A Bat's End: The Christmas Island Pipistrelle and Extinction in Australia.
John Woinarski, Clayton, VIC: CSIRO Publishing, 2018
Reviewed by Tessa Laird, University of Melbourne

If the extinction of the Christmas Island Pipistrelle[1] was "like a car crash in slow motion" (x), then what we are witnessing with Australia's ongoing bushfire devastation and wildlife apocalypse is more like a nuclear explosion. *A Bat's End* is intended as "an obituary and an inquest" (1) for the first known species to have become extinct in Australia since the introduction of the Environment Protection and Biodiversity Conservation Act 1999. It considers the failure of that act by examining each factor that played a role in the bat's demise, illustrated by depressing graphs of bat calls flat-lining, or regions of the island once plentifully populated by bats becoming void of habitation. While the extinction made national news for a day, it was soon forgotten, and Woinarski's book operates as a *memento mori*, giving "exposure, reflection and expression of remorse" to such irrevocable loss. Every lost species deserves such memorialisation, nevertheless Woinarski hopes "there are few such volumes in this series." (3) Unfortunately, we are heading toward a growing library of mournful tomes – if indeed there is time or capacity to record what we are losing at such catastrophic rates. Sadly, we may look back on the loss of the Pipistrelle with a sense of wonder, not at the mismanagement that allowed it to happen, but at the relative luxury of being able to focus on one particular species during a period of relative financial and climactic comfort.

Woinarski underscores that the Pipistrelle's extinction is yet another symptom of colonisation – the capitalist/ extractivist scourge that has changed the face of the planet forever. Imperialist logic saw islands, not as unique ecological niches, but "replaceable parts of the great colonial engine" (11). Woinarski sketches key characteristics of Christmas Island's social, economic, geographic and geologic histories; closer to Java than Australia, its natural reserves of phosphate were mined using Asian labour to enrich England's agriculture and feed the growing Empire. It's no surprise that the binomial nomenclature of our titular bat, *Pipistrellus murrayi*, honours the notorious Captain Murray, an exploiter of land and indentured labour.

Over Christmas Island's 120-year history of human settlement, Britain, Singapore, Japan, New Zealand and Australia have all had administrative responsibilities, including a succession of phosphate mining monopolies (each disavowing responsibility for cleaning up its predecessor's messes). Today the island has a Western Australian legal system despite being a Northern Territory electorate, and an insecure economy that survives on mining and a refugee detention centre, the latter increasing the island's population three-fold in less than a decade. Attempts at ecotourism have been hampered by the moonscape left behind by mining, depleted zones which become breeding grounds for invasive species. The complexity of the picture Woinarski builds highlights the fact that "all environmental problems are interconnected" (26). Donna Haraway might call it entanglement, or "staying with the trouble" – an acknowledgement of the world as a system of relations with no

[1] I am following David James' insistence on capitalising the bat's name as a mark of respect. Employed by Parks Australia to monitor and report on the Pipistrelle, his testimony in this book is impassioned and soul-searching.

outside, in which all (f)actors are co-implicated. For example, strategies for the reduction of introduced pests often cause more harm than good – poisons in particular. Some introduced species predate on each other, so a reduction in numbers of feral cats could lead to an explosion of rat and mouse populations. Woinarski's analysis reads like a whodunnit, exploring eight possible causes of the Pipistrelle's extinction, including increased predation, extreme weather events, exposure to new diseases, pollution and poison, but there is no single obvious explanation, rather, threats are "indirect, multiple, diffuse and subtle" (139). If he had to choose one, however, he suspects predation by the introduced wolf snake.

The Pipistrelle, of course, is not the only Christmas Island species to go extinct after colonisation. Two species of native rat once swarmed over the island, but died out within a few years of the introduction of European rats. Settlers didn't mourn these losses, nor, we imagine, did they notice or care about multiple invertebrate extinctions. In the 1980s and 90s, when ecologists were beginning to campaign for Christmas Island's endangered species, the charismatic Abbott's Booby became a conservational cause celebre, eclipsing the tiny bat which Woinarski confesses was an unremarkable addition to the global *Pipistrellus* genus. Yet he waxes lyrical about how it felt to hold this "amalgam of soft-fur core enveloped within wings of a strange texture somewhere between fine leather and balloon fabric, spanned by the most delicate elongate finger bones", noting that while some "struggle and bite, others are passive droplets of life." (96-7)

The Pipistrelle may not have been glamorous, nevertheless it inspired studies by dedicated researchers over a twenty-year period. Lindy Lumsden's 1998 study discovered a decline in population, however, years passed before she was funded to resume her research. When in 2008 Christmas Island Phosphates funded Lumsden to assess options for captive breeding, she could only locate four bats and was unable to capture them. By the time the government approved a rescue attempt, the Pipistrelle was already "functionally extinct" (116). Lumsden and volunteers arrived in early August 2009 but recorded the calls of only one bat. Eight people attempted to trap the last bat without success. August 26 was the last night it was ever heard. Woinarski calls this "the point at which the graph of unremitting and consistent decline hit the x-axis" (115), a metaphor which makes palpable the (dis)connections between life and science, bureaucracy, dollars and death. At one point he asks a (nameless) bureaucrat how much financial value is placed upon the survival of a species. The answer? More than half a million, but less than five million. While Lumsden lives with "overwhelming feelings of inadequacy and failure" (196), Woinarski notes that for the bean counters, politicians and bureaucrats who blocked her recommendations, "extinctions are merely splattered bugs on the windscreen of progress." (223)

As Australian scholars Thom van Dooren, Matthew Chrulew and the late Deborah Bird Rose have been writing for some years, extinction studies is unhappily a growing field which requires our urgent scientific and fiscal attention, but most of all our emotional engagement. Woinarski encourages his readers to *feel* beyond the inadequate abstraction of the term "extinction" itself. While the majority of the book is straightforward with an assiduous attention to detail, the introduction and conclusion, as well as personal testimonies from those directly involved with the Pipistrelle, offer opportunities to truly mourn. The many voices and approaches in this book will allow educators and students alike to view the problem of extinction from more than one angle, be it scientific, journalistic, or

poignantly personal. Woinarski writes that he would “walk hand-in-wing with the tiny bat ghost, knocking at the door of those policy makers who wheedled the words to avoid any obligation for commitment or accountability…” (4) and I can’t help thinking of a contemporary version of this reckoning, where activists knock on the doors of politicians and coal lobbyists with the charred remains of animal bodies, demanding to know how their short-term profits could ever balance against priceless biodiversity in the ledger book of life.

A Bat’s End is a synecdoche of the 6th Mass Extinction, and for the Anthropocene as a whole. Whether we think specifically of endangered bats, from loss of habitat, such as Florida’s Bonneted bat; disease, such as White Nose Syndrome devastating North American bats; or climate change, decimating Australia’s flying fox populations; or whether we think of extinctions of all creatures, and the unravelling of ecologies everywhere, *A Bat’s End* provides much material worth considering for the difficult journey ahead.

Bio Statement:
Tessa Laird is Lecturer in Critical and Theoretical Studies at the School of Art, Faculty of Fine Arts and Music, University of Melbourne. Her book *Bat* (2018) is a cultural history of bats, part of Reaktion’s celebrated *Animal* series. She has written numerous essays on the artistic and cultural representation of animals.