

**Submission
No 460**

**INQUIRY INTO MANAGEMENT OF PUBLIC LAND IN
NEW SOUTH WALES**

Name: Mr Vic Jurskis

Date received: 3/08/2012

Submission to the Inquiry into Management of Public Land in New South Wales

Vic Jurskis

Contents

Summary	1
Expertise	2
TOR 1 a	4
Environmental	4
Socioeconomic and cultural	8
Operational	8
TOR 1 b	9
TORs 2, 4	11
National Parks	11
State Forest and private lands	14
TOR 3	15
Additional References	16

Summary

Management of public land in New South Wales is based on antisocial green ideals and a desire to change both natural and artificial ecosystems towards an imaginary wilderness state. This results in perverse environmental, social and economic outcomes.

TOR 1. Conversion of various lands to National Parks and other reserves has reduced the environmental, social and economic benefits flowing from those lands and increased the net costs whilst producing poor outcomes of management.

- a. The process of conversion has been driven by politics, specifically the seeking of green preferences and inner city votes, rather than science. Environmental, social and economic impacts have not been objectively assessed and results of sham assessments have been preordained by governments.
- b. Impacts flowing from conversions have been negative. Infrastructure has been demolished or not maintained and access has been reduced along with pest and fire management standards. Public accountability of management has been substantially reduced. Neighbouring communities have suffered environmental, social and economic losses.
- c. Specific examples are provided in respect of river red gum forests, native hardwood forests on the north coast and other areas.

TOR 2. Some management practices that are mandated on private lands and State Forests are inappropriate and have perverse outcomes. Management practices on National Parks and reserves are not subject to the same scrutiny, but are generally inappropriate, producing perverse outcomes.

TOR 3. Alternative models for public land management are examined and discussed. Environmental, social and economic benefits can be increased by recognizing the long established role (circa 40 Ka) of human economy in the Australian environment and the fundamental rights of genuine local and regional stakeholders (in the literal sense) compared to city based environmentalists.

Expertise

I am an ecologist specializing in silviculture. I graduated from Australian National University as Bachelor of Science (Forestry) in 1976 and was awarded the (British) Commonwealth Forestry Bureau Book Prize for Academic Achievement in that year. I have been employed by New South Wales' forestry agency for 36 years as a fieldworker, forester, manager, researcher and lately as silviculturist. I have experience in all types of native and exotic forests and woodlands including natural and artificial forests throughout the State. I was awarded a Gottstein Fellowship in 2004 and a Maxwell Ralph Jacobs Award by Australian Academy of

Sciences in 2006 to study forest health and fire management throughout Australia. I am a member of the Institute of Foresters of Australia and the Australian Environment Foundation. I provide this submission as a private citizen.

I have authored or co-authored a large number of ecological papers in international scientific journals and conferences. For brevity I have listed only refereed papers of which I was lead author during the past decade:

(superscripts refer to citations in this submission)

¹²Jurskis V (2002) Short note: Restoring the prepastoral condition. *Austral Ecology* **27**, 689 – 690.

⁵Jurskis V (2004a) Foraging preference of the smoky mouse, *Pseudomys fumeus*, in south-eastern New South Wales: An examination of sampling strategies.

Jurskis V (2004b) Short Communication. Does logging favour bellbirds and promote tree decline? *Australian Forestry* **67** (4): 274–276.

³Jurskis V (2005a) Decline of eucalypt forests as a consequence of unnatural fire regimes. *Australian Forestry* **68** (4): 257–262.

⁷Jurskis V (2005b) Eucalypt decline in Australia, and a general concept of tree decline and dieback. *Forest Ecology and Management* **215**, 1–20.

⁴Jurskis V (2008) Drought as a factor in tree declines and diebacks. In: Sanchez JM (Ed.), *Droughts: Causes, Effects and Predictions*. Nova Science Publishers Inc., New York. pp 331-341.

¹⁴Jurskis V (2009) River red gum and white cypress forests in south-western New South Wales, Australia: ecological history and implications for conservation of grassy woodlands. *Forest Ecology and Management* **258**, 2593–2601.

¹Jurskis V (2011a) Benchmarks of fallen timber and man's role in nature: some evidence from temperate eucalypt woodlands in southeastern Australia. *Forest Ecology and Management* **261**, 2149-2156.

- ¹⁵Jurskis V (2011b) Human fire maintains a balance of nature. In: Thornton RP (Ed.), *Proceedings of Bushfire CRC & AFAC 2011 Conference Science Day 1 September 2011, Sydney Australia*. Bushfire CRC, Melbourne. pp. 129-138.
- ²Jurskis V, Bridges B, de Mar P (2003) Fire management in Australia: the lessons of 200 years. In: Mason EG Perley CJ (Eds.) ‘*Joint Australia and New Zealand Institute of Forestry Conference Proceedings 27 April – 1 May 2003*’ Ministry of Agriculture and Forestry, Wellington. pp. 353-368.
- Jurskis V, de Mar P (2005) Monitoring the health of native forests: how difficult is it? *The International Forestry Review* **75** (5) 196.
- Jurskis VP, Hudson KB, Shiels RJ (1997) Extension of the range of the smoky mouse *Pseudomys fumeus* (Rodentia: Muridae) into New South Wales with notes on habitat and detection methods. *Australian Forestry* **60** (2), 99–101.
- Jurskis V, Turner J (2002) Eucalypt dieback in eastern Australia: a simple model. *Australian Forestry* **65** (2): 81–92.
- ⁸Jurskis V, Turner RJ, Jurskis D, (2005) Mistletoes increasing in ‘undisturbed’ forest: a symptom of forest decline caused by unnatural exclusion of fire? *Australian Forestry* **68**, 221–226.
- ⁹Jurskis V, Turner J, Lambert M, Bi H (2011) Fire and N cycling: getting the perspective right. *Applied Vegetation Science* **14**, 433–434.

TOR 1 a. The process of conversion and the assessment of impacts.

Environmental

The primary object of the National Parks and Wildlife Act is conservation of nature. Thus a clear definition of nature is fundamental to assessing the implementation of the Act. The Act does not define nature, however it is clear from the process of establishing and extending the reserve system under the National Forest Policy

Statement and the Act, that the natural environment is regarded as that which existed immediately prior to European settlement of Australia and natural ecosystem processes are those which applied at that time.

The earlier regional assessments maintained some appearance of comprehensiveness and objectivity though they were obviously conducted so as to maximise the area and distribute the lands converted to National Park up to the limits of overall political acceptability. The later additional reservations on the north coast and the recent western reservations have not the slightest hint of objectivity. In the Brigalow, River Red Gum and South-west Cypress Assessments large areas of artificial ecosystems that did not exist prior to European settlement were reserved in a futile attempt to gain green, inner city support for a dysfunctional government at the expense of rural communities and nature conservation. The cypress and red gum reservations have no justification in terms of the Act.

Under Aboriginal management, river red gum forests occurred as narrow strips or lines of trees along rivers, runners (ephemeral effluent creeks) and billabongs. Low floodplains contained reedbeds and slightly higher floodplains contained red gum woodlands with around 20 trees per hectare. There were few shrubs, fallen logs or mistletoes¹. When Aboriginal management (broadcast burning; harvesting of firewood, bark and construction timber; burning hollow trees) was disrupted, red gum scrubs invaded reedbeds and woodlands, bare ground and groundlayer plants were choked out along with animals that used this habitat, litter accumulated, nitrogen accumulated in soils, health of established trees declined and shrubs (including parasitic cherry) and mistletoes proliferated. Similarly, cypress scrubs invaded woodlands on sandhills and sandy plains. From the late Nineteenth Century, foresters thinned scrubs to promote grazing and timber production, biodiversity recovered, and rural economies developed.

The recent assessments can be considered in relation to the Act. A relevant section can be paraphrased as follows:

the Director-General is to have regard to the following:

- (a) protecting the full range of natural heritage and the maintenance of natural processes,
- (b) the establishment of a comprehensive, adequate and representative reserve system,
- (c) protecting cultural heritage
- (d) providing opportunities for appropriate public appreciation and understanding, and sustainable use and enjoyment of land
- (e) integration of the management of natural and cultural values
- (f) protecting wilderness values,
- (g) this Act,
- (h) protecting world heritage properties and world heritage values.

The red gum and cypress reservations do nothing for (a) and therefore nothing for (b). They deny Aboriginal and European cultural heritage (c) in portraying the artificial forests as natural. They exclude many existing opportunities for public appreciation and enjoyment (d) and also promote misunderstanding by denying most of the rich cultural heritage. They are diametrically opposed to (e). For example, thinning and firewood collection in State Forests were cultural activities that helped to maintain natural values including biodiversity and healthy trees as well as socioeconomic values such as real jobs, access to cheap energy and revenue to maintain rural infrastructure. The Parks service is now proposing to waste tax payers money, contribute to carbon emissions, increase fire hazards, impede public access and destroy aesthetic values by ‘ecological’ thinning to waste in red gum forests.

(f) On a reasonable test, wilderness does not exist in New South Wales. Under the Wilderness Act 1987:

(1) An area of land shall not be identified as wilderness by the Director-General unless the Director-General is of the opinion that:

- (a) the area is, together with its plant and animal communities, in a state that has not been substantially modified by humans and their works or is capable of being restored to such a state

There is no land in New South Wales or Australia that has not been substantially modified by humans and their works. About 40,000 years ago Aboriginal people arrived and burnt huge quantities of biomass producing a pronounced peak in charcoal deposits across the continent, pushing mesic vegetation into moist sheltered refugia, promoting sclerophylls and grasses and consequently eliminating the specialist browsing megafauna¹. Subject to climatic fluctuations, frequent widespread Aboriginal burning maintained the new pattern until European settlement disrupted it bringing woody thickening, megafires, chronic eucalypt decline and loss of biodiversity.

After disastrous megafires and widespread pest outbreaks, forest services introduced broad area burning including aerial ignition in the 1960s and forest health and fire safety temporarily improved. Environmentalists have recently prevailed to reduce prescribed burning and with the large increase in reservation of National Parks since the 1980s have brought a return of disastrous megafires and increasingly widespread chronic eucalypt decline^{2,3}. Ecological resilience has been lost and recent droughts have consequently had severe impacts on the health of many woodlands and forests⁴. Management of National Parks has had scant regard for the objects of the act (g) and this has not been taken into account in regional assessments. They have routinely assumed that new Parks will be appropriately managed without any monitoring or assessment of what has gone before.

(h) World Heritage Areas in NSW National Parks (in the Blue Mountains and near the Queensland border) contain substantial areas of eucalypt forest that are in chronic decline from a lack of frequent mild fire. Management response has been to hire an academic to obfuscate the issue rather than taking action. I spent a full day showing this Project Officer around declining stands in World Heritage Areas on the border and detailing their history over the past three decades. Her response at the end of the day was “we need to do some more research”. Parks managers generally do not have the will or the skills to manage land and this has been ignored in regional assessments.

The biggest failure in the whole assessment process has been evident in the paradox that lands assessed as having high environmental values after up to a century of multiple use management have been taken out of that management ostensibly to protect those same values. It is ironic that no species has become extinct as a result of forestry management, whereas a number of local extinctions as a result of ‘protection’ in reserves have been recently documented^{1,5,17}.

Socioeconomic and cultural

Assessments of socioeconomic impacts of conversions have not been soundly based or objective. There has been no attempt to identify genuine stakeholders or rank interested parties according to potential impacts. Thus ‘feelgooders’ in Sydney have greater influence on the process than locals holding a genuine socioeconomic and cultural stake in the process. Since the Border Ranges decision in 1978, all assessments have purported to identify potential positive socioeconomic impacts as a result of increased visitation and tourism and funds have been provided for publicity, signage and visitor facilities. No positive socioeconomic impacts have actually occurred and all retrospective studies have identified negative impacts including contraction of local economies and populations and loss of public facilities. Each assessment has resulted in the provision of ‘bloodmoney’ to compensate for negative impacts. The bloodmoney always runs out without leaving any positive legacies. Assessments have failed to acknowledge the realities.

Operational

Assessments have routinely neglected to consider inevitable negative impacts as a result of non maintenance of infrastructure and human resources associated with multiple use management. The outstanding example is fire management which has universally suffered as a consequence of lost access, lost resources for fuel reduction and other prevention of wildfires and lost resources for firefighting.

TOR 1 b Operational, economic, social and environmental impacts of conversion.

There is a long and sorry history of impacts consequent to reservation of National Parks, dating back before the original Act of 1967. For example, reservation of Kosciusko State Park and its subsequent dedication as National Park had wide ranging and long lasting impacts⁶. These included elimination of grazing and virtual elimination of prescribed burning and competent fire management resulting in pest and weed control problems, gross changes in vegetation, megafires, extreme soil erosion and huge damage to infrastructure. Other impacts were loss and deliberate destruction of cultural heritage including historical equipment and buildings from the gold rush, the Queen's Lookout (for the official opening of the Snowy Scheme) and the Jounama arboretum.

The successful Hume Snowy Fire Prevention Scheme was disbanded and management under a new fire management plan developed by an 'Independent Scientific Committee' culminated in the 2003 fire disaster that caused loss of human life, unprecedented erosion and siltation of water supply catchments, killed many rare and endangered flora and fauna, and destroyed hundreds of houses, thousands of stock, thousands of kilometers of fencing and tens of millions of dollars in public infrastructure⁶. After 2003, the 'Independent Scientific Committee' falsely claimed that the multiple lightning ignitions were unexpected, even though similar events had occurred many times through history. Multiple lightning ignitions at the same time in State Forests to the west of the park were all contained within three days causing little damage⁶.

Conversions of lands to National Park have routinely involved the destruction of access by placement of rock, fill and/or bollards, ripping of roads and dismantling of culverts and bridges, loss of access by non-maintenance of trails and restriction of access by erection of elaborate gates. This taxpayer-funded vandalism is imposed without public consultation and has obvious negative economic, social and environmental impacts by impairing

fire and pest management and public enjoyment and appreciation. In addition, facilities have been removed from areas still accessible to the public. For example, three weeks ago I witnessed contractors to National Parks 'Service' removing garbage collection facilities from very high use areas of former State Forest in the heart of Deniliquin.

Conversion of Deniliquin State Forest to park also exemplifies an important social impact that has been largely overlooked - loss of opportunities for people to exercise with pet dogs and loss of cultural and recreational opportunities to tourists with accompanying dogs. Australian fauna have coexisted with dogs for several thousands of years and there is no ecological reason for excluding them from conservation reserves. (Wild dogs are managed because they are a threat to domestic stock.)

Socioeconomic impacts of converting lands to Parks have been universally negative. I have personally witnessed contraction of many local communities including Wiangarie, Grevillea, Woodenbong, Urbenville, Eden, Bombala, Nimmitabel, Baradine and Barham. Jobs, services, facilities, rates, rents and taxes are inevitably lost with loss of opportunities for economic uses including grazing, timber production, apiary and use of other natural resources. Other lost opportunities are evident from the proliferation of signs with red circles and a diagonal slash in the new reserves, clearly demonstrating the antisocial bent of Park managers. The arrogance and lack of public accountability that permeates the staff of the Parks Service was highlighted recently in the national media when rangers in uniform publicly demonstrated and spoke against the Government decision to permit hunting of vermin in some Parks. The Regional Manager of Parks in my area provided another example by refusing my request to discuss a prescribed burn that was conducted along my boundary in an incompetent manner with negative outcomes, even after the Fire Control Officer for the Shire had requested him to do so.

The major environmental impacts of converting lands to National Parks have been damage to soils and water

catchments, loss of biodiversity, chronic decline of eucalypts and proliferation of pests, parasites, diseases and megafires as a consequence of excluding frequent low intensity fire from the landscape and failing to employ ecologically analogous practices such as grazing or slashing to mimic natural ecosystem processes^{1,2,3,4,6,7,8,9}. The disastrous 1994 Sydney and 2003 Canberra megafires were a consequence of management practices in National Parks^{2,6,11}. The rapidly expanding area of forests affected by chronic decline over the past three decades is a consequence of conversion of lands to National Parks as well as conversion of grazing lands to ‘hobby farms’ and increasing regulation of management of State Forests and private lands in accordance with Park management philosophies. Nearly 20% (more than three quarters of a million hectares) of lands across all tenures in coastal New South Wales are now suffering chronic decline, loss of biodiversity and extreme fire hazard as a result of lack of appropriate management¹⁰.

The Gondwana World Heritage Area on the Queensland border is a case in point. In 1992 State Forests in this area contained open grassy eucalypt forests that were grazed and frequently burnt. Twenty years later, after they were converted to National Parks and World Heritage Areas, these formerly healthy forests are dying and infested by scrub, mostly lantana^{2,3,10}. Wallaby Creek in the new Tooloom National Park was renowned for its diversity of macropods and famously studied by CSIRO scientist J.H. Calaby and many other researchers from the 1960s to the 1980s. The grassy habitat that supported the diversity of animals is now obliterated by scrub and the forests are dying.

TORs 2, 4 Adherence to management practices on public lands that are mandated for private lands and related matters

National Parks

The real problem with management of National Parks is lack of adherence to management practices that are mandated by the Act. I have already ‘touched’ on divergence of management of Parks from management principles mandated by the Act and will now consider some additional provisions of the Act as paraphrased

hereunder:

Plans of management must consider all the above as well as:

- (h) the rehabilitation of landscapes and the reinstatement of natural processes,
- (i) fire management,
- (j) prohibition of any works adversely affecting the natural condition or special features of the park or reserve
- (k) the potential for the reserved land to be used by Aboriginal people for cultural purposes
- (m) the adaptive reuse of buildings and structures,
- (n) culturally appropriate and ecologically sustainable use of the land by lessees, licensees and occupiers of the land
- (o) preservation of catchment values,
- (p) the encouragement of research into natural and cultural features and processes
- (q) the identification and mitigation of threatening processes,
- (r) land management practices of land surrounding or within a region of the reserved land
- (s) the regional, national and international context of the reserved land
- (t) benefits to local communities,
- (u) the social and economic context of the reserve, for example that facilities are appropriate to the surrounding area or that pest management is co-ordinated across different tenures

A comparison of management performance against these considerations shows that either Plans of Management do not comply with the Act or they are not being implemented:

(h) Landscapes have continued to deteriorate because the natural process whereby frequent low intensity fire maintains nutrient cycling processes and competitive interactions has been excluded in line with Park

management philosophies. Biodiversity has been lost as a result. For example loss of rare and endangered species including eastern brown treecreeper, Hastings River mouse and broad-headed snake from 'protected' areas^{1,17}.

(i) already covered

(j) The development of ski resorts and associated infrastructure in Kosciusko National Park is the outstanding example of how this mandate is selectively ignored. It also illustrates the huge disparity in consideration given to city based interests compared to genuine stakeholders in rural communities.

(k) reserved land is generally unsuitable for Aboriginal cultural purposes because natural landscapes and processes have been destroyed by inappropriate management (see (h) and (i)).

(m) historic structures are routinely destroyed, for example most of Kiandra and the Queen's Lookout in Kosciusko.

(n) This mandate is routinely ignored. The outstanding example was the elimination of sustainable alpine grazing in total disregard for longstanding post European culture.

(o) Fire management in Parks is completely at odds with this mandate as evidenced by the results of the Kosciusko/Canberra fires of 2003. More insidious is the substantial reduction of water yields in Sydney Water catchments as a result of interception and evapotranspiration by unnaturally dense understoreys since effective prescribed burning was eliminated. The fact that this issue was kept hidden during recent droughts and debate over the desalination plant is another good illustration of the lack of public accountability of Park management.

(p) Research into natural cultural features and processes has been suppressed and totally unrealistic benchmarks of the natural environment have been used to support antisocial wilderness philosophies of management and especially to attempt to justify exclusion of grazing and burning from parks^{1,2,6,8,12,13}.

(q) Park managers have neither the will nor the skills to identify and mitigate threatening processes as evident from the cover up of the extent and cause (lack of frequent mild burning) of chronic eucalypt decline in New South Wales. This threatening process can be mitigated by burning but this is not happening because Park managers are philosophically opposed to burning or other solutions (grazing, slashing). All eucalypt dominated

Endangered Ecological Communities in New South Wales are threatened by this process however the Parks authority is not taking appropriate action and is also using its regulatory powers to hinder appropriate action (burning) by other land managers.

(r), (s), (t), (u) Park managers routinely attempt to impose their philosophies on managers of neighbouring lands and on local communities. This is evident in their submissions on development applications. An outstanding illustration of this attitude was the closure of long standing public access from Wonboyn to Nadgee Nature Reserve despite overwhelming opposition from the local community including the Aboriginal community.

State Forests and Private Lands

Management of State Forests is regulated by Integrated Forestry Operation Approvals (IFOAs) developed after regional assessments and signed by the relevant Ministers. These ‘approvals’ are mostly prohibitions of various activities at the behest of the Office of Environment and Heritage (OEH) with the intention of imposing Park management philosophies on multiple use forests and minimizing the cutting of trees and other socioeconomic activities. These prohibitions have almost universally perverse outcomes. They aim to ‘protect’ a large number of ‘features’ that have proliferated across the landscape as a result of inappropriate management, chiefly exclusion of frequent mild burning¹⁻¹⁵. These ‘features’ include the parasitic mistletoes and cherries as well as the invasive shrubs and unnatural accumulations of fallen timber that are symptoms of and contributors to chronic eucalypt decline, megafires and loss of biodiversity.

An outstanding example of the perversity of these ‘approvals’ is the prohibition of grazing and burning in habitat of the Hastings River mouse despite published scientific evidence from OEH that the mouse occurs only in grazed and burnt areas and not in ‘protected’ areas¹. The IFOAs contain many similar conditions that seriously impair sustainable management for forest health, biodiversity and productivity. These conditions have no ecological merit and are obviously intended to limit grazing, burning and treecutting on purely philosophical

grounds.

Management of private lands is also subject to Acts and regulations that impose inappropriate practices with perverse outcomes. As well as threatened species legislation and native vegetation legislation OEHL can influence private land management through its membership of the Bushfire Coordinating Committee under the Rural Fires Act. (It is disturbing that the only non-government organization that can nominate a person directly onto this committee is the Nature Conservation Council. That this largely taxpayer funded, city-based organization with negligible constituency can have a privileged position in policy formulation contrasts sharply with the charade of participatory democracy that has failed rural communities throughout New South Wales during the National Parks empire building processes¹⁶) The outstanding difference between management of State Forests and private lands compared to National Parks is the lack of public accountability and lack of monitoring, reporting and objective assessment of National Parks' management.

TOR 3 Alternative Models of Public Land Management

It is apparent from much of the foregoing discussion that inappropriate management of public lands is more a consequence of the way that OEHL administers the legislation rather than the provisions of the Act or of other legislation such as the Forestry Act. In fact, red gum, cypress and regrowth hardwood forests (i.e. most native forests) could be managed for multiple use including sustainable timber production as National Parks under the provisions of subclause 30E (2) (f) of the Act (modified natural areas - where native vegetation has been substantially modified by human activity). (All native vegetation in New South Wales and Australia fits this definition because it was substantially modified as a result of human occupation ~40,000 ago and also as a result of European settlement.)

If public land management is to improve, the challenge is to change the culture of the authority responsible for managing National Parks and regulating the management of other tenures. The only feasible way I can see to

ensure that this authority implements the legislation as intended by Parliament, manages and regulates management of lands in the public interest and is made accountable to the public for its actions is to restructure the organization and appoint senior managers with a proven track record as servants of the public. National Parks and reserves should be reviewed to identify modified natural areas with a history of or potential for multiple use management and these areas should be managed for sustainable use under section 30E of the Act and in accordance with other relevant legislation such as the Forestry Act in respect of crown timber. Very minor modification of the Act would facilitate this. At the same time IFOAs should be revised to remove all conditions not having sound ecological and scientific bases and to apply to all public and private lands. Audit, enforcement and reporting functions should be brought under an independent agency with the skills to assess outcomes and encourage positive socioeconomic and environmental outcomes.

Additional References

⁶Jurskis V, de Mar P, Aitchison B (2006) Fire Management in the Alpine Region. In: Tran C (Ed.), *Bushfire 2006. Life in a fire prone environment: translating science into practice*. Griffith University. CD

¹⁰Jurskis V, Walmsley T (2011) Eucalypt ecosystems predisposed to chronic decline: estimated distribution in coastal New South Wales <http://www.bushfirecrc.com/publications/biblio/author/887>

¹¹Conroy R.J. (1996) To burn or not to burn? A description of the history nature and management of bushfires within Ku-Ring-Gai Chase National Park. *Proc. Linn. Soc. N.S.W.* **116**, 79-96

¹³Jurskis V (2003) Assessing the ecological implications of prescribed burning: Where do you start? *Third international Wildland Fire Conference and Exhibition, Sydney*. Australasian Fire Authorities Council Melbourne.

¹⁶ Adams M, Attiwill P (2011) *Burning issues. Sustainability and management of Australia's southern forests*. CSIRO Publishing and BushfireCRC Melbourne.

¹⁷ Pringle RM, Syfert M, Webb JK, Shine R (2009) Quantifying historical changes in habitat availability for endangered species: use of pixel- and object-based remote sensing. *Journal of Applied Ecology* **46**, 644-663.