

The Woodhen: A Flightless Island Bird Defying Extinction

Frith, Clifford B. (2013)
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I BEGIN this review of Clifford Frith's book on the Lord Howe Island Woodhen *Gallirallus sylvestris* with a 'conflict of interest' admission. Long ago, 1970–72 to be precise, while at the Australian Museum, I co-ordinated an environmental survey of Lord Howe Island. The survey was undertaken at the request of the Lord Howe Island Board for the museum to determine the status of the island's flora and fauna. As the museum had a long association with Lord Howe Island commencing in 1869 when a team of scientists from the museum undertook a zoological survey of the island, the approach from the Board was well-received by museum staff many of whom participated in the survey. The survey was also joined by botanists from the Royal Botanic Gardens and zoologists from CSIRO.

In 1974, an account of the survey's findings with recommendations for the conservation and management of the island's biota was published by the Lord Howe Island Board (Recher and Clark 1974a). Our recommendations were repeated and amplified by Recher and Clark (1974b); a failsafe procedure I learned quickly to follow after joining the Australian Museum and becoming acquainted with the State's penchant for denying the public access to scientific advice (on the grounds, I was told, that it would only be mis-used and/or not understood).

It was clear even before the report was published that the Board was not enthusiastic about our recommendations for conservation which failed to support greater of development on the island and called for all of the island outside the existing settlement area to be declared a National Park. Indeed, the report was only made public and published per a verbal agreement I had with the Board as a condition of my agreeing to co-ordinate the survey after my saying I would release the report privately and a compromise was reached on wording; the term 'national park' was replaced by 'reserve', with that reserve to 'be formally dedicated by the Parliament of New South Wales as an amendment to the Lord Howe Island Act'. Thence commenced a most amazing series of 'environmental surveys' of the island beginning with the State Planning Authority (SPA), an organization I had originally sought to have involved in the survey I co-ordinated, but which was rejected by the Board. The SPA basically endorsed the recommendations we had put forward in our report seeking to minimize development and to promote the island for its natural history values. Another survey and then another and so on was commissioned until finally a report was received that

endorsed greater development of the island. Throughout this lengthy process I endured a succession of individuals and consultants passing through my office requiring access to our Lord Howe Island files and data. These were, of course, made freely available, but the process was disruptive and I had all our material put in a single filing cabinet. When a new consultant showed up, the filing cabinet was pointed out to them and they were told 'make yourself at home'.

Although many of our recommendations were contentious, such as limiting the number of motor vehicles on the island, it was establishing a 'reserve' that encountered the greatest problems. In particular, there was considerable resistance to including Transit Hill, which dominates the central portion of the island to the east of the main settlement. At the time of our survey, there were persistent rumours of plans for the development of Transit Hill, including a casino (this would have been the first legal casino in New South Wales (NSW) and the second in Australia; Wrest Point in Hobart opened in 1973). I considered the protection of Transit Hill from development essential to the conservation of the island's biota as it linked the largely undeveloped southern and northern sections of the island. Fortunately, Transit Hill is now included within the Lord Howe Island National Park, but the linking reserves and buffer zones recommended between Transit Hill and Intermediate Hill to the south along Blinky Beach, and Malabar Ridge to the north along Ned's and Middle Beach are not. There is also a large and disturbing in-holding on Transit Hill that was specifically recommended for reservation in our report that holds the threat of future, potentially environmentally damaging development.

Readers may begin to see why I have begun this review with such a lengthy *mea culpa*, but when you add seemingly endless petitions and requests for assistance from island residents for and against proposed changes to the island, after most rejected our recommendations, it may not be surprising that I've never returned to Lord Howe, nor do I have any interest in doing so. Readers may wish to keep this in mind as I review Frith's book on the woodhen.

Since I've begun this review with anecdotes about the environmental survey of Lord Howe that I co-ordinated, I continue by clarifying Frith's explanation of why the survey was commissioned by the island's Board. Frith implies (p. 86) that the study was needed 'before any decision could be made on the orientation of the Island's proposed new airstrip'. While we were aware of the proposal to construct an airstrip on the island, at no stage prior to or during the survey were we asked to survey the site proposed for the strip or to comment on its orientation. As stated by J. B. Holliday, Chairman, Lord Howe Island Board, in Recher and Clark (1974a; p. v), 'the Board commissioned the undertaking of a scientific

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survey to determine the current status of the flora and fauna and to recommend ways in which the long-term survival of the indigenous wildlife could be assured'. No doubt the Board was aware of the airstrip proposal, along with other possible developments, but there were no legal requirements in 1970 for the preparation of environmental impact or assessment statements for developments. Conservationist concerns over the airstrip related primarily to its impact on the coral lagoon, with some persons seeing the airstrip extending across the island well into the lagoon. This, of course, would have been environmental vandalism at its best, but studies by the NSW Dept. of Public Works determined that the lagoon's sediments would not and could not be made to support an airstrip. Some conservationists did not accept those findings and continued to argue against any airstrip being built on Lord Howe fearing it would destroy the lagoon. In recognition of those concerns, the survey report (Recher and Clark 1974a) commented briefly on possible environmental impacts of the airstrip concluding that with care these could be managed without significant environmental damage. What might happen with increased tourism or development on the island was another issue that our recommendations dealt with at length, to be largely ignored.

I am of the opinion that the Board was and is sincere in its concern for the island's biota and its long-term future. This is reflected in many of the actions taken by the Board to protect the island, but in no way more evident than in its support of the program to save the Lord Howe Island Woodhen from extinction.

Clifford Frith's book is a detailed (I'm minded to say 'tedious') account of the history of efforts to bring the woodhen back from the brink of extinction. Frith begins with an account of the European history of Lord Howe Island —the island's 'discovery' in 1788, the history of the ships involved, the island's settlement in the 19th Century, on through the era of seaplanes visiting Lord Howe commencing in 1931, to the present use of jet aircraft servicing a modern tourist industry. In the second chapter, Frith describes the island's volcanic origins some 7 my ago, its erosion down to the present, and the colonization and evolution of the island's wildlife. Frith then gives an account of the loss of much of the island's birdlife through depredations by humans, pigs, cats, and rats, as well as more recent colonizations by such birds as the Buff-banded Rail *G. philippensis*, Song Thrush *Turdus philomelos*, and White Tern *Gygis alba*. This is then followed by chapters on rails generally, and relatives of the woodhen specifically, the evolution and extinction of flightless rails, early accounts of the woodhen, its decline, and the causes of the decline. Early visitors to Lord Howe found the woodhen easy to catch and good to eat, many were collected for 'scientific research', with Roy Bell, a professional collector, taking 41 from Little Slope on Mt Gower alone in 1914, while others were killed by domestic dogs. Before Bell even visited Lord Howe, the woodhen had all but disappeared from the settled lowland; Bassett Hull, a keen naturalist and amateur ornithologist, failed to find woodhens in the lowlands in 1907/08, but reported them 'fairly

plentiful' in the Erskine Valley and on Mt Gower (Frith, p. 74). Hull attributed the demise of the woodhen to predation by dogs and pigs.

When we conducted our survey in 1970/71, woodhens were restricted to the summits of Mt Gower and Mt Lidgbird. John Disney, Curator of Ornithology at the Australian Museum, had developed a passionate interest in the woodhen after visiting Lord Howe in 1969 when he managed to band six birds on Mt Gower (Frith, p. 85). During the environmental survey, Disney was joined by Peter Fullagar, CSIRO Wildlife Research, and the two commenced to document the abundance and distribution of the woodhen on Lord Howe. It was soon clear that the population was unlikely to be greater than 30–35 individuals, with as few as 10 territorial pairs (Frith, p. 89). By 1975, numbers may have been as low as 15 birds. It was obvious to everyone that the woodhen was critically endangered and likely to proceed rapidly to extinction unless efforts were made to reduce predation on woodhens and increase the survival of young birds.

In response to the concern for the woodhen's survival expressed by Disney and Fullagar, among others, Ben Miller was appointed to Lord Howe Island by the NSW National Parks and Wildlife Service (NPWS) to study the woodhen in depth and advise on a captive breeding programme. Miller spent two years on the island concluding that pigs were the most important factor in the decline of the woodhen and recommending their eradication, along with cats, from Lord Howe. He also supported the establishment of a captive breeding programme. Captive breeding commenced in 1979 with the construction of facilities on the island and the first egg in captivity was laid on 24 December 1980 (Frith, p. 103). Woodhens, like humans, like to breed and the programme was highly successful, with numerous young birds released into the wild. So successful, that the programme was ended in 1983 with the last birds released in November and December. Meanwhile, cats and pigs had been eradicated enabling the now rapidly growing population of woodhens to recolonize almost all suitable habitat on the island.

Chapters 7–10 of Frith's book follow the development and success of the captive breeding programme and summarize the studies of Bob Harden, research officer with NPWS, and others on the woodhen's ecology and behaviour. Appendices provide a detailed account of the breeding programme, an up-to-date list of birds for the island, and a nomenclatural history of the woodhen. In preparing these chapters and appendices, Frith was fortunate in having access to unpublished documents, including reports, manuscripts of papers, and a draft book on the woodhen by John Disney, Bob Harden, and Peter Fullagar among others. Although I implied earlier that Frith's book risked being tedious in the detail of its accounts, Frith has done a valuable service in bringing together a vast amount of unpublished material on the woodhen and the efforts made to bring it back from the brink of extinction. One of my long-standing regrets was the failure of Disney and Fullagar to comprehensively document their studies and complete the book they had begun to write.

The concluding chapter of Frith's book looks to the woodhen's future. The number of wild woodhens on Lord Howe Island is now between 200 and 250 birds. It seems secure, but as Frith notes any population this small that is confined to a single island can never be considered safe from extinction. Single catastrophic events, the colonization of or introduction to Lord Howe Island of new competitors, predators, or disease could rapidly reverse the gains of the past three decades. Brook *et al.* (1997) published a population viability analysis of the woodhen that suggested there was a two percent chance of extinction over the next 100 years. This rose to 21 percent over the next 1000 years. As Recher and Clark (1974b) did, Frith calls for the establishment of one or more additional populations of the woodhen as a hedge against catastrophe on Lord Howe. Unfortunately, even if a suitable place can be found, establishing new populations of woodhens, or any other species, in the wild is not without risk. Woodhens themselves are predators and their foraging and nesting activities disturb the environment where they live. The consequences may have significant and adverse impacts on other species, even if these may only be soil invertebrates. We simply do not know. Keeping animals in captivity and ensuring they do not undergo genetic changes alienating them from ever being used to re-establish a wild population on Lord Howe Island is expensive and a continuing drain on scarce conservation dollars. Is it worth the cost?

I've never been comfortable with the emphasis placed on threatened species and their recovery. Yes,

there have been success stories, as documented by Frith (Appendix 4, Pp. 198-99), but there are costs beyond the financing of recovery plans and breeding programmes. It seems to me that the emphasis on threatened species diverts attention and conservation action away from species that may not be threatened immediately, but risk being threatened in the future. That is, conservation of threatened species is reactive, not proactive. Readers will no doubt have their own opinions, but they can gain considerable insight from reading Frith's book on the Lord Howe Island Woodhen. As a case history of human impacts on a species and of our efforts to prevent extinction, **The woodhen: a flightless island bird defying extinction** is informative, insightful, and (dare I say it) inspiring.

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Biodiversity Monitoring in Australia

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EFFECTIVE biodiversity monitoring, that allows an evaluation of how well we manage Australia's natural heritage, remains a frustration to many who have worked in conservation biology over the decades. Too many times colleagues have audibly groaned when presented with yet another new tool or pet interest, with an appropriate price tag, that has been paraded to senior management as a panacea to biodiversity monitoring. The hotchpotch of vertebrate, one-off botanical, one-off remote sensing, wetland, riparian ecosystem, Threatened and Priority Ecological Community, and species-focused monitoring programs represents the collective failure to provide consistent measure of the state of the Australian environment

within a common framework. We could audit the effectiveness of many of these monitoring programs; if we could find the data. If we can find the data, too often it is difficult to understand what the objective of the management intervention was. Effective biodiversity monitoring programs are in the minority and this must not continue.

Thankfully, perhaps belatedly, change is coming. Over the next decade the pace of this change in planning, analysis of benefit-cost, execution, storage, retrieval, reporting and audit of biodiversity condition monitoring outcomes will be rapid. The evidence for this prediction is provided within the pages of *Biodiversity Monitoring in Australia*.

This book was an outcome of an intensive workshop held at the Australian National University in 2011. The forty-five participants that contributed their expertise to the 22 chapters within the book represent a significant proportion of Australia's most experienced biodiversity managers and scientists. It is a collective brains trust that must not be ignored.

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The book is divided into three themes; National and international perspectives in biodiversity monitoring; Government agency and non-government organisation perspectives; and five case studies that represent biodiversity monitoring programs and lessons learned from them.

In the Introduction, Lindenmayer and Gibbons summarize the current state of play with respect to expenditure on environmental management in Australia and our inability to measure the effectiveness of this multi-billion dollar spend. They describe the structure of the book chapters, in particular specific instructions provided to authors that require them to outline two to three successes in biodiversity monitoring, two to three failures in biodiversity monitoring and three to four solutions to current problems. Importantly, the editors link their introduction to the national strategic document; *Australia's Biodiversity Conservation Strategy 2010 – 2030* (Natural Resource Management Ministerial Council 2010). In so doing, Lindenmayer and Gibbons have alerted the practitioner (us) to some required reading; a national strategic framework for conservation that will focus the efforts of all of us toward a common goal. This is a very important and insightful approach because in reading the NRM Ministerial Council (2010) strategy, we can first clarify our goals or targets for our own conservation efforts within a national framework.

In reading this book I gained terrific insights from varying perspectives across a broad spectrum of conservation biology in Australia. In chapters one to eight a common theme emerges. How can we demonstrate that our investment in conservation is effective? In Chapter 1, Lindenmayer argues for a coordinated monitoring program, particularly a link between “question-driven” monitoring occurring at the landscape or region-scale with larger-scale “mandated monitoring” (Lindenmayer and Likens 2010). Such a program needs to be resourced through a funded body tasked with delivering biodiversity monitoring outcomes.

Woinarski (Chapter 2) builds the argument for improved monitoring through his experiences and personal discovery of the elegance of long-term biodiversity monitoring within Australia's iconic national parks. He does this through discussion of the success in a monitoring program but cautions this against a failure to meet a management objective. “Monitoring should be considered... a package of environmental management”. He argues strongly for discipline in applying adaptive management, particularly the need to involve managers of biodiversity throughout the process. He also draws on the need to adopt business models for environmental management and, as was the case in Chapter 1, to establish a national approach to biodiversity monitoring.

The need for a national approach resonates throughout the book. Zerger and McDonald (Chapter 3) and Gibbons (Chapter 19) argue for national standards for data acquisition, storage and accessibility. Garnett (Chapter 4), Kingsford and Porter (Chapter 20) and White *et al.* (Chapter 21) describe the application of well archived long-term data.

Possingham *et al.* (Chapter 6) brings into focus the value of the tools applied by the resource economist. An understanding of the likely conservation benefit (and potential conservation cost) is crucial in managing our limited conservation investment. Importantly, the issue of tracking the benefit-cost predicted is deemed crucial to test these predictions about the expected benefit of monitoring. This has significant implications for shrinking investment opportunities at the government and NGO levels, and chapters by various authors in Section 2 of the book alert the reader to this challenge. Resource and social economics has become embedded within our agriculture, fisheries and forestry industries in Australia; conservation sciences in the government sector are perhaps slow to follow this lead.

A brief summary of all chapters is not possible within this review; for that I must apologize. However, there is value and lessons for conservation biologists in all chapters of this book. Perhaps my only criticism is the gap in marine sciences management. With Australia's current public and private investments in marine monitoring programs in response to new regulations in Oil Spill Contingency Planning, and the multiple threats at work within our coral reef ecosystems, the lessons learned from managers of marine protected areas will be of value.

Personally, four chapters are a stand-out. Ferrier (Chapter 7 Figure 7.1) reflects the need for a definition of the systems model as a first step in adaptive management, and identifies the need to bring that monitoring model to decision makers through an effective decision support system; that is, the realm of information management and workflow modelling (Sharp & McDermott 2009). These types of systems models allow managers to ‘better’ shift between scales of measurement and assessment. Once in-place as an adaptive management tool, they can then guide the automation of reporting. However, given this degree of sophistication, Legge and Fleming stress that both bottom-up and top-down approaches applied together yield superior outcomes (Chapter 14). They argue for a much stronger engagement from academics to assist in monitoring program revision but, importantly, recognize the skills or knowledge of those at “the patch” or local area being managed.

Ultimately, a management decision must be made; Varcoe (Chapter 11), *A Park Managers Perspective on Ecological Monitoring*. Information, provided to managers in a form they can understand is a key issue. The use of Environmental Report Cards is becoming more common and our confidence with trends and management interventions will improve as long-term, repeat-measures data is analysed and translated. However, a manager needs to feel confident in making a decision with respect to trend. Burgman *et al.* (Chapter 8) provide a simple, elegant solution for how decision points can be included, simply to focus management attention toward the monitoring data and to improve our confidence with trends in biodiversity condition.

In my opinion this book, being a brief synthesis of a lifetime of knowledge of many of Australia's preeminent conservation biologists could mark a

watershed moment in the effectiveness of biodiversity monitoring in the future. To describe it as a 'brain dump' should not be viewed as disparaging. I use this book in my own work every week simply because it is just that — the accumulation of many decades of work in the field of biodiversity monitoring condensed into 224 pages. I highly recommend this book and I look forward to the outcome of the next workshop, which I hope will be in 2016.

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Nature and Farming: Sustaining Biodiversity in Agricultural Landscapes

David Norton and Nick Reid (2013)
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THIS book is a valuable historic record of the practices employed by land managers, government programs and community groups to ensure a place for nature in farming landscapes. Its strength lies in the 16 case studies of individual properties and the 14 examples of general approaches to integrating conservation into production systems.

Those two very practical sections, plus another describing programs such as Landcare, carbon credits and offsetting, make up just under half the book. This practical, real world middle section is sandwiched between two sections that are quite different in tone and character to the sympathetic description of local heroes in the book's heart.

At the beginning are six chapters that introduce the concepts of landscape and community ecology to establish the scientific case for conservation. This includes analysis of types of farming systems, patterns of remnant vegetation distribution, and the functional properties of the agricultural matrix from the perspective of biodiversity. At the end are four chapters reflecting on the case studies and their implications. In both the introductory and concluding sections, the voice is that of the concerned ecologist, looking over the farm fence and wondering aloud 'is this really going to be enough?' Right towards the end is the warning that unless things change, "...the biodiversity train wreck lying ahead could exceed even our worse fears."

The 150 pages of introduction and reflection that bookend the case studies are of equal historical value as the case studies, as they highlight several dilemmas facing ecology as we confront the challenge of providing food for a growing population, while preserving natural values and environmental services.

It is on the question of values that these bookend sections are most interesting.

In the first chapter, the authors appear to place instrumental values (the value of nature to humans) ahead of the environmental ethical case (that non-human beings and the natural world have intrinsic value) as the main arguments for conservation. Five of six reasons given for conserving nature on farms are instrumental values (ecosystem services, current commercial value, undiscovered commercial value, aesthetics, and intergenerational equity). At the same time however, two additional reasons for conservation are invoked. These are endemism, with four of the six reasons for conservation specifying native species, and rarity, the sixth reason in the list.

Endemism is also a dominant theme of the second chapter which includes a detailed discussion of what is native and therefore more worthy of conservation than what is not. This leads to a series of definitions reminiscent of early twentieth century South African politics. There are natives, those species that were here before European settlement and haven't spread; native invaders, those here before European settlement but have spread since, partly through human agency; harmonized exotics, those that did not evolve here but are welcome, like the dingo, the cattle egret and the swallow; and infiltrators, exotics that are on the move. In all, nine categories of life are described from the most noble (globally extinct) to the least valued (exotic invaders). This is a live debate in ecology, with contributions by Davis *et al.* (2011) and Marris (2011) suggesting that in modified ecosystems, functional attributes of plants and animals are as if not more important than where they come from or how rare they are. In this book however, by page 12 the arguments for conservation based on ecosystem services and other instrumental values are beginning to look like that rare and exotic species, the Trojan horse.

These aspects of the book, the question of values and justifying calls to action, reflect our times. They

reflect the philosophical, social and political challenges we face as things get tight, as demand for natural resources strengthens, land use intensifies and questions of ethics and justice emerge as critical aspects of sustainability (Loos *et al.* 2014).

On two counts this book is in good company. It adds to a growing literature on practical guides to conserving nature in farming landscapes (Jackson and Jackson 2003; Lindenmayer *et al.* 2003; Dorrough *et al.* 2008; Lindenmayer *et al.* 2011) but also stands out from those earlier books with its comprehensive, sympathetic and well illustrated set of case studies of real people doing practical things. It also adds to the call for a different approach to agricultural landscapes, one that the authors terms 'agri-ecology' that has elsewhere been termed 'ecoagriculture' (McNeely and Scherr 2003) or more simply 'farming with nature' (Scherr and McNeely 2007).

This is a book in two distinct parts. For the practical reader there are fine examples of ingenuity and environmental hope. For students of ecology and environmental studies, there is food for thought about our relationship to nature and the aims of conservation in the twenty first century.

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