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Our future

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Our present begets our future. Our generation gives hurt or love, blight or gifts, to the generations that follow us. This book was prompted by, and represents a response to, a single catastrophic event – the unprecedented series of Australian megafires of 2019–20. Our objectives were to review the many impacts that these fires had on biodiversity and the natural environment, to describe management responses, and to assess what we have learnt in our attempt to ameliorate impacts and support recovery. In this chapter, we use that assessment as a baseline and perspective for looking into the future, to attempt to discern what it may hold for Australian biodiversity and to consider the extent to which we may shape that future.

Our primary focus in this book on the conservation impacts of that single season of megafires matches a long-established societal perspective, to look immediately and retrospectively at a single catastrophe rather than the longer-term pattern, broader context and underlying causality. Our society concerns itself with wildfire mostly in its urgency and aftermath, when shocked by the damage a single fire or set of fires has caused, rather than on the recurrent pattern. For example, the historian Tom Griffiths noted community responses to the 2009 wildfires in Victoria:

> *The 2009 fires were 'unprecedented,' as many commentators have said … But it is the recurrent realities that are more striking. For those of us who know the history, the most haunting aspect of this tragedy is its familiarity. The 2009 bushfires were 1939 all over again, laced with 1983. The same images, the same stories, the same words and phrases, and the same frightening and awesome natural force that we find so hard to remember and perhaps unconsciously strive to forget. It is a recurrent nightmare. (Griffiths 2009)*

We are readily mesmerised by catastrophe and acute impacts; and, of course, we need to pay attention to and understand the effects of events such as the 2019–20 wildfires. But it is at least as important to more broadly contextualise such events and impacts. Any single fire is part of a fire regime that extends dynamically across time and space, with a kaleidoscopic variety of impacts. The 2019–20 fires are part of a pattern that has been characterised by an increasing frequency of high severity fires in Australia and globally (Abram *et al.* 2021; Canadell *et al.* 2021). This patterning has important consequences that

influenced the impacts of the 2019–20 wildfires. In some areas the 2019–20 wildfires burnt over country not yet recovered from previous fires (Lindenmayer and Taylor 2020); some habitats and places have now been irrevocably changed as a result of such recurrent fire (Fairman *et al*. 2016). Indeed, the now extinct *Banksia montana* mealybug (*Pseudococcus markharveyi*) might have survived the 2019–20 wildfires were it not for the fact that a fire a few years before caused the loss of a second population (see Chapter 11): fire impacts compound.

Future fires may compromise the management efforts directed to, and hence the recovery of, species and communities affected by the 2019–20 wildfires (Legge *et al*. in press): the time available for recovery is diminishing. Given the vast extent of the 2019–20 wildfires, there is a high risk that this subversion of recovery will occur over large areas, ratchetting up the rate of population loss in species (Wagner *et al*. 2020) and of ecosystem collapse (Bergstrom *et al*. 2021). But a future marked by more wildfires of the severity of the 2019–20 wildfires will also touch much more of the landscape, leading to far more widespread risks and impacts, including losses of some of those important refuge areas and culturally significant places that were unburnt in 2019–20.

These fires had severe impacts on Australian biodiversity, but that biodiversity is declining rapidly due to many other pervasive and ongoing threats (Woinarski *et al*. 2015, 2019; Bayraktarov *et al*. 2021) and to the inadequacy of policy, legislation, management and resourcing directed to the conservation of our nature (Woinarski *et al*. 2017a; Ward *et al*. 2019; Wintle *et al*. 2019). As an example, the vast toll of Australian wildlife affected by the 2019–20 wildfires (Chapter 12) galvanised much public concern in Australia and globally, yet for mammals and birds, the number of individuals involved (180 million birds and 143 million mammals 'affected' by fire) is appreciably less than the estimated numbers killed – far less conspicuously – each year in Australia by feral cats (272 million and 815 million, respectively) (Woinarski *et al*. 2017b; Murphy *et al*. 2019). Collectively, this medley of threat factors is likely to drive increasing rates of loss of Australian biodiversity in the future (Geyle *et al*. 2018). This ongoing, indeed escalating, biodiversity decline is also part of a global trend, driven historically by many of the same threats, and increasingly by the consequences of climate change (Collen *et al*. 2009; Ceballos *et al*. 2017; Johnson *et al*. 2017).

While much public attention is focused on declines in a few high-profile iconic species (The Senate Environment and Communications References Committee 2011), the decline of biodiversity is far more extensive and less known, and includes a wide range of ecosystems (Bergstrom *et al*. 2021). In decline are areas of old growth and other long-unburnt vegetation, which provide important resources and carbon storage (Lindenmayer and Taylor 2020), species that provide critical support for ecosystem processes and health, and poorly known species with low public profiles (Lintermans *et al*. 2020; Braby *et al*. 2021; Geyle *et al*. 2021). In many cases, the rate of loss and extent of imperilment in Australia is greatest among species and environments that are the most distinctive and of the most ancient lineages – as these prove least adaptable to the increasing incidence and severity of disturbance and rapidly changing climate (Woinarski and Recher 1997; Holz *et al*. 2020). The fabric of our land is fraying; our nature is in retreat.

Acute episodes of loss, such as those due to the 2019–20 wildfires, cause a step change in the underlying trajectory of this decline. Indeed, the chronic factors that are driving the momentum of biodiversity loss – introduced animals, land clearing, timber harvesting, modification and loss of water resources, weeds, disease – rendered environments and species less resilient to the 2019–20 wildfires. These threats will further compromise

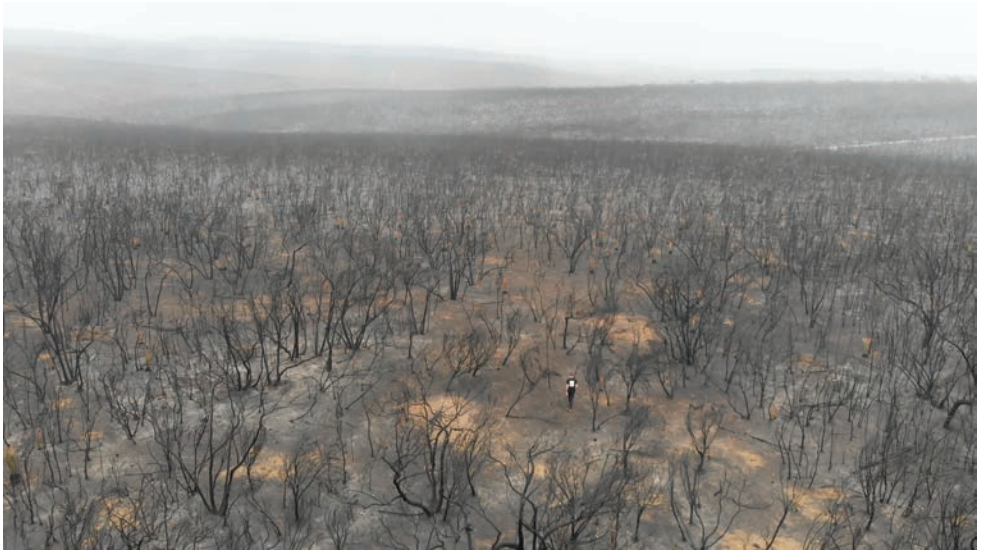

Fig. 36.1. Our future risks being increasingly transformed by severe wildfires and other environmental catastrophes. Kangaroo Island after the 2019–20 wildfires. (Photo: © WWF-Australia/Sii Studio)

recovery following the fires (Chapters 17, 18 and 19). Furthermore, some of the factors that catalysed the 2019–20 wildfires – such as extensive drought, rising temperatures, and days of extreme heat – themselves directly drive both abrupt and gradational declines and losses of many components of biodiversity (Welbergen *et al*. 2008; Mac Nally *et al*. 2009; van der Zande *et al*. 2020; Williams and de la Fuente 2021). These factors are part of a syndrome of pressures that threaten biodiversity – and our lives and livelihoods – and they can't readily be unpicked.

Other chapters of this book have recommended responses that need to be made – in law, policy, management, and in our values – to help support the recovery of biodiversity and landscapes following the 2019–20 wildfires and to reduce the risk of comparable losses in future wildfires. For the conservation of fire-prone species and environments, it is vital to implement these recommendations at all scales (Chapter 35). But these alone will be insufficient: it is likely to be futile to try to recover biodiversity following the 2019–20 wildfires if the larger package of threats also affecting that biodiversity is not also addressed; and if the resources provided for conservation remain nugatory. Furthermore, these wildfires bore the fingerprint of climate change, where episodes of catastrophic environmental events are escalating globally (Abatzoglou *et al*. 2019; Fig. 36.1); constraining the impacts will require global solutions.

The 2019–20 wildfires forced us to imagine a possible – indeed, likely – future, terrifyingly close, in which catastrophe becomes commonplace (Fig. 36.1).

It doesn't have to happen like this. We can shape a different future.

The 2019–20 wildfires as catalyst for change

The 2019–20 wildfires showed that our governments and our community are deeply affected by the loss of biodiversity, and are committed to attempting to repair those losses. For many fire-impacted species and environments, this commitment is paying dividends,

achieving some recovery. We want to indicate here that it is possible that the 2019–20 wildfires could also leave an enduring legacy of positive change, of a community unwilling to bequeath to future generations a land in continuing decline. The 2019–20 wildfires showed us that the rate of change is now so rapid we can recognise the fragility of the future, and that it is within our hands to shape it – or to do too little and allow that future to wither. The royal commission into the 2019–20 wildfires provides an important springboard: it recognised that we need a different way of managing and living with fire, to use the inter-fire periods to build resilience – else we will be overwhelmed (Royal Commission into National Natural Disaster Arrangements 2020). Though not explicitly stated, this is so also for biodiversity.

The Victorian response to the 2019–20 wildfires includes a 'nature-led community recovery' (see Chapter 23) that provides a blueprint for such holistic and enduring change (Inspector-General for Emergency Management 2021). This recognises that helping to recover nature is a vital component of restoring the economic and social fabric of rural communities affected by fire, and that our wellbeing cannot be divorced from that of nature (Fig. 36.2). From this viewpoint, healing involves far more than simply responding to wildfire and patching up its casualties. Instead, it has as its foundation an ethic of connection to and responsibility for the care of nature. This is in part because our lives are dependent upon and enriched by healthy and diverse natural environments: they provide the necessary foundation for our life.

Such appreciation of the need to care for Country is, of course, a central tenet of the culture of Indigenous Australians. The 2019–20 wildfires demonstrated many failings in the prevailing official methods of land management, and that we will need to do things

Fig. 36.2. The 2019–20 wildfires affected our society and natural environments; here, a kangaroo is framed by a burning house at Lake Conjola, December 2019. Nature-led community recovery offers a pathway for a future built on caring for country. (Photo: Bruce Detorres)

differently in order to reduce the risks of comparable future catastrophes. While the post-fire government inquiries recognised some of this needed change involves improved technology, more resourcing and better coordination (Government of NSW 2020; Inspector-General for Emergency Management 2020), they also recognised the urgent need for a cultural change that respects the long-established fire knowledge held by Indigenous Australians, and to implement such practice, led by Traditional Owners (Inspector-General for Emergency Management 2020; Royal Commission into National Natural Disaster Arrangements 2020; Inspector-General for Emergency Management 2021). Importantly, such Indigenous fire management is predicated not on the application of fire as an end in itself but rather as an integral part of nurturing and healing Country. We can hope that a legacy of the 2019–20 wildfires involves a much greater appreciation and respect by all Australians of such expertise, and of the culture on which it is based, and recognition that such knowledge and ethics will be needed to maintain and restore the health of our country.

An attitudinal shift to caring for country offers hope for recovery and for reversing the baleful trajectory of decline in our nature. But over generations we have sown the seeds for a perilous future. A recent assessment concluded 'the rate of change in fire risk delivered by climate change is outstripping the capacity of ecological and social systems to adapt' (Nolan *et al.* 2021). Climate change risks sabotaging any improvements we may make in the management of fire, and in actions taken to support the recovery of species and environments affected by the 2019–20 wildfires and by any comparable future fires. A fundamental lesson from the 2019–20 wildfires is that we must strive harder and more urgently to constrain the emissions that drive such change, else our nature and society will not cope. There is hope that this lesson has been learnt: a recent Australian public survey found that 52% of respondents 'take climate change more seriously now as a result of the bushfires' (morestrategic 2020). Climate change affects our nature, it affects us; it will affect even more our descendants.

These are difficult challenges to overcome. Climate change is now deeply embedded. It may take generations for our society to learn how to adapt to the changes in fire regimes that seem inevitable. An ethic of caring for Country may not yet fit readily into those long accustomed to exploiting the land. But we fail, as a society, to evaluate the true costs of inaction. In not planning for the very real future scenario where climate change exists, we are not even guaranteeing short-term economic gain. We are locking ourselves into a future of continually mopping up after natural disasters of our making, and locking ourselves into a future of social, ecological and economic decline. So our conclusion to this book reflects our hope, but also our plea – for more investment into mitigation, preparation and protection, aided by a better understanding of what biodiversity we have, and how it can be effectively conserved.

There are challenges and threats that we can manage now, with short-term benefits. Many of the factors that compound the impacts of fire (Chapters 17 and 18), or have their own impacts, can be more readily managed than fire, provided there is will, resources, capability and legislative support (Garnett *et al.* 2018). Our laws continue to allow land clearing at a profligate rate, even where it causes the loss of habitat for threatened species (Ward *et al.* 2019). Aquatic environments continue to be degraded and exploited (Kingsford *et al.* 2017). Many feral animals, weeds and diseases remain largely unchecked, driving ongoing declines in many native species and environments (Legge *et al.* 2017). Such enhancement in the control of factors affecting our environments requires strong will in the face of competing demands, resources, capability and legislative support (Garnett *et al.* 2018).

The sudden transformation of loved landscapes due to fire (Fig. 36.1) caused many in our society to see and be confronted by the loss of nature, and to recognise that such loss should not be acceptable. These fires showed that we value nature, are affronted by its loss, and are willing to invest in its recovery. The challenge now is to extend such concerns and actions beyond response to this single catastrophe to also encompass biodiversity loss attributable to all other factors. For the future of our nature, and hence our own future, depends upon such transformation.

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