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Book review

A Bat's End: The Christmas Island Pipistrelle and Extinction in Australia

By John Woinarski
2018. Published by CSIRO Publishing, Melbourne. 280 pp.
Paperback, AU$59.99, ISBN 9781486308637

Professor John Woinarski is an Australian ornithologist based at Charles Darwin University, in Australia. He was awarded the 2001 Eureka Prize for Biodiversity Research. Much of his work has been focused on threatened mammal species and he is a coauthor of the 2012 Action Plan for Australian Mammals.

The aim of this book is to inform the readers as to why the Christmas Island Pipistrelle *Pipistrellus murrayi* (hereafter pipistrelle) went extinct. Yet moreover it is to explore the biological/ecological and administrative reasons for its extinction. This important book is obviously about the pipistrelle, but more so about the myriad of possible biological reasons for its extinction and the complex of administrative failures that facilitated its extinction. It does not have a surprise happy ending.

This is a book in three major parts (the three parts is my analysis: the book divides itself into nine chapters). Part 1: explores or attempts to unravel the biological reasons for the pipistrelle's extinction. These are complex and far from conclusive. Thus, the section is long and significant. Part 2: is a forensic dissection of the administrative and management failures. This section is, when required, interwoven with explanations of how the management policies are supposed to work (or why they never could work) and why they failed. The author, Prof. John Woinarski, being more even-handed in doing this than I am here in outlining it. Part 3: gives the personal perspectives of those that worked on understanding the pipistrelle or on the administration of its conservation. There are other sections, in order they are: a Foreword by Tim Lowe; an introduction entitled 'The end' (because you know the end at the start); an Introduction that introduces the book; sections that provide background including the pipistrelle's biology through to the administration and management of its conservation; the personal perspectives; and finally, a conclusion chapter entitled Lessons and generalisation. The book concludes with acknowledgements, endnotes, references (24 pages of them) and an index.

The author is addressing a broad audience, although general readers wouldn't pick it up if they knew the detail coming towards them, but on the other hand they won't put it down after they discover the detail. It's all important. This book is definitely slanted to academics and their students: academics in ecology and in management. Politicians and their advisors will not read it even though they may be the ones with most to gain.

This book is not a light read. The last part of its title '… and Extinction in Australia' give warning that it is to be a much more broad read than simply the extinction of a single species.

Its weaknesses are its strengths: they are its detail. Yet, if you find it has too much detail you will, in the end, argue that the detail is needed, thus justified. I find the greatest strength of this book is in the knowledge it imparts: a knowledge that educates. The education provided within may, if read closely, help avoid the next mammal extinction. Oops, not the next one that's already happened (Fulton 2016; 2017), so perhaps the next next one.

This text clearly reiterates what we already know about insular (island) environments, but extends our knowledge to the complexities of Christmas Island. Therefore it acts as a text for island conservation and provides an educational plus for those working in that field. A plus because beyond the ecology presented the text clearly informs us how the administration and management ebbs and flows, vacillating to its ultimate and unavoidable failure. Though to be fair, the author is very even-handed in his approach to this. But, will his balanced exposé aid the administrative discipline? Will they learn from it? Only if they read it and amend their ways. In general, I think researchers working in conservation, particularly at the post-graduate and post-doctoral level will benefit enormously from reading this book. It also stands as a potentially important resource in tertiary teaching for all those working in conservation.

The text is well organised and dominated by the three parts I described above. The first two parts, biological understanding followed by management and policy responses, are essential in understanding why the pipistrelle is extinct. The third part, the personal perspectives of the main protagonists adds a deeper insight. The deeper insight extends to getting a little inside their minds and understanding how they feel as well as seeing how some try to excuse their failure by blaming others. No doubt these more personal insights extend and advance an already important book.

The level of research is deep and pertinent to the text, to the tune of 24 pages of references. The writing style is clear, concise and easy to follow. It is studded with appropriate examples and analogies. It is engaging and at times cleverly entertaining, which helps the reader get through the detail and probably aids the reader's memory. There are carefully selected pictures, maps, graphs and tables, which are appropriately placed through the book supporting the text.

In the Foreword of this book, Tim Lowe writes 'What an important book this is.' I could not agree more! I would recommend this book to all conservation professionals, particularly those working with threatened taxa or threatened communities, or indeed anyone working within the administration, management and policy areas of conservation. Its opening sections on the ecology and biology of the pipistrelle are essential reading for undergraduate and postgraduate students, although the latter group may put it to use immediately.

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