



Fire regimes that cause biodiversity decline

Options for a national abatement response

Invasive Species Council

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About the Invasive Species Council

The Invasive Species Council was formed in 2002 to advocate for stronger laws, policies and programs to keep Australian biodiversity safe from weeds, feral animals, exotic pathogens and other invaders. It is a not-for-profit charitable organisation funded predominately by donations from supporters and philanthropic organisations.

Our Threats to Nature project is focused on reforming Australia’s national threat abatement system to more effectively abate major threats to biodiversity. It is not possible to recover all threatened species one by one through recovery programs. We need a concerted national focus to overcome the major threats our native plants and animals have in common – in particular invasive species, habitat destruction, adverse fire regimes, altered hydrological regimes and climate change.

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INTRODUCTION

Listing ‘fire regimes that cause biodiversity decline’ as a key threatening process (KTP) and then appropriately responding to that listing could be a major step towards substantially reducing threats to nature in Australia and recovering threatened biodiversity.

This listing provides the opportunity to not only mount a national response to one of Australia’s most pervasive, insidious and calamitous threats, but to provide a model to remake the national threat abatement system – to design a system that is effective for abating such major complex threats.

This KTP is complex in several respects:

- *Impacted biodiversity*: The KTP impacts a wide range of threatened species (about two thirds of nationally listed terrestrial and freshwater threatened taxa¹) and ecological communities.
- *Fire events and fire regimes*: As demonstrated by the 2019/20 fires, single fire events can have acute and devastating impacts, but biodiversity can also be affected chronically by ongoing patterns of less-severe fires, or by the absence of fires. Adverse fire regimes vary widely (spatially and temporally), and include those with fires that are too frequent, too infrequent, too frequent in the late dry season (Northern Australia), too frequent in autumn (southern Australia), outside the natural fire season, too intense (Australia wide), not intense enough, too large, too small, or lacking patchiness.²
- *Mixed benefits and detriments*: Most other KTPs are scalar – reduce the intensity of the threat (eg the abundance and extent of cats, goats, weeds) and the impact on biodiversity is proportionally abated. But fire is an integral component of Australian ecology, and many threatened species and ecological communities depend on some manifestation of fire regimes. Any particular regime will benefit some species but disadvantage others.
- *Impacted landscapes*: The threat operates across many different ecosystems, intersecting with a wide range of land uses and stakeholders.
- *Interaction with other threats*: The impacts of adverse fire regimes are exacerbated by interactions with several other threats, including climate change³, invasive species (eg flammable pasture grasses exacerbate fire risks,⁴ feral predators target burnt patches⁵ and feral herbivores impede recovery of some habitats⁶), logging (eg by modifying fire regimes⁷ and post-fire salvage

¹ Stephen G Kearney et al., “A Novel Threat-Abatement Framework Confirms an Urgent Need to Limit Habitat Loss and Improve Management of Invasive Species and Inappropriate Fire Regimes for Australia’s Threatened Species,” *Preprints* 2020100372 (2020).

² AFAC, “A Risk Framework for Ecological Risks Associated with Prescribed Burning – National Burning Project: Sub-Project 3.” (Australasian Fire and Emergency Service Authorities Council Limited, 2016).

³ Richard J Williams et al., “Interactions between Climate Change, Fire Regimes and Biodiversity in Australia: A Preliminary Assessment” (Department of Climate Change and Department of the Environment, Water, Heritage and the Arts, 2009).

⁴ Carla M D’Antonio and Peter M Vitousek, “Biological Invasions by Exotic Grasses, the Grass/Fire Cycle, and Global Change,” *Annual Review of Ecology and Systematics* 23, no. 1 (1992): 63–87.

⁵ Hugh W McGregor et al., “Landscape Management of Fire and Grazing Regimes Alters the Fine-Scale Habitat Utilisation by Feral Cats,” *PLoS One* 9, no. 10 (2014): e109097.

⁶ Brendan A Wintle, Sarah Legge, and John CZ Woinarski, “After the Megafires: What next for Australian Wildlife?,” *Trends in Ecology & Evolution* 35, no. 9 (2020): 753–57.

⁷ David Lindenmayer, “Interactions between Forest Resource Management and Landscape Structure,” *Current Landscape Ecology Reports* 1, no. 1 (2016): 10–18.

logging⁸) and habitat destruction (eg clearing for hazard reduction can result in unnecessary habitat destruction⁹).

- *Many uncertainties*: In 2010, several Australian ecologists identified the following as major knowledge gaps: (1) a mechanistic understanding of the response of plants and animals to fire regimes, (2) how species are influenced by the spatial arrangement and temporal sequence of fires, (3) how factors such as herbivory, predation, fragmentation, invasive species and weather interact with fire to alter species' responses to fire directly or via changes to the fire regimes.¹⁰
- *Social complexity*: Fire is often a contentious issue (in part due to limited scientific evidence), sometimes making it difficult for proponents to reach agreement on appropriate fire regimes and the actions needed to safeguard people, assets and biodiversity. Fire regimes that benefit biodiversity may have collateral benefits or detriments to other values, and fire regimes for other purposes may be detrimental or beneficial for biodiversity.

The current national threat abatement system has been hamstrung by the limited response options provided for under the EPBC Act – a threat abatement plan or nothing (other than a non-statutory threat abatement advice). While an abatement plan is a 'feasible, effective or efficient way' to abate some specific threats and is working well for threats such as longline fishing (seabird bycatch), feral cats, and invasive rodents on islands, the adverse fire regimes KTP may be too multi-faceted a threat to be feasibly abated under a standard threat abatement plan.

In response to this complexity, the Australian Government should take a flexible approach – designing a response to achieve effective abatement rather than trying to fit a response into the specified statutory abatement options (or ignoring the threat).

For all sorts of aligned reasons, the fire KTP offers an excellent opportunity for the Australian Government to design and implement an optimal abatement response:

- The catastrophic bushfires of 2019/20 have provided the impetus for the Australian Government to take a much greater role in preparing for, responding to and recovering from extreme fire events, as recommended by the Royal Commission into the National Natural Disaster Arrangements. The establishment of a national resilience agency should enable biodiversity considerations to be embedded as an integral part of national arrangements for extreme fire events.
- The death and displacement of an estimated 3 billion vertebrate animals in the 2019/20 fires have created a strong public desire for national leadership on preventing extreme fires and reducing their environmental impacts.
- The 20-year review of the EPBC Act has urged a stronger focus on threat management – and 'a fundamental shift, from a transaction-based approach to one centred on effective and adaptive planning'.
- Given Indigenous experience with fire management across much of Australia, the response to this KTP offers an exceptional opportunity for the involvement and leadership of Indigenous people and agencies.
- And, not least, the current agreement under Disaster Recovery Funding Arrangements (whereby the Commonwealth pays much of the recovery costs for emergency-declared fires) offers major

⁸ David B Lindenmayer, Philip J Burton, and Jerry F Franklin, *Salvage Logging and Its Ecological Consequences* (Island Press, 2012).

⁹ Philip Gibbons et al., "Options for Reducing House-Losses during Wildfires without Clearing Trees and Shrubs," *Landscape and Urban Planning* 174 (2018): 10–17.

¹⁰ Don A Driscoll et al., "Fire Management for Biodiversity Conservation: Key Research Questions and Our Capacity to Answer Them," *Biological Conservation* 143, no. 9 (2010): 1928–39.

leverage (and a strong budgetary incentive) for the Australian Government to motivate state and territory governments to implement threat abatement priorities and apply national standards and guidelines. There are other compelling economic as well as social and environmental reasons for reducing the threat of adverse fire regimes.

In this briefing note, we address 3 questions:

- (a) What are the criteria for an effective national response?
- (b) What are the elements of an effective KTP response?
- (c) What are the potential instruments of response and their pros and cons?

In preparing this document, we have consulted a small number of ecologists and ecological burning practitioners. To design an effective abatement response, the Australian Government will be able to draw on a wide range of ecological and practical burning expertise in Australia, including from the National Environmental Science Program, research institutions, Traditional Owners, and public and private conservation land managers.

Q1. FEATURES OF AN EFFECTIVE FEDERAL KTP RESPONSE?

The *features* of an effective response (distinguished from the *response elements* in the next section) include priority foci, recommended approaches, and aspects of governance and accountability.

Response priorities

The federal response to this KTP should as a priority:

- identify research and action priorities for abating the KTP, encompassing the full range of adverse fire regimes and focused on preparing for future predicted climate scenarios
- integrate with recovery planning, prioritised for the most at-risk threatened species and ecological communities
- address interacting/cumulative threats
- recognise an important role for Indigenous fire management
- establish a highly functional information management system.

National interest

To protect the national interest, the response to this KTP should:

- clearly define the national interests in fire management and develop mechanisms for ensuring the national interest is accorded appropriate priority in state/territory and regional processes and actions
- place matters of national environmental significance (and biodiversity in general) as a central consideration in federal, state and territory fire disaster preparation, response and recovery programs
- not duplicate what is already occurring at state and territory levels: it should fill gaps and add value (but assert the national interest where this is compromised)
- place the federal environment department as an authority and source of guidance and support on protecting matters of national environmental significance from adverse fire regimes.

Implementation and accountability

To ensure implementation, the KTP response should:

- specify a route to implementation of threat abatement priorities and commit to sustainable funding for these priorities
- require implementation on all Commonwealth land
- apply incentives and mechanisms (eg intergovernmental agreements, grant programs, conditions for funding, standards) to motivate implementation at state, territory and regional levels
- commit to a robust regime of monitoring, reporting and independent reviews
- specify a process for refining abatement priorities and actions guided by the results of monitoring and reviews and in response to changing circumstances
- ensure there is a clear allocation of responsibility for implementation and a dedicated position to oversee and coordinate delivery of the diverse threads of the KTP response
- commit to collaboration (where feasible) with other governments, Traditional Owners and non-government groups
- institute accountability mechanisms including regular independent evaluations of the effectiveness of abatement programs and overall abatement effort
- include a strong focus on communications and community engagement.

Q2. POTENTIAL ELEMENTS OF AN EFFECTIVE FEDERAL KTP RESPONSE?

The following suggested elements are not comprehensive. One of the first steps in designing an abatement response should be to compile a comprehensive evidence base and list of abatement proposals (by consulting a wide range of experts and stakeholders) to inform the design of the abatement response. The national abatement response won't be able to incorporate all desirable elements, and nor should it, for much abatement does and will occur outside a national program, and there are key knowledge gaps.

Biodiversity assets and information

- Collaboratively, with relevant stakeholders, identify, map and prioritise biodiversity assets at risk from adverse fire regimes, including in landscapes at increasing risk due to climate change.
- Identify preferred or acceptable fire regimes for all threatened species and ecological communities, and the consequences of fire management options for their conservation and recovery.
- Identify regions where fire regimes are currently most adverse for biodiversity.
- Map current government (federal, state and territory) policies, programs and plans relevant to fire management and biodiversity. Undertake a gap analysis to identify where the Australian Government can best add value for fire-related threat abatement and threatened species recovery.
- Develop a national fire and biodiversity research plan.
- Establish a national supply chain of environmental information, as recommended by the interim EPBC Act review report and consistent with Royal Commission recommendation 16.1.
- Establish a monitoring and reporting regime sufficiently comprehensive to track the effectiveness of abatement actions, including the trajectories of threatened species and ecological communities most at risk from adverse fire regimes, and to guide refinement of abatement strategies and responses to severe fire events.
- Improve, and better coordinate across jurisdictions, national mapping of fire (including severity), and reporting on the gap between current and desirable fire regimes.
- Establish protocols for knowledge-sharing between Indigenous and non-indigenous experts.

Abatement planning

- Develop national, state/territory and/or regional fire plans, with a strong focus on threatened or at-risk species and significant sites (such as World Heritage areas and national heritage sites).
- Integrate recovery priorities – threatened species and ecological communities most detrimentally affected by prevailing fire regimes or with the most narrow and specialised requirements for fire management – into threat abatement strategies/plans.
- Develop strategies to manage interacting and cumulative threats to:
 - (a) foster greater resilience to the impacts of adverse fire regimes
 - (b) prevent the exacerbation of adverse fire regimes (eg control flammable invasive pasture grasses)
 - (c) limit biodiversity impacts from fire-related activities such as land clearing for hazard reduction
 - (d) foster recovery of species impacted by fire (eg control feral predators and herbivores, limit post-fire salvage in forests).
- Apply decision-making tools, including those incorporating economic costs and benefits, to transparently determine priorities.

- Develop national performance targets to measure the effectiveness of plans and document progress.
- Investigate new and innovative approaches for managing species and landscapes threatened by fire (recognising that we live in a new era of heightened extreme fire risks).

Disaster preparation, responses and recovery

- Strongly focus on preventing and preparing for extreme fire events. Ensure that biodiversity priorities are incorporated into all national, state and territory disaster arrangements. Develop pre-agreed contingency and disaster recovery plans (as per Royal Commission recommendation 22.5) for priority species and sites (eg World Heritage areas). The review of the EPBC Act recommends adopting a biosecurity model for responding to acute threats. Precautionary pre-disaster actions should include the establishment of insurance populations of at-risk species, translocations for risk spreading and baseline surveys and monitoring.¹¹ Disaster recovery plans should include a strong focus on minimising the impacts of invasive plants and animals and preventing their spread.
- Develop environmental information systems that can be integrated with other fire management information systems to enable decision-makers during disasters to quickly identify biodiversity assets at risk and the actions needed to protect them (in combination with decision-making protocols that recognise the triple bottom-line benefits of protecting life, property and biodiversity).
- Identify and address environmental risks arising from fire disaster preparation, response and recovery actions directed towards protecting life and property (eg hazard reduction and fire-fighting methods that could impact threatened species), with the aim of averting or minimising environmental risks. Establish a process (eg by applying decision theory¹²) for addressing apparent conflicts between human safety, property protection and biodiversity protection (relevant to Royal Commission recommendations 12.1, 17.1, 17.2 regarding roadside vegetation management and fuel load management).
- Adopt a strong future focus to prepare for new extremes under climate change and other environmental changes (eg the spread of flammable invasive weeds), including through horizon scanning and scenario planning.

Standards and guidelines

- Develop standards and guidelines to specify expectations in the national interest for protecting matters of national environmental significance from adverse fire regimes.
- Develop guidelines about when actions relevant to fire management should be referred for assessment under the EPBC Act.
- Develop national guidelines for monitoring and reporting on the status of the adverse fire regimes KTP and threatened species and ecological communities most susceptible to the KTP and the outcomes of fire management and severe fire events.
- Develop scientific statements and policy guidelines about issues on which there is contention (such as hazard reduction) or poor understanding (such as the notion of ecological resilience) and on the role of Indigenous burning (relevant to Royal Commission recommendations 18.1 and 18.2).

¹¹ Wintle, Legge, and Woinarski, "After the Megafires: What next for Australian Wildlife?"

¹² Don A Driscoll et al., "Resolving Conflicts in Fire Management Using Decision Theory: Asset-protection versus Biodiversity Conservation," *Conservation Letters* 3, no. 4 (2010): 215–23.

- Establish a national expert advisory committee, including Traditional Owners, to provide advice on abating adverse fire regimes, recognising that many aspects are uncertain, complex or contentious and require further research.

Capacity building and public engagement

- Undertake an audit of ecological fire management capacity, including by Traditional Owners and private land managers with significant conservation assets.
- Support capacity building of Indigenous ranger teams for fire management and the integration of traditional and modern knowledge and techniques.
- Support biodiversity-focused fire management training – assess gaps, develop training modules.
- Support the provision of expert advice at regional levels and for different land management sectors.
- Undertake community engagement to motivate, inspire and educate. Communicate widely the biodiversity consequences and needs for fire management to all stakeholder groups.

Q3. THE PROS AND CONS OF POTENTIAL ABATEMENT INSTRUMENTS?

The instruments available for threat abatement should be flexible – to effectively deliver the aims and priority actions specific to each threat – rather than the available instruments dictate the elements of the abatement response. Instrument options include:

- threat abatement plan
- strategic national plan and regional fire plans
- threatened species strategy
- guidelines and standards (for federal, state and territory programs).

In addition, a threat abatement advice could be developed, but that is clearly insufficient to drive abatement, so is not considered here.

Threat abatement plan

The final report of the EPBC Act review is silent on the future of threat abatement plans, although we were assured by Professor Samuel that he thought they should be retained. As they are a proven effective instrument for abating some KTPs, we strongly recommended they be retained as one option in the threat abatement system.

Advantages

- A statutory process (although the only obligation for implementation is on Commonwealth land)
- Defines national objectives and specifies priority actions over 5-year timeframe
- Establishes a framework for data collection, monitoring and reporting
- May specify a budget (or at least starts the discussion on required funding)
- Provides useful information (accompanied by a detailed background document)
- Can be collaboratively implemented if state/territory governments are supportive (eg as occurs with the national taskforce for the feral cat abatement plan)

Disadvantages

- May be difficult to encompass a complex threat in one plan (the fire KTP encompasses many different fire regimes, ecosystems, land uses and management regimes, interactions with other threats and stakeholders).
- Development of abatement plans is often not collaborative (usually developed by the federal environment department in consultation with state/territory governments).
- Implementation is not guaranteed as it mostly depends on willingness and funding by state/territory governments (but it could be implemented through bioregional fire plans, see next section).
- There is typically too little funding for full implementation (but this problem applies to all options).
- Fire management is a contentious topic with many socio-economic implications that probably cannot be effectively addressed in an abatement plan, making agreement on abatement actions harder to achieve.
- There may be cynicism about yet another plan in an already crowded planning landscape for fire management (due to the poor implementation of other plans or resistance to additional policy layers).

Comment: In what could be a new era for the national threat abatement system, it will be important to review the potential role of threat abatement plans, the circumstances under which they are a 'feasible, effective or efficient way' to abate a threat, and how abatement planning and implementation can be improved. Most disadvantages listed above can apply to any plan or strategy.

The general view of threat abatement plans is they are not well suited to responding to complex threats such as adverse fire regimes. This view should be tested. The planning process and plan content could perhaps be modified to better accommodate complexity.

As with all plans, it is essential to specify a route to implementation. It seems clear that the more successful abatement plans are those with an implementation taskforce involving government and non-government members, such as is the case for the feral cat and longline fishing plans.

Strategic national plan and bio regional fire plans

The report of the EPBC Act review has proposed the development of strategic national plans for “big-ticket”, nationally pervasive issues such as the management of feral animals and adaptation of the environment to climate change’. As outlined in the interim and final review reports, these can provide a national framework to:

- guide a national response
- direct research
- support prioritisation of investment (public and private)
- enable shared goals and implementation across jurisdictions
- inform regional planning
- develop processes and capabilities to respond to acute threats.

The review recommended that these be statutory plans and that monitoring, reporting and implementation be mandatory. It did not specify a process or specific content or how to achieve implementation of actions that depend on state and territory governments.

The review also recommended the development of Commonwealth-led regional recovery plans to ‘support coordinated threat management and investment to reduce cumulative impacts on threatened species and ecological communities’. Regional plans offer one route to implementing aspects of national threat abatement plans or strategic national plans amenable to on-ground management.

Advantages

- A national abatement strategy could be more flexible than a threat abatement plan, with a process and content designed to drive the priority research and actions specific to particular KTPs.
- A national strategy can provide the framework for devolution to more-specific plans, for abatement at a regional or site-specific level. These offer a clear route to implementation (provided there is funding) and the opportunity to also address interacting and cumulative threats and integrate threatened species and community recovery priorities.
- The process for developing and implementing a strategy can be collaborative and inclusive of other sectors and non-environmental considerations.

Disadvantages

- A lot of strategies fail to drive change – mainly because they lack leadership, commitments, sufficient funding, and collaborative taskforces to drive implementation.
- An effective strategy will require the cooperation and participation of state and territory governments, which may not be forthcoming unless there are strong incentives.
- The process for developing an effective strategy will need to be inclusive and collaborative, and therefore will take time and may be perceived as onerous (although that is inevitable for any effective planning process).

Comment: Because the EPBC Act review report lacks much detail about the proposed national and regional plans (and there was limited consultation by the review team about planning options), it will

be important for the Environment Minister to convene a process to design an effective planning regime applying best-practice planning principles. Australia is awash in ‘dud’ plans – often lacking specific commitments and a clear path to implementation.

The plans would need to be fit for clearly defined purposes. One of the failings during the 2019/20 bushfires was that only a small proportion of relevant environmental plans were referred to (one expert estimated 20% in the NSW fires) due to the relevant information not being incorporated into the protocols and information at hand for decision-makers. One highly valuable role for the Commonwealth would be to design information systems that facilitate optimal decision-making for biodiversity priorities.

Although the processes for effective threat abatement planning and strategic planning have many similarities, the process for a strategy could be more flexible than that for a threat abatement plan. Adverse fire regimes is a challenging but highly suitable KTP for piloting a new planning regime.

Standards and guidelines

The review of the EPBC Act recommends a strong focus on national environmental standards to set the benchmark for protecting the environment in the national interest. Standards could be developed to define the national interest and expectations in fire management and federal, state and territory disaster response and recovery programs for protecting matters of national environmental significance. Guidelines would be needed to support these standards.

Advantages

- Standards and guidelines could add value to existing federal, state and territory programs and provide a systematic way of considering and agreeing on accepted practices and help facilitate cross-jurisdictional and cross-sectoral integration.
- They would clarify the national interest and could help resolve contentious issues and identify gaps in policy and knowledge.
- The funding provided by the Australian Government for disaster responses and recovery offers potential leverage for agreement by the state and territory governments to implement national standards and guidelines (and a budgetary incentive to obtain this agreement where it will reduce the risks of further disasters).

Disadvantages

- Standards and guidelines are a limited response option and do not provide a basis for comprehensive abatement of the adverse fire regimes KTP.
- Standards and guidelines are unlikely to adequately deal with the complexity of responses of biodiversity to different fire regimes, operating variably across Australian environments, and of the required array of management responses.
- Implementation will require the cooperation of state and territory governments (and necessitates incentives).
- Effective standards rely on monitoring and enforcement, which is poor under current arrangements.

Comment: The development of national standards and guidelines to define and protect the national interest is important, although it does not on its own constitute an effective abatement response. The focus could include standards for threat abatement planning (including for regional plans and site-specific plans for World Heritage areas and national heritage places), monitoring and reporting, and disaster preparation, responses and recovery. The latter should include standards to counter the risks that fire management, hazard reduction and disaster responses will exacerbate threats to

biodiversity. Solutions should be sought that protect biodiversity as well as human safety and properties.

Threatened species strategy

The 10-year Threatened Species Strategy under development is likely to include a focus on adverse fire regimes. Fire management was proposed as one of 6 'direct action' areas following the consultation process.

Advantages

- A focus on fire threats in the strategy will facilitate implementation of high-priority abatement actions and facilitate integration with threatened species recovery.

Disadvantages

- The strategy will not provide a comprehensive abatement response to the KTP, as it is likely to focus only on particular adverse fire regimes (probably catastrophic bushfires) and a subset of high-priority actions for a priority set of threatened species and ecological communities.

Comment: The Threatened Species Strategy offers an important route for implementing some high-priority actions for abating the threat of adverse fire regimes but is unlikely to constitute a comprehensive abatement response. Ideally, it would be underpinned by a threat abatement plan or strategy (as is the case for the feral cat focus in the current strategy).

PRELIMINARY RECOMMENDATIONS

The listing of an adverse fire regimes KTP offers the opportunity to invigorate the national threat abatement system and design a process with the elements needed to effectively abate one of Australia's most severe threats.

An effective abatement response requires the development of a national plan or strategy to define abatement objectives and specify priority research and actions. This could be either a threat abatement plan or a national strategic plan (as recommended in the EPBC Act review). A national strategy is likely to offer more opportunity than the current abatement planning process to design a process that is flexible and collaborative, and can be devolved to and relevant to fire management at regional levels. Because it is likely to take some time to develop national strategic plans as a statutory instrument (which the EPBC Act review recommended), one option would be to proceed with a non-statutory strategy.

Defining the routes to implementation is essential. This could include a combination of regional-level fire plans (particularly for regions with many at-risk species and ecological communities) and site-specific plans for the likes of large World Heritage areas and national heritage places. We recommend pursuing pilot regional plans to test processes and develop exemplars. The Threatened Species Strategy and its action plan are ideal for implementing some high-priority national projects.

It is essential to incorporate national abatement priorities into state and territory processes, including disaster management. This should include national standards and guidelines defining the national interest and required or recommended practices for relevant federal, state and territory programs in fire and land management and disaster preparation, response and recovery.

Like many others, we are wary of proposing a plethora of new plans, for we have observed and experienced innumerable planning processes that fail to drive change. This includes successive biodiversity conservation strategies and national weed and pest animal strategies. But plans and strategies are foundational to action, so the focus must be on designing processes that lead to highly functional plans that work for the agencies and people implementing them, with funding guaranteed and strong accountability mechanisms to ensure they are implemented.

With a new planning regime being a central recommendation of the review of the EPBC Act, the listing of adverse fire regimes as a KTP offers the opportunity to design an optimal process and pilot the options. This would signal a much-needed new national commitment to threat abatement.

Finally, there needs to be thought about how to inspire and educate the public about this new threat abatement focus. Ideally, it would be presented as a cohesive package with a long-term vision (we look with envy at New Zealand with its 2050 predator-free vision that has galvanised the community, industry and government to collaboratively abate the threat of invasive predators). The wildlife-focused public commentary about the 2019/20 fires was dominated by concerns about animal welfare and saving iconic species. An abatement program can capitalise on the enormous sympathy that people feel for fire-impacted animals to foster a more ecological focus on fire, commitment to a science-based approach to fire management, appreciation of the importance of a threat abatement focus (including for interacting threats), and support for the idea that 'there is a role for everyone'.¹³ The social sciences will be central to an effective abatement program.

¹³ Wintle, Legge, and Woinarski, "After the Megafires: What next for Australian Wildlife?"