

Introduction: Australia's island arks

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Introduction

Australia holds custodianship of one of the most diverse sets of island landscapes of any country. These islands include tropical atolls (e.g. Cocos-Keeling) and coral cays, tropical, subtropical and temperate continental islands, sea stacks such as those off Tasmania, the world's largest sand island (K'gari-Fraser Island), oceanic islands (such as the exposed sea-mounts that form Lord Howe and Norfolk), and finally sub-Antarctic islands at the higher latitudes (Heard-McDonald and Macquarie Islands). Additionally, our islands vary in topography, reaching altitudes as high as 2745 m on Heard Island. As a consequence of this geographical and altitudinal spread, species and ecosystem diversity is understandably high.

Offshore islands under Australian stewardship number some 8411 (Woinarski *et al.* 2014). These islands contribute 40% of Australia's coastline (Geoscience Australia 2004), and thus a significant proportion of Australia's coastal landscape despite representing only 1.26% of its landmass (Woinarski *et al.* 2014). Many islands are repositories or in some cases essential locations for a staggering amount of Australia's biological diversity (Gibson and McKenzie 2012). They support over 35% of threatened species listed under the Commonwealth's *Environment Protection and Biodiversity Conservation Act 1999*.

Importantly for conservation purposes, islands offer relatively enclosed areas where key threaten-

ing processes, such as feral mammals, may be cost-effectively eliminated. Furthermore, incursions by feral animals, weeds and diseases that continue to impact biological diversity on mainland Australia can be managed through robust biosecurity arrangements on islands. Finally, islands provide important ecosystem services to human well-being, such as fisheries, energy, freshwater, agriculture and traditional ecological knowledge (Wong *et al.* 2005; Vigilante *et al.* 2013). They therefore play a critical role in the local economy, for the people who reside there, and more widely for the nation. For example, Phillip Island (Victoria), Kangaroo Island and the Whitsunday Islands all rank highly in terms of tourism economy relative to other tourism areas across mainland Australia (Tourism Research Australia 2011).

Australia's islands form the foundation of an estimated A\$13 billion/annum nature-based tourism industry. For example, in 2012 the Great Barrier Reef alone contributed A\$5.7 billion to the Australian economy and sustained 69 000 full-time jobs (Deloitte Access Economics 2013). In a similar vein, in 2013–14, internationally renowned Phillip Island – primarily, Phillip Island Nature Parks – in Victoria was estimated to contribute A\$1.3 billion in total tourism output and, directly and indirectly, to employ 6400 people (Tourism Victoria 2015). On Kangaroo Island in South Australia, tourism contributed A\$134 million (c.15%) to the regional economy in 2015, employed 500 people

directly and helped to support a further 900 employees indirectly.

At a global scale, islands are recognised as important areas that support biodiversity in terrestrial, freshwater and thus connected marine environments. Yet this biodiversity can be highly vulnerable to intense human visitation and use (Secretariat of the Convention on Biological Diversity 2014). Surprisingly, the critical importance of islands to conservation of Australia's biological diversity and regional economies has not received a commensurate amount of management attention or investment by this nation. Co-operative research centres and aligned management efforts have been formed for other landscapes – coral reefs, rainforests, deserts, the Antarctic and savannahs – but not islands. Islands are also overlooked within protected area systems. For example, nationally, less than 30% of islands are protected within Nature Reserves (GeoSciences Australia, unpublished data).

Historical context of Australia's use of its islands

Aboriginal and Torres Strait Islander peoples have maintained continuous connection with most of Australia's islands since before they were created by the 100+ m rise in global sea levels that stabilised ~6000 years ago. Tasmanian Aborigines, for example, harvested short-tailed shearwaters or mutton birds (*Ardena tenuirostris*) and their eggs from offshore Tasmanian islands for generations. This farming continues today for many families as an important cultural practice and commercial industry (Skira 1997). Similarly, the Traditional Owners of the coast of the Kimberley region have had a close association with the coastal landscape, including the offshore islands which hold great significance and value for them (Vigilante *et al.* 2013). Many islands, such as these Kimberley islands, are components of larger interlinked Indigenous cultural landscapes and seascapes that are of enormous significance to Traditional Owners all around Australia.

Historical use of islands around Australia by Europeans dates as early as the 1600s, when some

were used as staging posts for mariners to record their visit: Dutch mariner Dirk Hartog placed a flattened pewter plate on what is now Dirk Hartog Island off Western Australia as a record of his visit there in 1616 (Playford 1998). Further north, with the establishment of towns such as Roebourne (1866) and Cossack (1972) on the Pilbara mainland, nearby offshore islands in the Dampier archipelago became bases for fishing, pearling and whaling operations particularly because of their proximity to sheltered bays in which to moor vessels (Morris 1989).

During the late 18th and the 19th centuries, Australian islands were also used as important penal colonies because of their remoteness and ocean barriers. Australia itself was viewed as an island on which to maroon convicts, by the British Empire. Many of Australia's offshore islands, especially Tasmania, became *in situ* jails for convicts seen as in need of additional security: Norfolk Island (~1500 km east of Australia) was reinstated in 1824 as a place to send the worst convict reoffenders. Queensland's North Stradbroke Island became the site of Australia's first Catholic mission in 1843 (Carter *et al.* 1994). Other islands such as Barrow, Bernier, Dorre and Rottnest Islands (Western Australia) or Tasmania's Flinders Island were used in the late 1800s/early 1900s as quarantine areas to isolate Aboriginal people or those suffering illnesses such as tuberculosis, measles or venereal disease (Jebb 1984).

Islands were viewed as reliable sources of marine wildlife and many offered important resting sites for whalers and sealers. Due to their remoteness, men were often left onshore with provisions for months, to establish bases, exploit the resources and await returning vessels. Macquarie Island was exploited for fur and oil from elephant seals and four species of penguins in the early 1800s (Cumpston 1968). Other islands (e.g. Norfolk Island; St Peter's Island, Tasmania; Moreton Island, Queensland) were used to establish whaling stations or turtle canneries. Green sea turtles (*Chelonia mydas*) were exploited for the European and Asian markets in canneries such as those on Heron Island

in the Great Barrier Reef; female turtles were preferred for their superior flesh, and were killed and rendered into tins of soup (Limpus 2008). Commercial exploitation of Western Australian turtles was operational from at least the 1930s, with green turtles harvested from the Montebello Islands and at reefs around Flying Foam Islands (Western Australia: Limpus 2008). Other island wildlife exploited by Europeans included mutton birds and beche de mer, among other fisheries (Hourston 2010).

Islands have long been used as navigational aids and lighthouse stations. During the 1950s, due to their remoteness from European and eastern Australian cities, islands in the Montebello archipelago were used by the British for nuclear tests, with no recognition of the island wildlife that occurred there. The European mindset that islands were waste grounds and there only to be exploited was typical at that time. However, historical visitations on islands have had consequences, particularly the introduction of non-indigenous species that have had major impacts on local insular and typically predator-naïve fauna and succulent flora.

A significant number – and geographical area – of Australian islands have little or no human visitation, and continue to protect biodiversity values regardless of the islands' formal protected area status. Unlike other parts of the world, the majority of Australia's islands are not populated; less than 1% of Australia's total population lives on islands and those that are occupied comprise only ~30 of the larger island groups (ABS 1999). Many have one or more non-exclusive or complementary uses such as mining and resource extraction industries, tourism, farming and as urban or rural residences. The impacts of these uses may be significant and contrary to biodiversity conservation unless carefully mitigated. Poor or absent biosecurity arrangements leave islands open to further ingress of non-indigenous species that might have negative impacts at the ecosystem level. Overuse of resources such as freshwater, or pollution of water by waste management landfills, may have high and chronic impacts. Poorly managed access to the coastline by vehicles, particularly in erosion-prone areas, causes degra-

dation of habitats and can lead to progressive loss of soil stability and subsequent vegetation loss. Not all island vegetation communities are fire-tolerant, and fires have the potential to remove all vegetation cover, leading to local extinctions for those species unable to find refuge. Finally, artificial lighting can result in severe disruptions to breeding for some species, such as marine turtles (Kamrowski *et al.* 2014) and seabirds (Montevecchi 2006).

The importance of islands in the Australian context

Together with their surrounding marine environments, islands have intrinsic values as functioning and interlinked ecosystems supporting high levels of biodiversity, which in turn provides economic benefits for tourism. Many islands have been vested as nature reserves, national parks or World Heritage Areas due to their significance for nature conservation, geomorphology, as examples of ongoing ecological and biophysical processes or the role they played in human cultural history.

Islands are logical places to safeguard Australia's biological diversity. They are important breeding grounds for seabirds, marine turtles and seals, with many species breeding primarily on islands (e.g. short-tailed shearwater, little penguin (*Eudyp-tula minor*) and lesser frigatebird (*Fregata ariel*). Islands offer essential refugia for common as well as for rare and endangered species. These either occur only on islands, or have their most secure populations on islands. Unfortunately, Australia has a poor mammal extinction record on islands: of 28 endemic land mammal species in Australia extirpated since 1788, seven (25%) were island endemics (Woinarski *et al.* 2015). A further two species have recently become extinct: the Christmas Island pipistrelle (*Pipistrellus murrayi*) in 2009 (Lunney *et al.* 2011) and Bramble Cay melomys (*Melomys rubicola*) in 2016 (Gynther *et al.* 2016).

Islands, because of their isolation and size, often present the opportunity to holistically restore the landscape in a way that is not possible on the mainland. Eradication (rather than just control) of

non-indigenous species is more feasible on islands where suitable biosecurity is in place to reduce the risks of reinvasions. Isolation (and remoteness) also limits the risks from other ecosystem impacts such as disease or further land clearing.

Islands offer value for people. Many islands have deep and abiding spiritual connections for Aboriginal and Torres Strait Islander communities. Many islands are places where people live and gain an income based on recreational and tourism industries. They supply food resources from the marine environment or support opportunities for commercial development and resource extraction. Finally, many islands offer scientific and educational destinations for scientists and land managers to survey the biota and genetic resources of these relatively undisturbed areas, study island biogeography, monitor the health of marine ecosystems and trial management initiatives.

Development of the consciousness of island importance

There is a change occurring in people's values of islands (Secretariat of the Convention on Biological Diversity 2014). This changed paradigm is particularly relevant due to the altering climate and the associated sea level rises accepted by the IPCC (Mimura 1999; Mimura *et al.* 2007), and the recent impacts of tidal inundation on biodiversity of some low-lying islands (Gynther *et al.* 2016).

In addition to these global challenges are salient challenges faced by islands around Australia: border protection and biosecurity, resource management, invasive species management, and whole-island restoration to rebuild or maintain functional ecosystems. In particular, Australia as a nation has undertaken vast changes in its assessment of off-shore islands and required conservation-driven actions. This assists prioritisation of island conservation interventions to guide future government and other investments (Ecosure 2009). These changes have been commensurate with the urbanisation of many islands, which has further increased the pressures on their ecosystems through land

clearing for agriculture and mining, and infrastructure associated with those industries. The challenge today is to develop priorities among islands to allocate scarce resources and to change the community mindset that islands are not just remote outposts – they are important as arks for biodiversity conservation, and this can support existing and new economic opportunities, i.e. for tourism. Investments to return island ecosystem services through whole-island restoration programs are becoming more broadly acceptable. However, island restoration (and other – narrower – conservation interventions) also has socio-economic implications and requires exemplary community engagement where people have ownership or traditional links to the island. Conservation ecology and its practice is now considering these human elements in island conservation initiatives (Chapter 4).

In recent times, the historical and cultural significance of many islands and archipelagos to Indigenous groups is being recognised more formally and managed through Indigenous Protected Areas (Smyth *et al.* 2016; Chapter 8). Indigenous Protected Areas are areas of land and/or sea that have been voluntarily dedicated as protected areas by their Traditional Owners, recognised and supported by governments, and managed by Indigenous people through a combination of legal and other effective means, often in collaboration with conservation agencies and other partners, consistent with international protected areas guidelines. Coastal and island Indigenous Protected Areas are planned and managed holistically in accordance with the Indigenous concept of 'sea country', in which all the natural and cultural values of land, sea, islands, animal, plants and people are acknowledged as inter-linked and interdependent.

It is also becoming apparent that island restoration needs to be conducted holistically due to a high probability that actions directed at one part of an ecosystem may have undesired consequences elsewhere in space and time. For example, taking a holistic approach to the management of invasive

species in natural environments was a lesson learned from a pest management program on Macquarie Island: eradicating feral cats (*Felis catus*) led to a trophic cascade effect in the island ecosystem due to increases in rabbit abundance that substantially altered large areas of island vegetation (Bergstrom *et al.* 2009). Lessons from New Zealand ecological restoration programs on islands demonstrate that a multi-species approach to island eradication programs is achievable, particularly when it is driven by support from local community and cultural partnerships (Chapter 14).

National strategic planning

Legislation in Australia relating to the management of islands either remains undeveloped or (most often) poorly considers specific challenges and opportunities of islands and their cultural values and human communities. While inhabited islands offer electoral reasons to support their infrastructure, uninhabited islands (i.e. most) remain unrecognised politically and so threats that degrade them continue largely unabated and with little current prospect of resource investment. There are several shortcomings of current planning that, if reversed, could improve the management of Australia's islands in the future. However, a shift in thinking is now clear: islands hold a special identity as unique ecosystems for Australia and many hold spiritual significance as part of Indigenous sea country. They deserve to be recognised as such.

As a result of the adoption of the Programme of Work on Island Biodiversity in 2006 (COP 8 Decision VIII/1), Australia (together with Italy and Mexico) has developed island strategies that recognise the importance and significance of island biodiversity. Australia's efforts focused on an independent national assessment of the conservation value, and subsequent prioritisation of high conservation status offshore islands and their specific vertebrate pest management issues (Ecosure 2009). The focus of the report was to develop a priority list of 100 islands of high conservation status

to help guide future government investment on offshore islands. However, the process was largely flawed in that it only considered islands of 100 ha or larger. Consequently, many smaller yet extremely important islands – such as those used for nesting by seabird and marine turtles – are not considered. This information is now being collated at a state level (Chapter 5).

In *Ten Commitments: Reshaping the Lucky Country's Environment*, Lindenmayer *et al.* (2008) highlighted the ecosystems around Australia where special political and socio-economic attention is required to stem their further degradation; islands as ecosystems are not recognised as warranting special attention.

However, in a follow-up edition six years later – *Ten Commitments Revisited* (Lindenmayer *et al.* 2014) – islands were afforded their own chapter in recognition of their value for biodiversity based on endemism, refuge and breeding grounds. Woinarski *et al.* (2014) identified 10 key issues that will move island conservation and management forward over the next decade in Australia. These focus areas are worth repeating as they underpin the advocacy we require to invest and commit to current and future island conservation initiatives:

- 1 Implement a comprehensive stocktake of island life.
- 2 Design and implement a comprehensive biosecurity program for islands, prioritised by risk and biodiversity significance.
- 3 Design and develop a national program that systematically prioritises, implements, monitors and improves island conservation management interventions.
- 4 Ensure that Australian islands are included in national conservation management programs.
- 5 Act to conserve island threatened species, and amend the *Environment Protection and Biodiversity Conservation Act 1999* to better safeguard islands of biodiversity significance.
- 6 Develop strategic risk-based programs to translocate threatened species among islands and mainland areas.

- 7 Develop broad-based sustainability programs for island human communities, incorporating social, economic and environmental factors.
- 8 Improve collaboration among island managers, residents and visitors across Australia, including the ongoing support for and coordination of the island arks program.
- 9 Increase resourcing to, and longer-term security of, island Indigenous Protected Areas, and enhance their management capacity.
- 10 Integrate island-based ecotourism industries into holistic management arrangements.

While overarching in motive, these focus areas should guide a national strategic approach to conserving offshore island ecosystems. This strategy is required if the full suite of extant island values is to be conserved into the future.

National-level prioritisation and coordination of island restoration programs, notably including non-indigenous species eradication programs, and translocations of insurance populations of threatened species, is required to maximise return on investment. This should be a sensible framework that recognises islands as arks for Australia's biological diversity, but must also consider the imperatives of maintaining community, cultural and commercial values and future opportunities. National planning needs to be practical to implement, dares to adopt novel approaches to landscape-scale management, addresses evidence-based management in the decision-making process, actively includes local citizens to support on-ground initiatives, and needs to include adaptive learning (especially that made from mistakes). The question is: are we as a nation actively achieving and investing in this level of planning and implementation for conservation of Australia's offshore islands?

Structure and content of this book

Our intent has been to produce an invaluable yet easy-to-understand book for politicians, policy-makers, scientists, practitioners and visitors with interests in Australia's offshore islands. This book highlights the interplay of conservation and land

development in or associated with island ecosystems across the Australian region. The book aims to provide the knowledge and shared experience required to effectively plan and implement island restoration projects to maximise their value to biodiversity conservation into the future. The authors are a broad mix of island management practitioners, researchers, planners and policy-makers, ranging from managers with 20+ years of experience to postgraduate students offering fresh perspectives.

Included are a selection of case studies of island management practices and approaches, shared by Australian managers and scientists, about their work on island protection and continued management. These include Aboriginal and Torres Strait Islander values, visitor management, invasive species management, endangered species recovery, partnerships and conservation planning. The rise in community-driven island conservation programs (Chapter 12) demonstrates the volunteer effort that has contributed to restoring populated and unoccupied island ecosystems. The intent of these case studies is to highlight what is possible when well-designed management interventions are undertaken in partnership with investors, stakeholder organisations and island communities.

This book has been developed to focus on key themes of relevance to island conservation and management around Australia. Importantly, we note that these themes also have relevance and application to islands globally. We have structured the book to address 11 focus areas (Table 1.1), such as the political and policy values of islands around Australia including tenure and jurisdictional arrangements (Chapters 2, 3, 8, 10), the biodiversity and associated biosecurity values to protect island ecosystems (Chapters 5, 6, 7, 9), the importance of islands to Aboriginal and Torres Strait Islander peoples (Chapter 8), the interplay between islands and the marine ecosystem (Chapter 13), the vulnerability of islands to a changing climate (Chapter 15), community engagement (Chapters 4, 9, 12) and the socio-economic values of islands to the resource sector and tourism (Chapters 4, 9, 11, 12). In the final chapter, we summarise the advancements in

Table 1.1. The organisation of chapters in this book based on a framework of themes related to island policy, conservation and management around Australia

Island theme and values	Chapters
Policy and status of islands, statutory processes and legislation	2, 3, 8, 10, 16
Community-driven conservation and engagement	4, 9, 12
Tourism	11,12
Island prioritisation	5
Biosecurity and quarantine	6, 9
Biodiversity	7
Indigenous Protected Areas	8
Resource development	9
Marine connections	13
Whole-island management	14
Climate change	15

relation to Australia's offshore islands in terms of conservation, policy and management, and identify emerging priorities and challenges. This will lead to a re-evaluation of the themes identified in Chapter 1, and an attempt to reflect on the current commitments *sensu* Woinarski *et al.* (2014) for the next 20 years for Australia, integrating research, management, and policy.

Concluding comments

The Australian nation has a gift: continental and oceanic islands that collectively are rich in cultural heritage, biodiversity and ecosystem services. Ultimately, these unique ecosystems need institutional support and cross-organisational partnerships to maintain their integrity and to avoid increasing their risk of further degradation. We hope this book will stimulate thought and further action to manage these iconic landscapes sustainably.

References

ABS (Australian Bureau of Statistics) (1999) *Australian Social Trends*. <<http://www.abs.gov.au/ausstats/abs@.nsf/2f762f95845417aeca25706c008>

34efa/65f1ae55ef772f18ca2570ec001117a4!OpenDocument>

- Bergstrom DM, Lucieer A, Kiefer K, Wasley J, Belbin L, Pedersen TK, Chown SL (2009) Indirect effects of invasive species removal devastate World Heritage Island. *Journal of Applied Ecology* **46**, 73–81. doi:10.1111/j.1365-2664.2008.01601.x
- Carter P, Durbidge E, Cooke-Bramley J (1994) *Historic North Stradbroke Island*. North Stradbroke Island Historical Museum Association Inc. and Watson Ferguson & Co., Brisbane.
- Cumpston JS (1968) *Macquarie Island*. Publication no. 93. ANARE Scientific Reports, Series A. Department of External Affairs, Antarctic Division, Melbourne.
- Deloitte Access Economics (2013) *Economic Contribution of the Great Barrier Reef*. Great Barrier Reef Marine Park Authority, Townsville.
- Ecosure (2009) *Prioritisation of High Conservation Status of Offshore Islands*. Report to the Federal Department of the Environment, Water, Heritage and the Arts. Ecosure, Queensland.
- Geoscience Australia (2004) *Geodata topo 100K*. Google Earth, 1:100,000 scale vector map data (DVD). Geoscience Australia, Canberra.
- Gibson LA, McKenzie NL (2012) Identification of biodiversity assets on selected Kimberley islands: background and implementation. *Records of the Western Australian Museum* **81**(Supplement), 1–14. doi:10.18195/issn.0313-122x.81.2012.001-014
- Gynther I, Waller N, Leung LK (2016) *Confirmation of the Extinction of the Bramble Cay Melomys Melomys rubicola on Bramble Cay, Torres Strait: Results and Conclusions from a Comprehensive Survey in August–September 2014*. Department of Environment and Heritage Protection, Brisbane.
- Hourston M (2010) Review of the exploitation of marine resources of the Australian Indian Ocean Territories: the implications of biogeographic isolation for tropical island fisheries. Fisheries Research Report no. 208. Department of Fisheries, Western Australia.
- Jebb MA (1984) The Lock hospitals experiment: Europeans, aborigines and venereal disease. *Studies in Western Australian History* **8**, 68–87.

- Kamrowski RL, Limpus C, Pendoley K, Hamann M (2014) Influence of industrial light pollution on the sea-finding behaviour of flatback turtle hatchlings. *Wildlife Research* **41**, 421–434. doi:10.1071/WR14155
- Limpus C (2008) *A Biological Review of Australian Marine Turtle Species. 2. Green Turtle, Chelonia mydas. (Linnaeus)*. Environmental Protection Agency, Queensland.
- Lindenmayer DB, Dovers S, Harriss Olson M, Morton S (Eds) (2008) *Ten Commitments: Reshaping the Lucky Country's Environment*. CSIRO Publishing, Melbourne.
- Lindenmayer DB, Dovers S, Morton S (Eds) (2014) *Ten Commitments Revisited: Securing Australia's Future Environment*. CSIRO Publishing, Melbourne.
- Lunney D, Law B, Schulz M, Pennay M (2011) Turning the spotlight onto the conservation of Australian bats and the extinction of the Christmas Island pipistrelle. In *The Biology and Conservation of Australasian Bats* (Eds B Law, P Eby, D Lunney and L Lumsden) pp. 485–498. Royal Zoological Society of NSW, Sydney.
- Mimura N (1999) Vulnerability of island countries in the South Pacific to sea level rise and climate change. *Climate Research* **12**, 137–143. doi:10.3354/cr012137
- Mimura N, Nurse L, McLean RF, Agard J, Briguglio L, Lefale P, Payet R, Sem G (2007). Small islands. In *Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* (Eds ML Parry, OF Canziani, JP Palutikof, PJ van der Linden and CE Hanson) pp. 687–716. Cambridge University Press, Cambridge.
- Montevecchi W (2006) Influences of artificial light on marine birds. In *Ecological Consequences of Artificial Night Lighting* (Eds C Rich and T Longcore) pp. 94–113. Island Press, Washington DC.
- Morris KD (1989) The Dampier archipelago: managing people in a nature reserve. In *Australian and New Zealand Islands: Nature Conservation Values and Management*. (Ed. A Burbidge) pp. 183–192. Department of Conservation and Land Management, Perth.
- Playford PE (1998) *Voyage of the Discovery to Terra Australis by Willem de Vlamingh in 1696–97*. Western Australian Museum, Perth.
- Secretariat of the Convention on Biological Diversity (2014) *Island Bright Spots in Conservation and Sustainability Investing, Scaling and Replicating in Order to Achieve the Aichi Biodiversity Targets*. Secretariat of the Convention on Biological Diversity, Canada.
- Skira I (1997) 'I hope you will be my friend': Tasmanian Aborigines in the Furneaux Group in the nineteenth century – population and land tenure. *Aboriginal History* **21**, 30–45.
- Smyth D, Gould J, Ayre M, Bock E, Dulfer-Hyams M (2016) Indigenous-driven co-governance of sea country through collaborative planning and indigenous protected areas. *Indigenous Law Bulletin* **8**, 15–20.
- Tourism Research Australia (2011) *The Economic Importance of Tourism in Australia's Regions*. Tourism Research Australia, Canberra.
- Tourism Victoria (2015) *Value of Tourism to Phillip Island 2013–14*. Research factsheet. Tourism Victoria, Melbourne.
- Vigilante T, Toohey J, Gorrington A, Blundell V, Saunders T, Mangolamara S, George K, Oobagooma J, Waina M, Morgan K, Doohan K (2013) Island country: Aboriginal connections, values and knowledge of the Western Australian Kimberley islands in the context of an island biological survey. *Records of the Western Australian Museum* **81**(Supplement), 45–81.
- Woinarski J, Ball D, Burbidge AA (2014) Islands. In *Ten Commitments Revisited: Securing Australia's Future Environment* (Eds DB Lindenmayer, S Dovers and S Morton) pp. 117–128. CSIRO Publishing, Melbourne.
- Woinarski CZ, Burbidge AA, Harrison PL (2015) Ongoing unravelling of a continental fauna: decline and extinction of Australian mammals since European settlement. *Proceedings of the National Academy of Sciences of the United States*

of America **112**, 4531–4540. doi:10.1073/pnas.1417301112

Wong PP, Marone P, Lana P, Fortes M, Moro D, Agard J, Vicente L, Thonell P, Mulongoy KJ (2005) Island systems. In *Ecosystems and Human*

Well-being: Current State and Trends: Findings of the Condition and Trends Working Group, Volume 1. (Eds R Hassan, R Scholes and N Ash) pp. 663–680. Island Press, Washington DC.

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