier Economics 2023), and public support to keep subsidising it has collapsed (DELWP 2019), with the vast majority of people wanting more national parks and for plantation forests to take the place of native forests in timber production (Biodiversity Council 2025).

Jamie Kirkpatrick played a key role in catalysing the changes in forest management and conservation in the past 50 years. He did this through outstanding and fundamental ecological science, the development of truly innovative reserve selection algorithms, and deep engagement with innumerable inquiries, panels, and reports. The hope is that his contributions will not be forgotten. Rather, they will help us in the future to better navigate the challenges that will arise in the coming 50 years and further consolidate the important conservation gains that were made through his outstanding scholarship and leadership.

7 | Post-Script

In December 2024, I was on a boat trip with friends on the Derwent River outside Hobart. We were talking about Jamie Kirkpatrick's remarkable life and contributions. My colleague's daughter piped up in the conversation. Jamie Kirkpatrick had been one of her lecturers at the University of Tasmania just a few years earlier. His class was one of her favourites. She recounted Jamie's amazing enthusiasm, bounding up hills in an overcoat and weathered hat, spreading knowledge about this plant or that with great passion and, of course, lots of laughter. That too is the

Jamie Kirkpatrick that I remember, although in the earlier days, smoking a damn pipe as well. All of us agreed Jamie Kirkpatrick was an exceptional scientist, a dedicated teacher, and a highly influential contributor to conservation.

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Conflicts of Interest

The author declares no conflicts of interest.

Data Availability Statement

Data can be made available upon reasonable request to the authors.

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